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

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**Abstract**

How do real-time expectations affect firms' economic decisions? We provide evidence by using a dataset on Japanese multinational firms' sales forecasts and exploring an unexpected escalation of a territorial dispute between China and Japan in 2012. Our estimation substantiates that, after the escalation of the dispute, affiliates of Japanese multinational firms in China experienced a sharp but temporary decline in total sales relative to affiliates in other countries and a more persistent decline in investment. Moreover, the territorial dispute has led to persistent pessimism in these firms' expectations about future sales, which can explain 60% of the overall decline in investment.

**JEL**: E22, E32, D84, F51.

**Keywords**: forecasts, pessimistic expectations, geopolitical events, investment.

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# 1. Introduction

Unexpected demand or supply shocks can affect firms' performance as well as expectations. Many important decisions rely heavily on firms' expectations about future demand and supply conditions. A burgeoning literature investigates how economic agents form expectations and how these expectations evolve over the business cycle (Coibion and Gorodnichenko 2012, 2015; Bachmann et al. 2013, 2017; Coibion et al. 2015; Kozlowski et al. 2015; Orlik and Veldkamp 2015). However, there is little evidence on how real-time expectations of firms affect their economic decisions, including price-setting, hiring and investment. Understanding the relationship between shocks, expectations and firm-level decisions is crucial for the study of macroeconomics.

There are two main challenges to identifying the impact of expectations on firms' economic decisions. First, such an analysis requires panel data on firms including both realized and forecasted value of variables such as sales and investment. Second, we need exogenous and unexpected shocks that can change firms' performance and expectations. We address these two challenges by using a unique (panel) dataset of Japanese multinational firms that contains firms' forecasts for future sales and exploring the effect of an unexpected escalation of a territorial dispute between China and Japan in 2012. In particular, we examine how the unexpected shock led to a decline in affiliates' investment by changing these firms' expectations.

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 Islands (also known as 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 crisis (henceforth, "Island Crisis") negatively impacted Japanese multinational firms' operation in China as well as their expectations about future sales.[1] Using affiliates in other countries as a control group, we estimate the causal impact of the Island Crisis on firms' expectations and investment. Using additional identification assumptions, we identify the effect of firms' expectations on their investment.

We document three facts regarding the impact of the Island Crisis using difference-in-differences (DID) strategies. First, sales of Japanese affiliates in China dropped for the year of 2012, but recovered within two years, relative to sales of affiliates in other countries. Second, capital investment of affiliates in China dropped in 2012 and it did not show any sign of recovery as of 2014, the last year in our dataset. The largest impact on investment appeared in fiscal year of 2014, two and a half years after the

[1] A firm-level survey on Sino-Japan relationship done by Teikoku data bank in October 2012 showed this trend. For details (in Japanese), see Teikoku Data Bank (2012) or http://www.tdb-di.com/visitors/kako/1210/summary_2.cgi.

Island Crisis.[2] Third, we find that the expectations of affiliates in China became more pessimistic after the Island Crisis compared to affiliates in other countries. To show this, we construct a measure of forecast errors (FEs), defined as the percentage deviation of the realized sales (one year later) from the (current) forecast for next year's sales. The Island Crisis induced a persistent increase in this measure for 2012 and 2013, which suggests that affiliates in China continued to be pessimistic at least until 2013, though sales had already recovered at this point.

These three facts point to a belief-driven mechanism through which the unexpected, temporary shock continues to affect firms' investment. To quantify how much of the induced decline in investment was caused by pessimistic expectations, we proceed in two steps. First, we made an additional assumption that the Island Crisis is uncorrelated with determinants of investment other than firms' expected sales, conditioning on a set of fixed effects and firm characteristics that include existing capital stock, liquidity and firm age. Based on this assumption, we use the Island Crisis as an instrumental variable (IV) to estimate the effect of firms' expected sales on investment. The elasticity of investment with respect to sales forecasts is around 1.65 in the short run (i.e., one year) and round 1.93 in the medium run (i.e., two years). Second, we perform a simple back-of-the-envelope calculation with the following thought experiment: had Japanese affiliates in China not been pessimistic (i.e., zero FEs on average after the crisis), that is, had they predicted the average sales in 2013, how much less of a decline in investment would there be? Our DID regressions show that the Island Crisis made Japanese firms' investment in China drop by roughly 13.7% (and 15.8%) and their sales forecasts drop by roughly 5.4% (and 4.8%) in one year (and in two years). Therefore, the pessimism due to the Island Crisis explains roughly 60% of the overall drop in Japanese affiliates' investment in China after the crisis, which is quantitatively significant.

Our paper contributes to a growing literature that uses forecasting data to analyze economic agents' beliefs and how the beliefs evolve over business cycles (Coibion and Gorodnichenko 2012, 2015; Bachmann et al. 2013, 2017; Coibion et al. 2015; Kozlowski et al. 2015; Orlik and Veldkamp 2015). As Coibion et al. (2017) pointed out, there is a lack of empirical evidence on how real-time beliefs of firms affect their economic decisions. We are among the first to use a firm-level panel dataset that contains realized and forecasted values of firm sales across periods to explore this important issue. Moreover, using the Island Crisis as an exogenous shock helps to address some identification issues when using other types of shocks such as aggregate movement over business cycles.[3]

[2] In our data, the fiscal year starts on April 1 of each year and ends on March 31 of the next year.

[3] Bachmann et al. (2017) used survey data from Ifo on firm investment expectations and realizations to build a panel dataset of investment expectation errors and analyzed time series and cross-sectional features of these errors. Our paper differs from Bachmann et al. (2017) in that we look at sales forecasts that they do not have in their data. We also investigate how an unexpected geopolitical shock affected firm investment via influencing firm's forecasts, which is not the research question addressed

Our paper is related to the literature on uncertainty and firm behavior. Previous research has extensively investigated how objective uncertainty in aggregate or firm-level variables evolves over business cycles and how it affects firm investment.[4] Some recent papers focus on *subjective* measures of firms' uncertainty (see, for example, Guiso and Parigi, 1999; Bachmann et al. 2013; Morikawa 2013, 2016; Senga 2017). Though our analysis does not involve uncertainty directly, the finding that sales and forecasts are impacted differently by the aggregate shock suggests that it may be important to distinguish between objective and subjective uncertainty in business cycle studies.

This paper finds that a change in firms' expectations due to a short-lived shock plays an important role in generating a persistent impact on medium- to long-run economic activities such as firm investment. This has not been documented much in previous studies that examine effects of sudden and short-lived events. For instance, event studies in international trade fail to find long-run impacts of sudden events on trade-related variables (e.g., Fuchs and Klann 2013; Boehm et al. 2015). On the contrary, our paper finds a long-run negative impact of a geopolitical conflict on investment by multinational corporations (MNCs). This finding points out an important channel through which sudden events can affect firm behavior in the medium to long run through their beliefs. This in turn has long-lasting effects on real economic activities, a similar point made by Kozlowski et al. (2015) in their study of business cycles.

The rest of the paper is organized as follows. Section 2 describes the escalation of the Island Crisis. Section 3 presents our empirical results, starting with some stylized facts, followed by DID estimation. Section 4 concludes.

## 2. The Island Crisis

China and Japan have been debating over the sovereignty of the Senkaku islands (also known as Diaoyu Islands) for years, and the most serious conflict over the islands between between the two countries by far 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

by Bachmann et al. (2017).

[4]Various theories have been proposed to explain why uncertainty varies over time and how it adversely affects firm investment. For example, existing theories have shown that increased uncertainty raises the option value of waiting in the presence of nonconvex adjustment costs (Bernanke 1983; Dixit and Pindyck 1994; Abel and Eberly 1996; Bloom 2009), which makes firms delay their investment. Baker and Bloom (2013) use natural disasters as experiments to investigate the relationship between uncertainty and growth. For empirical measures of uncertainty, several candidates have been proposed, including stock-price volatility (Leahy and Whited 1996), the frequency of appearance of words such as "uncertain" in news articles (Baker et al. 2016), and disagreement among forecasters (Backmann et al. 2013). These proxies are used to show that investment is negatively associated with uncertainty at the firm level. See Bloom (2014) for a literature review.

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, much larger scale anti-Japanese demonstrations subsequently occurred. 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 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 Databank 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 unexpected anti-Japanese demonstrations would negatively affect their sales in China.[5] Moreover, one sixth of them planned to withdraw or reduce their investment in China.[6] 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.[7] On the other hand, angry protestors ransacked Japanese stores and plants, which we see as supply shocks to Japanese affiliates. We do not try to distinguish between demand- and supply-side shocks in this paper. Our estimates of the impact of the Island Crisis on sales, investment and sales forecasts could operate through both demand and supply conditions among firms.

## 3. Empirical Findings: Differences-in-Differences Estimation

### 3.1. Data Description

We use the parent-affiliate-level data of the Basic Survey of 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

[5]For details, see Teikoku Data Bank (2012) or http://www.tdb-di.com/visitors/kako/1210/summary_2.cgi, both of which are in Japanese.

[6]It was reported that the substantial scale-up of anti-Japan protests was related to problems associated with the transition of political power in China around the same time. This further shows that the escalation of the island dispute was exogenous to other demand and supply conditions of Japanese affiliates in China. For details, see http://www.cnn.com/2012/09/18/world/asia/china-protests-japan-fury/index.html.

[7]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.

of Japanese MNCs: (1) direct subsidiaries with ratios of investment by Japanese enterprises' being 10% or higher as of the end of the fiscal year (March 31), (2) second-generation subsidiaries with the ratio of investment by Japanese subsidiaries of 50% or higher as of the end of the fiscal year (March 31). 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 in the beginning of the next fiscal year. The survey form for parent firms includes variables concerning the parent's sales, capital, employment, industry classification, etc. The survey form for the foreign affiliates reports their equity, sales, investment, number of employees, country and industry information, the date of establishment, and operation status including dissolution or withdrawal.

Based on this 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; and the total number of observations across 8 years is roughly 170,000.

We constructed the variable of capital stock at the affiliate level as part of the study, as the data do not contain information on capital. As the time span of our data is not long, we cannot use the perpetual inventory method. Instead, we use investment information and equity information in the first year when the firm appears in the data to construct firm's capital stock. Specifically, the capital stock at year $t$ is calculated as $K_t = 0.9 * K_{t-1} + inv_t$, where $K_{t-1}$ is the capital stock in year $t-1$ and $inv_t$ is the investment made in year $t$. For the first year when the firm appears in the data, we use the registered equity to proxy for its initial capital. As some of our regressions use the investment ratio and the ratio of liquidity to capital stock, we also construct such variables by dividing the amount of investment and cumulative retained earnings by the capital stock. As there are outliers in the calculated investment ratio and the calculated ratio of liquidity to capital stock, we trim observations that are among the top or bottom one percent of these variables.

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:

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

Therefore, if the firm underpredicts its sales, the forecast error defined above will be positive, and negative when the firm overpredicts its sales. To exclude extreme values, we trimmed observations that are among the top or bottom one percent of $FE_t$.

In the fourth row of Table 1, we present summary statistics for these FEs. The average is 0.4%, a number very close to zero. This variable varies from a minimum of $-85\%$ to a maximum of 207%, and the standard deviation is roughly 29%. We further plot the distribution of $FE_t$ in Figure 2. The graph confirms that FEs are centered around zero. Therefore, firms sometimes overpredict and sometimes underpredict their sales. But on average, they are able to predict their sales next year quite precisely.

Because there are a reasonable number of observations (43%) in our data that do not include forecasts, we show that the existence of such observations should not affect our empirical findings. First, Figures 3 and 4 present the employment and sales distribution of observations that report sales forecasts and of those that don't report. It is straightforward to observe that the two distributions are similar. In particular, the mean and variance of the two distributions do not differ in the statistical sense. Moreover, these features hold for Japanese affiliates in China as well, as shown by Figures 5 and 6. In total, we conclude that the existence of observations that did not report their sales forecasts should not affect our empirical findings.[8]

### 3.2. Empirical Findings

In this section, we empirically explore how the Island Crisis in the third quarter of 2012 affected Japanese multinational firms in China. Our findings are summarized by the following four points. First, total sales of Japanese affiliates in China dropped sharply but not persistently. Second, capital investment of Japanese affiliates in China began to drop substantially and persistently after the Island Crisis. Third, Japanese MNCs in China kept generating positive FEs of total sales after the Island Crisis. That is, even after their total sales rebounded, they kept underestimating total sales. Finally, low levels of forecasts (i.e., positive FEs) caused by the Island Crisis generated a negative and quantitatively sizable impact on firm-level investment, accounting for roughly 60% of the overall drop in aggregate investment after the Island Crisis. Since we want to tease out shocks common to all Japanese affiliates abroad, we implement DID regressions and add country-specific time trends (i.e., China and non-China) into our regressions. DID analysis suggests that the year of 2012 is indeed a turning point for Japanese MNCs' affiliates in China, and we point out a potential explanation for these documented facts: a relationship between subjective uncertainty and investment.

#### 3.2.1. Finding One: Significant and Non-persistent Impact on Total Sales of Japanese Firms in China

In this subsection, we present evidence that total sales of Japanese affiliates in China fell sharply but not persistently after the outbreak of the Island Crisis.[9] Figure 7 shows

[8] Although simple regression analysis does show that larger firms are more likely to report sales forecasts, we do control for firm size (i.e., employment and/or sales) in our regressions when we look at forecasts and FEs.

[9] We choose to focus on total sales instead of local sales for three reasons. First, our forecast data are for total sales. We can make a meaningful comparison only by using both the projected and realized

that average annual growth rate of total sales did fall substantially in 2012 (i.e., compared to 2011), although it recovered substantially in 2013 and 2014. Moreover, a simple plot of average sales in Figure 8 shows that Japanese affiliates in China suffered a big loss in sales in 2012 (compared to Japanese affiliates in other countries), while the recovery of their average sales was also substantial in 2013 and 2014. In addition, the figure shows that the time trend of average sales in China is roughly the same as in other countries.

In order to confirm our finding for total sales, we run DID regressions by comparing total sales of Japanese affiliates in China to those in other countries after the Island Crisis. Specifically, we run[10]

$$\begin{aligned}\log(total\ sales)_{ft} &= \beta_0 + \beta_1 Shock_t * China_f + \beta_2 \ln(age)_{ft} + \beta_3 \ln(equity)_{p(f)t} \\ &\quad + \beta_4 \ln(sales)_{p(f)t} + year_t + controls_{j(f)t} + firm_f + \epsilon_{ft}, \qquad (1)\end{aligned}$$

where $f$ represents the firm, and $t$ and $j$ denote the year and the country where the affiliate is located, respectively. Subscript $p(f)$ is the ID of the parental firm of affiliate $f$. The dummy variable $Shock_t$ takes a value of one, if the year is later than or equal to 2012 and zero otherwise. The dummy variable $China_f$ equals one, if the affiliate is located in China and zero otherwise. Country-level control variables ($controls_{j(f)t}$) include log(GDP), log(GDP per capita) and annual GDP growth rate. In some of the regressions, we also control for (the logarithm of) affiliate's employment. Finally, standard errors are clustered at the country level, and China and non-China specific time trends are included in the regression.

In order to check whether there are pre-trends for total sales of Japanese affiliates in China, we implement a placebo test. Specifically, we move the timing of the shock to 2009, 2010 and 2011 hypothetically and rerun the above regression. Moreover, in order to detect the long-run impact of the Island Crisis on the total sales, we interact year dummies after 2012 (i.e., $yr_{2012}$, $yr_{2013}$, $yr_{2014}$) with the dummy variable that indicates whether the affiliate is located in China (i.e., $China_f$) in some regressions (instead of using the shock dummy, $Shock_t$).

Empirical results for how the Island Crisis affected total sales of Japanese affiliates in China are reported in Tables 2 and 3. When we set the shock dummy to the year 2009 or 2010, no significantly negative effect on Japanese affiliates in China is detected by our DID regression (see columns (1), (2), (5) and (6)). However, when we set the shock dummy to the year 2011 or 2012, total sales of Japanese firms in China do seem to drop (relative to those in other countries) at least after we control for affiliate-level

total sales of Japanese firms. Second, we believe that the Island Crisis triggered both demand and supply shocks to Japanese affiliates in China. Therefore, exports back to Japan and to other countries were also affected by the crisis and should be taken into account. Finally, although most firms report annual total sales, there are substantially fewer firms that report annual local sales. We would lose 1/3 of our observations if we used local sales instead of total sales.

[10]Note that the shock dummy, $Shock_t$, is absorbed by the year fixed effects.

employment (see columns (3), (4), (7) and (8)). These findings suggest that total sales of Japanese affiliates in China probably already began to fall prior to the Island Crisis, which substantiates the existence of pre-trends for total sales. When we look at the persistency of the drop in total sales in China, Table 3 shows that the drop was significant only in the year when the crisis happened (i.e., 2012) after we control for affiliate-level employment. This is consistent with the findings in Figure 7 and 8. Taken together, we conclude that total sales among Japanese affiliates in China fell sharply but not persistently after the outbreak of the Island Crisis.

#### 3.2.2. Finding Two: Persistently Negative Impact on Japanese Firms' Investment in China

In this subsection, we show that capital investment of Japanese affiliates in China started to drop after the outbreak of the Island Crisis. Furthermore, evidence suggests that this drop is persistent and exists at both the intensive and the extensive margins. A simple plot of average log real investment in Figure 9 shows that the time trend of investment for Japanese affiliates in China is roughly the same as the trend for Japanese affiliates in other countries until fiscal year 2011 (i.e., March of 2012), while they diverge after 2012 persistently. Moreover, if we take the extensive margin of investment (i.e., investing or not) into account by calculating the logarithm of investment plus one, the divergence after 2012 seems to be even bigger and persistent as shown by Figure 10.

Other than presenting the data directly, we use regressions to confirm our findings above. When a firm makes its investment decision, factors it takes into account are the existing capital stock, firm age and the forecast for future sales. As we focus on Japanese MNCs' affiliates, their parent firms' characteristics should also affect these affiliates' investment decisions. Since firm's forecast for future sales is an endogenous variable, and the Island Crisis exogenously and unexpectedly affects it, we run the following regression first:

$$\begin{aligned} \log(inv)_{ft} &= \beta_0 + \beta_1 Shock_t * China_f + \beta_2 \ln(age)_{ft} + \beta_3 \ln(equity)_{p(f)t} \\ &\quad + \beta_4 \ln(sales)_{p(f)t} + \beta_5 \ln(capital)_{f,t-1} + \beta_6 \ln(capital)^2_{f,t-1} \\ &\quad + year_t + controls_{j(f)t} + firm_f + \epsilon_{ft}, \end{aligned} \tag{2}$$

where $f$ represents the firm, and $t$ and $j$ denote the year and the country in which the affiliate is located, respectively. Subscript $p(f)$ is the ID of the parental firm of affiliate $f$. The dependent variable, $\log(inv)_{ft}$ takes one of the following three values: the logarithm of investment, the logarithm of investment plus one,[11] and whether the firm invests. In other words, we investigate how the Island Crisis has affected investment of Japanese affiliates in China both at the intensive margin and at the extensive margin. The dummy variables $Shock_t$ and $China$, and country-level control variables are

[11] Note that roughly 30% of Japanese affiliates do not invest in a given year.

defined as before. Finally, standard errors are clustered at the country level, and China and non-China specific time trends are included in the regression.

In order to check whether there are pre-trends for investment of Japanese affiliates in China, we implement a placebo test. Specifically, we move the timing of the shock to 2011, 2010 and 2009 hypothetically and rerun the above regression. Moreover, in order to detect the long-run impact of the Island Crisis on investment, we interact year dummies after 2012 (i.e., $yr_{2012}$, $yr_{2013}$, $yr_{2014}$) with the dummy variable $China_f$ in some regressions (instead of using the shock dummy, $Shock_t$).

Empirical results for how the Island Crisis has affected investment of Japanese affiliates in China are reported in Tables 4 through 6. When we set the shock dummy to 2012, which is the right timing, Table 4 shows that this crisis caused Japanese firms' investment in China to drop by roughly 16%, while the probability of investing was reduced by 1.5% by the crisis. Both coefficients are highly significant. Moreover, when we look at the persistency of this shock, Table 5 suggests that the negative effect on investment seems to increase with time, as estimated coefficients of the year dummies (interacted with the China dummy) are larger (in absolute value) for years after 2012. Finally, when we move the timing of the shock to any year between 2009 and 2011, the estimated coefficient on the interaction term is either positively significant or insignificant, as shown by Table 6. This suggests that pre-trends do not seem to exist for Japanese firms' investment in China. If there is anything, Japanese firms' investment in China would have been higher if there had been no such a crisis. In total, we argue that both the intensive margin and the extensive margin of Japanese affiliates' investment in China were negatively affected by the Island Crisis.

In the existing work (e.g., Guiso and Parigi 1999 and Bloom et al. 2007), the investment ratio (i.e., investment divided by the capital stock) is used to measure firm's investment decision. In order to further confirm our previous finding on firm investment, we use the investment ratio as the dependent variable to rerun equation (2). Following Guiso and Parigi (1999), we also include the lagged ratio of liquidity to capital stock, $\frac{Liquidity}{Capital}_{f,t-1}$ (a measure for the liquidity constraint), as an independent variable in some regressions and drop $\ln(capital)_{f,t-1}$ and $\ln(capital)^2_{f,t-1}$ from the regression.[12] Table 7 shows the regression result and confirms our previous finding that the drop in firm investment is substantial and persistent after the Island Crisis.

### 3.2.3. Finding Three: Persistent Effects on Forecasts and Forecast Errors

Our third finding is that forecasts of Japanese affiliates in China became pessimistic after the outbreak of the island dispute. Moreover, the drop in the confidence of Japanese affiliates in China is both substantial and persistent. First, Figure 11 shows that the dis-

[12] In the dataset, Japanese affiliates report their cumulative retained earnings by the end of each fiscal year. As we want to avoid the direct substitution between retained earnings and investment in the same year, the lagged value of the ratio of retained earnings to capital stock is used.

tribution of FEs in 2013 (for forecasts made in the end of fiscal year 2012) changed from their distribution in 2012 dramatically. Average value of FEs increased substantially and the dispersion also became larger, suggesting that realized sales were substantially higher than projected sales for most affiliates in China in 2013, and the degree of misforecast was quite heterogeneous. Interestingly, the distribution of FEs in 2012 is not too much different from the distribution in 2011 as shown by Figure 11, although Japanese affiliates in China overestimated their sales more in 2012 than in 2011 (due to the unexpected Island Crisis). This implies that the drop in total sales after the Island Crisis was probably temporary, and total sales probably bounced back quickly after the crisis was over, which is consistent with empirical findings. As a result, the size of the drop in total sales was limited in 2012, which makes the distribution of FEs in 2012 not too much different from those in 2011 (and 2010).[13] Therefore, the large positive values of FEs in 2013 do not come from the fact that many firms always missed (and underestimated) their forecasts in previous years, rather, they adjusted their forecasts conservatively after the crisis. This implies that Japanese firms in China tried erring on the side of caution after the Island Crisis. Finally, we do observe that the distribution of FEs in 2014 moves back to its pre-crisis level slightly. However, it is still clear that Japanese affiliates in China underestimated their total sales even in 2014. This hints at the existence of a persistent impact of the crisis on the beliefs of Japanese firms in China.

In order to further confirm our previous findings, we run DID regression:

$$\begin{aligned} \log(forecasted\ sales)_{ft} &= \beta_0 + \beta_1 Shock_t * China_f + \beta_2 \ln(age)_{ft} + \beta_3 \ln(equity)_{p(f)t} \\ &\quad + \beta_4 \ln(sales)_{p(f)t} + year_t + controls_{j(f)t} + firm_f + \epsilon_{ft}, \quad (3) \end{aligned}$$

where $f$ represents the firm, and $t$ and $j$ denote the year and the country in which the affiliate is located, respectively. Subscript $p(f)$ is the ID of the parental firm of affiliate $f$. Dummy variables, $Shock_t$ and $China$, and country-level control variables are defined as before. In some of the regressions, we also control for (the logarithm of) affiliate's employment and(/or) sales. Finally, standard errors are clustered at the country level, and China and non-China specific linear time trends are included in the regression.

In order to check whether there are pre-trends for sales forecasts of Japanese affiliates in China, we implement a placebo test. Specifically, we move the timing of the shock to 2011, 2010 and 2009 hypothetically and rerun the above regression. Moreover, in order to detect the long-run impact of the Island Crisis on the forecasts, we interact year dummies after 2012 (i.e., $yr_{2012}$, $yr_{2013}$, $yr_{2014}$) with the dummy variable, $China_f$, in some regressions (instead of using the shock dummy, $Shock_t$).

Empirical results for how the Island Crisis affected sales forecasts of Japanese affiliates in China are reported in Tables 8 and 9. When we set the shock dummy to 2012,

[13] The distribution of FEs in 2010 is available upon request.

which is the right timing, Table 8 shows that this crisis caused Japanese firms to adjust their forecasts downward by roughly 7%. Also, the coefficient is highly significant. Moreover, when we look at the persistency of this shock, Table 9 suggests that the negative effect on Japanese firms' forecasts seems to increase with time, as estimated coefficients for the dummy years are larger (in absolute value) for later years than in 2012. Finally, when we move the timing of the shock to 2009 or 2010 or 2011, the estimated coefficient on the interaction term is either positively significant or insignificant. Even when the coefficient of the interaction term becomes negatively significant in column (7) of Table 8, where the shock dummy is set to 2011, the magnitude is much smaller than the one in column (8) of Table 8 which sets the shock dummy to 2012. Therefore, we conclude that pre-trends do not seem to exist for the belief of Japanese affiliates in China. In fact, Japanese affiliates in China seemed to be more optimistic than their counterparts in other countries in 2009 and 2010. In short, the Island Crisis caused Japanese affiliates in China to be cautious and lower their forecasts for future sales.

It is understandable that Japanese firms in China lowered their sales forecasts after the substantial drop in sales in 2012 (due to the Island Crisis). What is interesting is that they actually became *pessimistic* after the crisis by persistently underestimating future sales after the crisis. To validate this point, we first do a simple plot of FEs made by Japanese affiliates in China and in other countries in Figure 12. As the figure indicates, the increase in the value of FEs from years before 2012 to the year 2013 (and 2014) is substantially larger for Japanese affiliates in China than in other countries.[14] This hints that Japanese affiliates in China become more pessimistic than the affiliates in other countries after the Island Crisis.

In order to further confirm our previous findings on FEs, we run the same regression as in equation (3) except that the dependent variable is replaced by $\log(forecast\ error)_{ft}$. Note that if the Island Crisis affected Japanese firms' FEs, then the first year affected should be 2013 (i.e., not 2012) as forecasts are made one year in advance. The empirical result is reported in Tables 10 through 12. First, Table 10 tells us that the Island Crisis caused Japanese affiliates in China to underestimate their future sales by about 5% for the two years after the crisis. Moreover, Table 11 reveals that the drop in the confidence of Japanese affiliates in China is persistent (i.e., true for at least two years). Finally, Table 12 shows that if we move the timing of the change in FEs to any year between 2009 and 2012, the estimated coefficient on the interaction term is either positively significant or insignificant. This suggests that pre-trends do not seem to exist for Japanese firms' FEs in China in terms of pessimism. If there is anything, Japanese affiliates in China would have been more optimistic if there had been no such a crisis. In total, we argue that the confidence of Japanese affiliates in China was negatively and persistently affected by this Island Crisis.

[14] Remember that FE shows up one year after a forecast is made.

### 3.2.4. Subsample Analysis: Skipping the Period of Financial Crisis

Our simple plots of firm sales and investment in Figures 8, 9 and 10 show that the financial crisis hit Japanese affiliates abroad substantially. This is especially true in the year 2009. In this subsection, we do several subsample analyses by excluding observations in the financial crisis from our empirical analysis. Specifically, we rerun equations (1) through (3) by excluding the year 2009 or by starting our sample from 2010 (i.e., after the financial crisis). Obviously, restricting our analysis to a smaller and shorter sample prevents us from identifying whether there are pre-trends for firm sale and investment. This is the reason we only use the subsample analysis as the robustness check. However, it is still worth restating that our major empirical findings survive even after we exclude observations during the financial crisis.

We relegate regression results of this subsection to the online appendix (i.e., Tables 17 through 24), as the analysis is just a replication of the previous analysis using shorter (sub)samples. The bottom line is that all our previous empirical findings survive both qualitatively and quantitatively if we use a sample that excludes observations in 2009. When we exclude observations in three years (2007–2009) from the analysis, the empirical results are qualitatively the same, although quantitative magnitude of some estimated coefficients becomes smaller.[15] Therefore, we conclude that our empirical findings above cannot be explained by persistent effects of the financial crisis on Japanese affiliates abroad.

### 3.2.5. Finding Four: Impact of the Island Crisis on Firm Investment through Affecting Firms' Beliefs

The final finding of this paper is that underestimation of firm sales (i.e., positive forecast error) has a negative and quantitatively sizable impact on firm-level investment. In order to substantiate this point, we do a simple back-of-the-envelope calculation using the island shock. As we want to quantify how the increase in FEs caused by the Island Crisis affected firm investment, we make several identifying assumptions. First, following Ericson and Pakes (1995) and Olley and Pakes (1996), we assume that firm's investment decisions depend on its productivity, age and existing capital stock. The forecast for future sales contains information on firm productivity and firm-specific demand shocks. Thus, firm's existing capital stock, age and forecast for future sales are the three variables that affect firm's investment decision. In addition, as the corporate finance literature (e.g., Lamont 1994; Blanchard et al. 1997; Almeida et al. 2004) has shown that firm investment is sensitive to the liquidity constraint the firm faces, we add lagged ratio of retained earnings to capital stock into our investment regression in this subsection as well. In total, conditional on firm's age, existing liquidity and capital stock, the Island Crisis affects investment only through affecting firms' forecast. This validates the use of the Island Crisis as an IV for the sales forecast in

[15] This is true for the effect on investment and forecasted sales.

the regression of investment. Next, we do not have FEs for forecasts made in the year 2014; the maximum length of our analysis for firm forecasts is from 2007 to 2013 (i.e., forecasts from 2007 to 2013 and FEs from 2008 to 2014). As there are two years after the Island Crisis between 2007 and 2013, we do analysis for two time periods separately: 2007–2012 and 2007–2013, the latter of which is related to the persistent (and medium-run) effect of the Island Crisis on firm investment.

Tables 13 and 14 present the results for the period of 2007 to 2012. Note that firm age evolves exogenously and existing liquidity and capital stock for 2007–2012 are the liquidity holding and capital stock at the end of 2006–2011 (i.e., before the arrival of the Island Crisis). Therefore, all three explanatory variables included in our regressions are not affected by the Island Crisis, as the crisis is unexpected. In addition to including a set of fixed effects and parent-level control variables, we regress the logarithm of investment on firm's age, lagged liquidity ratio and capital stock in column (1) of Table 13. In the remaining three columns of Table 13, we regress variables related to firm's realized and projected sales on the same set of fixed effects and parent-level control variables as used in column (1) and do not control for firm's lagged liquidity holding and capital stock. Different from Table 13, we use the same set of explanatory variables, which is the same as in column (1) of Table 13, to run our four regressions for 2007–2012 again, the results of which are reported in Table 14. As the shock to FEs started in 2013 and the shock to projected sales started in 2012, we set the timing of the shock to realized sales to 2013 (in the regression) in order to make meaningful comparisons between realized sales, projected sales and FEs after the Island Crisis. For the same reason, we use the time period of 2008–2013 for the regressions of realized sales and FEs in Tables 13 and 14.

As the Island Crisis serves as an IV for firm's forecasts now, columns (1) to (2) of Table 13 tell us that the effect of the sales forecast on investment equals $-0.137/-0.083 = 1.65$ in the short run (i.e., one year). In other words, if the sales forecast decreases by one percent, investment goes down by 1.65%. Furthermore, as FEs increased by 5.4% after the crisis, the increase in average FEs in 2012 (due to the crisis) accounts for $65\%(= 5.4\% * 1.65/13.7\%)$ of the overall drop of Japanese affiliates' investment in China, which is substantial. In addition, the same calculation shows that the increase in average FEs in 2012 accounts for $65.7\%(= 6\% * 1.5/13.7\%)$ of the overall drop in Japanese affiliates' investment in China if we use regression results from Table 14. In short, the belief-channel through which the Island Crisis reduced firm investment plays an important role in the overall reduction of capital investment after the crisis. It is also interesting to note that the increase in average FEs after the crisis is mainly driven by the low level of forecasts, as the drop in realized sales in 2013 is small (i.e., roughly 2%) and statistically insignificant. This again verifies our first empirical finding that Japanese affiliates' sales in China did not drop persistently after the crisis. What matters for the pessimism is the low level of confidence among Japanese affiliates in China.

Similar to the regressions and calculation done for the period of 2007–2012, we can implement the same regressions and calculation for the period of 2007–2013 and investigate the persistent effect of firm belief on investment. Affiliate-level capital stock and the liquidity ratio at the end of 2012 are endogenous to the Island Crisis, as they are affected by the Island Crisis in 2012.[16] Thus, we replace the affiliate-level capital stock and liquidity ratio in 2012 by their values in 2011 in the regressions for 2007–2013 to solve this endogeneity problem. The regression results are reported in Tables 15 and 16. A caveat here is that the effect of the Island Crisis on firm investment we identify for 2007–2013 includes other channels (than the belief channel) and should be viewed as a persistent effect of the crisis on firm investment.[17] Nevertheless, it is also worthwhile to do a simple back-of-the-envelope calculation using the data for 2007–2013. Columns (1) and (2) of Table 15 tell us that the effect of the sales forecast on investment equals $-0.158/-0.082 = 1.93$ in the medium run (i.e., two years), which is larger than its counterpart in the short run. Furthermore, as FEs increased by 4.8% after the crisis, the increase in average FEs in 2012 and 2013 (due to the crisis) accounts for $58.5\%(= 4.8\% * 1.93/15.8\%)$ of the overall drop in Japanese affiliates' investment in China, which is substantial. In addition, the same calculation shows that the increase in average FEs in 2012 and 2013 accounts for $59\%(= 5.2\% * 1.80/15.8\%)$ of the overall drop in Japanese affiliates' investment in China if we use regression results from Table 16. In total, the analysis using a sample with longer time span (after the Island Crisis) substantiates the finding that the belief channel accounts for more than half of the overall drop in Japanese affiliates' investment in China even in the medium run.

Ideally, we would want to restrict our four regressions (for investment, realized sales, forecasted sales and FEs) to the same sample when we do the simple back-of-the-envelope calculation. However, the fact that we have to use realized sales and FEs one year later (than the projected sales) to run the regressions prevents us from using the same sample. The good news is that a comparison between Tables 13 and 14 (and between Tables 15 and 16) shows that the estimated coefficient for the shock dummy (in regressions for the realized sales, forecasted sales and FEs) does not differ that much when we use different samples. Moreover, the two tables generate almost the same level of contribution from the belief channel to the overall drop in the investment after the crisis. Therefore, we are confident that the calculated contribution of firm belief to the overall reduction in firm investment is robust to using different subsamples of our data. Therefore, we probably should not be worried about the different subsamples used in different regressions.

[16] In particular, it is true given our findings that both realized sales and investment went down in 2012.

[17] The channels include how the destruction of Japanese capital in China in 2012 affected Japanese affiliates' investment in China in 2013 and how the change in the liquidity constraint (due to the crisis) faced by Japanese affiliates in China affected their investment in China in 2013.

## 4. Concluding Remarks

Using data of Japanese MNCs and the sudden escalation of a territorial dispute between China and Japan in 2012, we provide evidence on the effect of a temporary and negative shock on firm investment. Specifically, we find that a sharp but non-persistent fall in total sales of Japanese MNCs in China led to a persistent downward deviation of investment and forecasts of these firms from their pre-crisis trend. Moreover, despite the quick recovery of the total sales, Japanese MNCs in China persistently underestimated their total sales, which generated pessimism. We view this as evidence for a belief-driven channel through which an unexpected short-lived shock leads agents to revise their beliefs and adjust their economic decisions. Finally, we also implement a simple back-of-the-envelope calculation and show that underestimation of sales has a negative and quantitatively sizable impact on the overall drop in Japanese firms' investment in China after the Island Crisis.

Nevertheless, much remains to be done. First, looking at how the Island Crisis affects other economic decisions of Japanese firms in China (e.g., hiring and technology transfers) through the belief channel is also interesting. In addition, modeling the belief-driven channel theoretically and exploring its quantitative impact on real economic variables such as investment are also intriguing. Finally, other effects of the Island Crisis on Sino-Japan economic relations (e.g., the impact on the location choice of global value chains in east Asia) also await exploration.

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## Tables and Figures

***Table 1.*** *Summary Statistics of the Basic Survey of Overseas Business Activities*

| Variable | Obs. | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| Share of equity held by Japanese parental firm | 170,375 | 0.876 | 0.228 | 0 | 1.000 |
| Total sales of foreign affiliate | 145,119 | 11,531 | 89,832 | 0 | 7888623 |
| Forecasted total sales of foreign affiliate | 98,605 | 9,418 | 68,898 | 0 | 7,407,548 |
| Forecast error of total sales of foreign affiliate (trimmed) | 70707 | 0.004 | 0.289 | -0.848 | 2.072 |
| Capital investment of foreign affiliate | 112,421 | 422 | 7,854 | 0 | 1,435,488 |
| Number of employees of foreign affiliate | 149,588 | 273 | 1,214 | 0 | 80,575 |
| Equity of parental firm | 171,259 | 52,350 | 107,166 | 1 | 1,467,840 |
| Sales of parental firm | 166.753 | 903,979 | 2,441,903 | 0 | 23,100,000 |

Number of observations: 173398.

Unit for investment, sales and equity: one million JPY.

***Table 2.*** *Pre-trends for total sales*

| | (1) $\log(sales)_{sub}$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{sub}$ | (4) $\log(sales)_{sub}$ | (5) $\log(sales)_{sub}$ | (6) $\log(sales)_{sub}$ | (7) $\log(sales)_{sub}$ | (8) $\log(sales)_{sub}$ |
|---|---|---|---|---|---|---|---|---|
| $I_{year\geq 2009}$*China | 0.041 | | | | 0.013 | | | |
| | [0.031] | | | | [0.023] | | | |
| $I_{year\geq 2010}$*China | | 0.074*** | | | | 0.037* | | |
| | | [0.024] | | | | [0.020] | | |
| $I_{year\geq 2011}$*China | | | -0.007 | | | | -0.031** | |
| | | | [0.016] | | | | [0.014] | |
| $I_{year\geq 2012}$*China | | | | -0.062*** | | | | -0.048*** |
| | | | | [0.019] | | | | [0.013] |
| $\log(emp)_{sub}$ | | | | | 0.441*** | 0.441*** | 0.441*** | 0.441*** |
| | | | | | [0.063] | [0.063] | [0.063] | [0.063] |
| $N$ | 129742 | 129742 | 129742 | 129742 | 122720 | 122720 | 122720 | 122720 |
| adj. $R^2$ | 0.931 | 0.931 | 0.931 | 0.931 | 0.943 | 0.943 | 0.943 | 0.943 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 3.*** *Shock to total sales is not persistent*

| | (1) | (2) |
|---|---|---|
| | $\log(sales)_{sub}$ | $\log(sales)_{sub}$ |
| $I_{year=2012}$*China | -0.063*** | -0.051*** |
| | [0.017] | [0.011] |
| $I_{year=2013}$*China | -0.071* | -0.041 |
| | [0.036] | [0.027] |
| $I_{year=2014}$*China | -0.098** | -0.045 |
| | [0.048] | [0.035] |
| $\log(emp)_{sub}$ | | 0.441*** |
| | | [0.063] |
| $N$ | 129742 | 122720 |
| adj. $R^2$ | 0.931 | 0.943 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita).
Country-level controls: annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 4.*** *Shock to investment*

| | (1) $\log(invest)$ | (2) $\log(invest+1)$ | (3) $I_{invest>0}$ |
|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.174*** | -0.155*** | -0.015*** |
| | [0.035] | [0.038] | [0.005] |
| Lagged $\log(capital)_{sub}$ | -0.146*** | -0.137** | -0.023* |
| | [0.041] | [0.055] | [0.014] |
| Lagged $\log(capital)^2_{sub}$ | 0.022*** | 0.021*** | 0.003** |
| | [0.005] | [0.007] | [0.001] |
| $N$ | 53656 | 79718 | 79718 |
| adj. $R^2$ | 0.766 | 0.785 | 0.637 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita),
Country-level controls: annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 5.*** *Shock to investment is persistent*

| | (1) $\log(invest)$ | (2) $\log(invest+1)$ | (3) $I_{invest>0}$ |
|---|---|---|---|
| $I_{year=2012}$*China | -0.155*** | -0.148*** | -0.018*** |
| | [0.038] | [0.040] | [0.006] |
| $I_{year=2013}$*China | -0.240*** | -0.255*** | -0.033*** |
| | [0.076] | [0.070] | [0.008] |
| $I_{year=2014}$*China | -0.197* | -0.280*** | -0.055*** |
| | [0.113] | [0.105] | [0.011] |
| $N$ | 53656 | 79718 | 79718 |
| adj. $R^2$ | 0.766 | 0.785 | 0.637 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita).
Country-level controls: annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 6.*** *No pre-trends for investment*

| | (1) $\log(invest)$ | (2) $\log(invest)$ | (3) $\log(invest)$ | (4) $\log(invest+1)$ | (5) $\log(invest+1)$ | (6) $\log(invest+1)$ | (7) $I_{invest>0}$ | (8) $I_{invest>0}$ | (9) $I_{invest>0}$ |
|---|---|---|---|---|---|---|---|---|---|
| $I_{year\geq 2009}$*China | 0.138** | | | 0.130** | | | 0.014* | | |
| | [0.067] | | | [0.060] | | | [0.007] | | |
| $I_{year\geq 2010}$*China | | 0.120** | | | 0.200*** | | | 0.042*** | |
| | | [0.055] | | | [0.052] | | | [0.007] | |
| $I_{year\geq 2011}$*China | | | -0.060 | | | -0.022 | | | 0.011** |
| | | | [0.077] | | | [0.063] | | | [0.005] |
| $N$ | 53656 | 53656 | 53656 | 79718 | 79718 | 79718 | 79718 | 79718 | 79718 |
| adj. $R^2$ | 0.766 | 0.766 | 0.766 | 0.785 | 0.785 | 0.785 | 0.637 | 0.637 | 0.637 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 7.*** *Drop in investment: Investment Ratio*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | *invest ratio* | *invest ratio* | *invest ratio* | *invest ratio* |
| $I_{year \geq 2012}$*China | -0.035** | -0.032** | | |
| | [0.015] | [0.015] | | |
| $I_{year=2012}$*China | | | -0.033** | -0.028* |
| | | | [0.017] | [0.016] |
| $I_{year=2013}$*China | | | -0.054*** | -0.035*** |
| | | | [0.013] | [0.012] |
| $I_{year=2014}$*China | | | -0.057*** | -0.024 |
| | | | [0.019] | [0.017] |
| Lagged $\frac{Liquidity}{Capital}$ | | 0.008*** | | 0.008*** |
| | | [0.001] | | [0.001] |
| $N$ | 78901 | 70197 | 78901 | 70197 |
| adj. $R^2$ | 0.294 | 0.302 | 0.294 | 0.302 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
Top and bottom one percent observations of investment ratio are trimmed.
Top and bottom one percent observations of the liquidity-capital ratio are trimmed.
$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 8.*** *No pre-trends for sales forecasts*

| | (1) $\log(sales)_{fore.}$ | (2) $\log(sales)_{fore.}$ | (3) $\log(sales)_{fore.}$ | (4) $\log(sales)_{fore.}$ | (5) $\log(sales)_{fore.}$ | (6) $\log(sales)_{fore.}$ | (7) $\log(sales)_{fore.}$ | (8) $\log(sales)_{fore.}$ |
|---|---|---|---|---|---|---|---|---|
| $I_{year\geq 2009}$*China | 0.072** | | | | 0.045* | | | |
| | [0.031] | | | | [0.023] | | | |
| $I_{year\geq 2010}$*China | | 0.086*** | | | | 0.048** | | |
| | | [0.026] | | | | [0.024] | | |
| $I_{year\geq 2011}$*China | | | -0.016 | | | | -0.029* | |
| | | | [0.018] | | | | [0.016] | |
| $I_{year\geq 2012}$*China | | | | -0.077*** | | | | -0.064*** |
| | | | | [0.025] | | | | [0.021] |
| $\log(emp)_{sub}$ | | | | | 0.447*** | 0.447*** | 0.447*** | 0.447*** |
| | | | | | [0.085] | [0.085] | [0.085] | [0.085] |
| $N$ | 88769 | 88769 | 88769 | 88769 | 85418 | 85418 | 85418 | 85418 |
| adj. $R^2$ | 0.937 | 0.937 | 0.937 | 0.937 | 0.947 | 0.947 | 0.947 | 0.947 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 9.*** *Shock to sales forecasts is persistent*

| | (1) $\log(sales)_{fore.}$ | (2) $\log(sales)_{fore.}$ | (3) $\log(sales)_{fore.}$ | (4) $\log(sales)_{fore.}$ |
|---|---|---|---|---|
| $I_{year=2012}$*China | -0.080*** | -0.045*** | -0.067*** | -0.041*** |
| | [0.023] | [0.015] | [0.019] | [0.014] |
| $I_{year=2013}$*China | -0.088** | -0.045** | -0.064* | -0.040* |
| | [0.040] | [0.022] | [0.034] | [0.021] |
| $I_{year=2014}$*China | -0.140*** | -0.085*** | -0.091** | -0.069** |
| | [0.052] | [0.029] | [0.041] | [0.027] |
| $\log(sales)_{sub}$ | | 0.611*** | | 0.560*** |
| | | [0.020] | | [0.030] |
| $\log(emp)_{sub}$ | | | 0.446*** | 0.192*** |
| | | | [0.085] | [0.051] |
| $N$ | 88769 | 87620 | 85418 | 84480 |
| adj. $R^2$ | 0.937 | 0.964 | 0.947 | 0.966 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 10.*** *Shock to forecast errors*

| | (1) $FE_{sales}$ | (2) $FE_{sales}$ |
|---|---|---|
| $I_{year \geq 2013}$*China | 0.048*** | 0.052*** |
| | [0.011] | [0.011] |
| $\log(emp)_{sub}$ | | 0.017** |
| | | [0.008] |
| $N$ | 66776 | 64276 |
| adj. $R^2$ | 0.232 | 0.235 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Top and bottom one percent observations of FEs are trimmed.
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita).
Country-level controls: annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 11.*** *Shock to forecast errors is persistent*

| | (1) $FE_{sales}$ | (2) $FE_{sales}$ | (3) $FE_{sales}$ | (4) $FE_{sales}$ |
|---|---|---|---|---|
| $I_{year=2013}$*China | 0.049*** | 0.057*** | 0.052*** | 0.057*** |
| | [0.012] | [0.009] | [0.012] | [0.010] |
| $I_{year=2014}$*China | 0.044*** | 0.052*** | 0.052*** | 0.055*** |
| | [0.011] | [0.009] | [0.010] | [0.009] |
| $\log(sales)_{sub}$ | | 0.178*** | | 0.205*** |
| | | [0.009] | | [0.011] |
| $\log(emp)_{sub}$ | | | 0.017** | -0.057*** |
| | | | [0.008] | [0.012] |
| $N$ | 66776 | 66776 | 64276 | 64276 |
| adj. $R^2$ | 0.232 | 0.291 | 0.235 | 0.300 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
Top and bottom one percent observations of forecast errors are trimmed.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita).
Country-level controls: annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 12.*** *No pre-trends for forecast errors*

| | (1) $FE_{sales}$ | (2) $FE_{sales}$ | (3) $FE_{sales}$ | (4) $FE_{sales}$ | (5) $FE_{sales}$ | (6) $FE_{sales}$ | (7) $FE_{sales}$ | (8) $FE_{sales}$ |
|---|---|---|---|---|---|---|---|---|
| $I_{year \geq 2009}$*China | -0.041** | | | | -0.046*** | | | |
| | [0.018] | | | | [0.017] | | | |
| $I_{year \geq 2010}$*China | | -0.009 | | | | -0.016 | | |
| | | [0.016] | | | | [0.016] | | |
| $I_{year \geq 2011}$*China | | | 0.016 | | | | 0.015 | |
| | | | [0.012] | | | | [0.013] | |
| $I_{year \geq 2012}$*China | | | | -0.026* | | | | -0.025* |
| | | | | [0.015] | | | | [0.015] |
| $\log(emp)_{sub}$ | | | | | 0.017** | 0.017** | 0.016** | 0.016** |
| | | | | | [0.008] | [0.008] | [0.008] | [0.008] |
| $N$ | 66776 | 66776 | 66776 | 66776 | 64276 | 64276 | 64276 | 64276 |
| adj. $R^2$ | 0.232 | 0.232 | 0.232 | 0.232 | 0.235 | 0.234 | 0.234 | 0.234 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
Top and bottom one percent obs. of forecast errors are trimmed.
$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Affiliate-level Control: log(sales).
Country-level controls: log(GDP), log(GDP per capita), annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2014.

***Table 13.*** *Quantification: 2007-2012*

| | (1) $\log(invest)$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{fore.}$ | (4) $FE_{sales}$ |
|---|---|---|---|---|
| $I_{year \geq 2012}$*China | -0.137*** | | -0.083*** | |
| | [0.048] | | [0.021] | |
| $I_{year \geq 2013}$*China | | -0.020 | | 0.054*** |
| | | [0.018] | | [0.012] |
| Lagged $\log(capital)_{sub}$ Included? | Yes | No | No | No |
| Lagged $\log(capital)^2_{sub}$ Included? | Yes | No | No | No |
| Lagged $\left(\frac{Liquidity}{Capital}\right)_{sub}$ Included? | Yes | No | No | No |
| Time span | 2007-2012 | 2008-2013 | 2007-2012 | 2008-2013 |
| $N$ | 32648 | 97225 | 64088 | 56025 |
| adj. $R^2$ | 0.773 | 0.940 | 0.944 | 0.233 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

Top and bottom one percent observations of FEs are trimmed.

Top and bottom one percent observations of the liquidity-capital ratio are trimmed.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

***Table 14.*** *Quantification: 2007-2012*

| | (1) $\log(invest)$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{fore.}$ | (4) $FE_{sales}$ |
|---|---|---|---|---|
| $I_{year \geq 2012}$*China | -0.137*** | | -0.092*** | |
| | [0.048] | | [0.020] | |
| $I_{year \geq 2013}$*China | | -0.018 | | 0.060*** |
| | | [0.021] | | [0.013] |
| Lagged $\log(capital)_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Lagged $\log(capital)^2_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Lagged $\left(\frac{Liquidity}{Capital}\right)_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Time span | 2007-2012 | 2008-2013 | 2007-2012 | 2008-2013 |
| $N$ | 32648 | 68609 | 40523 | 50378 |
| adj. $R^2$ | 0.773 | 0.946 | 0.954 | 0.234 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

Top and bottom one percent observations of FEs are trimmed.

Top and bottom one percent observations of the liquidity-capital ratio are trimmed.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

***Table 15.*** *Quantification: 2007-2013*

| | (1) $\log(invest)$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{fore.}$ | (4) $FE_{sales}$ |
|---|---|---|---|---|
| $I_{year \geq 2012}$*China | -0.158*** | | -0.082*** | |
| | [0.049] | | [0.026] | |
| $I_{year \geq 2013}$*China | | -0.025 | | 0.048*** |
| | | [0.023] | | [0.011] |
| Lagged $\log(capital)_{sub}$ Included? | Yes | No | No | No |
| Lagged $\log(capital)^2_{sub}$ Included? | Yes | No | No | No |
| Lagged $\left(\frac{Liquidity}{Capital}\right)_{sub}$ Included? | Yes | No | No | No |
| Time span | 2007-2013 | 2008-2014 | 2007-2013 | 2008-2014 |
| $N$ | 40108 | 115802 | 76370 | 66776 |
| adj. $R^2$ | 0.768 | 0.936 | 0.941 | 0.232 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

Top and bottom one percent observations of FEs are trimmed.

Top and bottom one percent observations of the liquidity-capital ratio are trimmed.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

Affiliate-level capital stock and liquidity ratio in 2012 are replaced by their values in 2011.

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

***Table 16.*** *Quantification: 2007-2013*

| | (1) $\log(invest)$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{fore.}$ | (4) $FE_{sales}$ |
|---|---|---|---|---|
| $I_{year \geq 2012}$*China | -0.158*** | | -0.088*** | |
| | [0.049] | | [0.023] | |
| $I_{year \geq 2013}$*China | | -0.024 | | 0.052*** |
| | | [0.024] | | [0.011] |
| Lagged $\log(capital)_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Lagged $\log(capital)^2_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Lagged $\left(\frac{Liquidity}{Capital}\right)_{sub}$ Included? | Yes | Yes | Yes | Yes |
| Time span | 2007-2013 | 2008-2014 | 2007-2013 | 2008-2014 |
| $N$ | 40108 | 80554 | 49654 | 58637 |
| adj. $R^2$ | 0.768 | 0.943 | 0.950 | 0.224 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

Top and bottom one percent observations of FEs are trimmed.

Top and bottom one percent observations of the liquidity-capital ratio are trimmed.

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

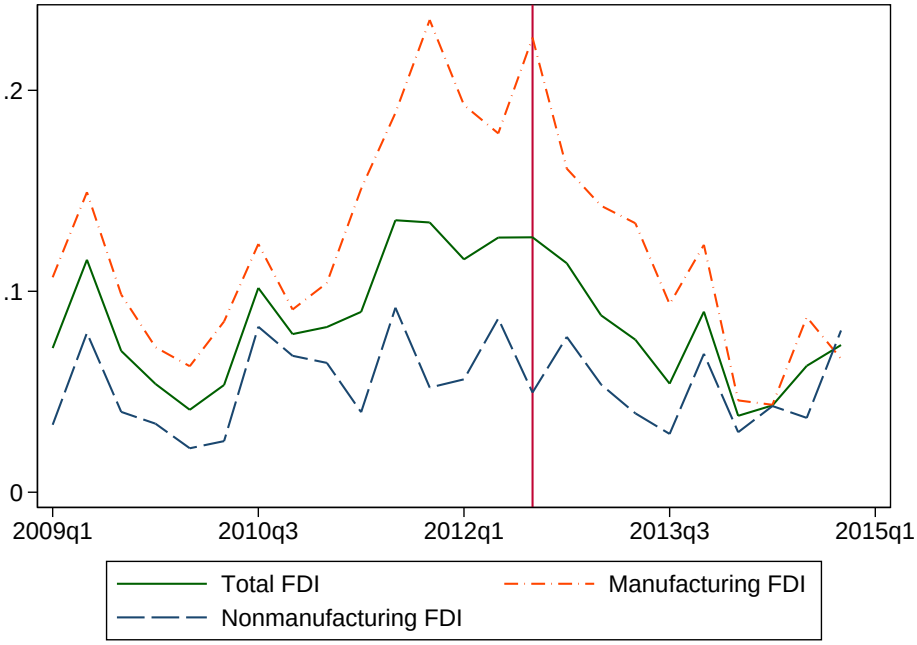
Affiliate-level capital stock and liquidity ratio in 2012 are replaced by their values in 2011.

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

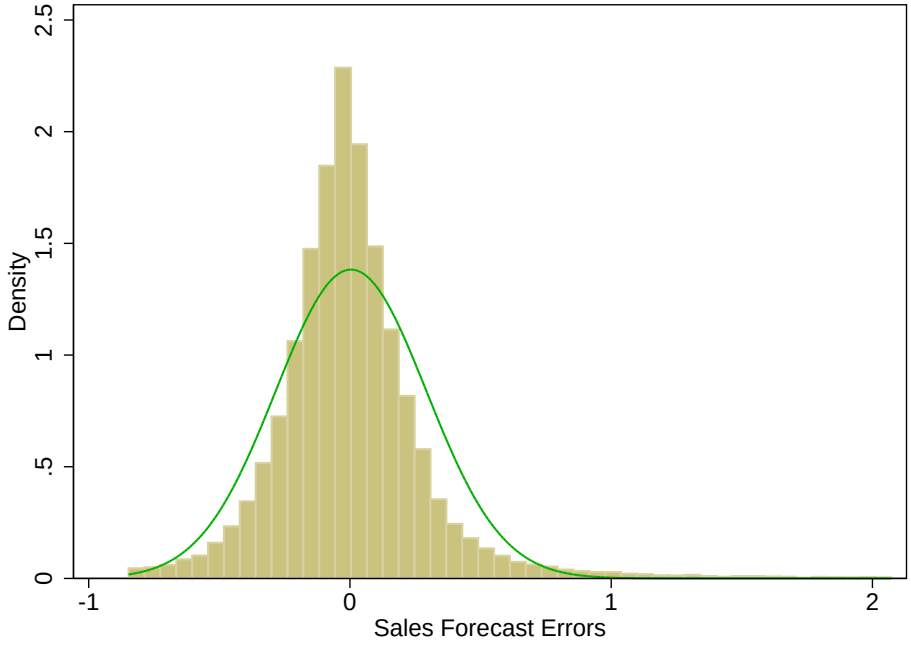
China and non-China specific linear time trends are included.

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



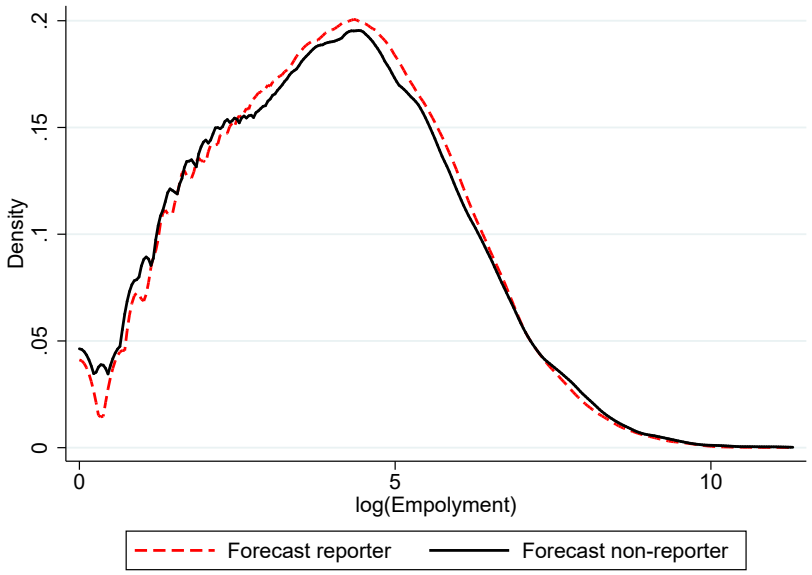

*Note: The vertical line indicates 2012/Q3, the quarter in which the Island Crisis happened. Japanese quarterly FDI data are obtained from the Bank of Japan. Quarterly total FDI inflows into China are obtained from China Data Online. We partition the quarterly total FDI inflows into manufacturing and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

***Figure 2.*** *Histogram of Forecast Errors for Total Sales*



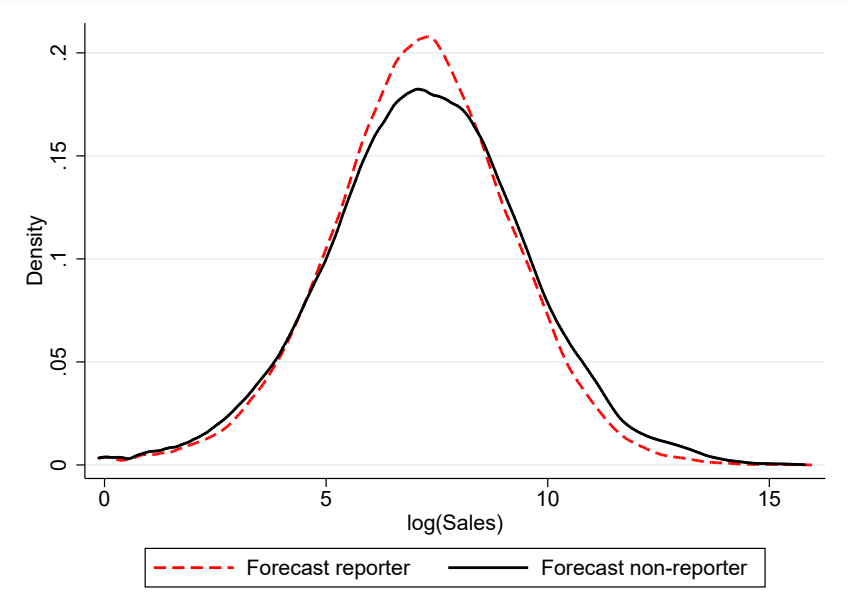

*Note: Histogram of* $FE_t$ *with fitted normal density.* $FE_t$ *is the forecast error of sales, defined as* $Sales_t / E_{t-1}(Sales_t) - 1$.

***Figure 3.*** *Employment Distribution of Reporting and Non-reporting Observations: All Affiliates*



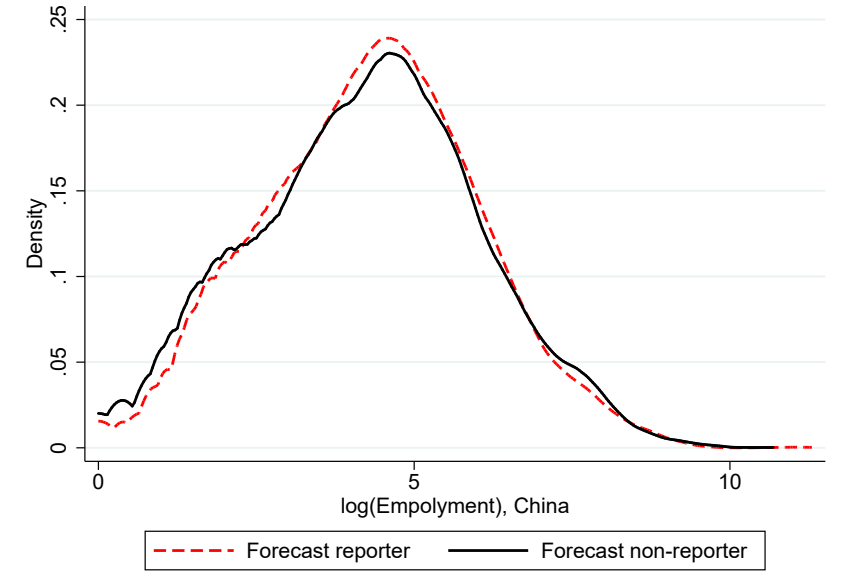

*Distribution of Log Employment of Reporting and Non-reporting Observations*

***Figure 4.*** *Sales Distribution of Reporting and Non-reporting Observations: All Affiliates*



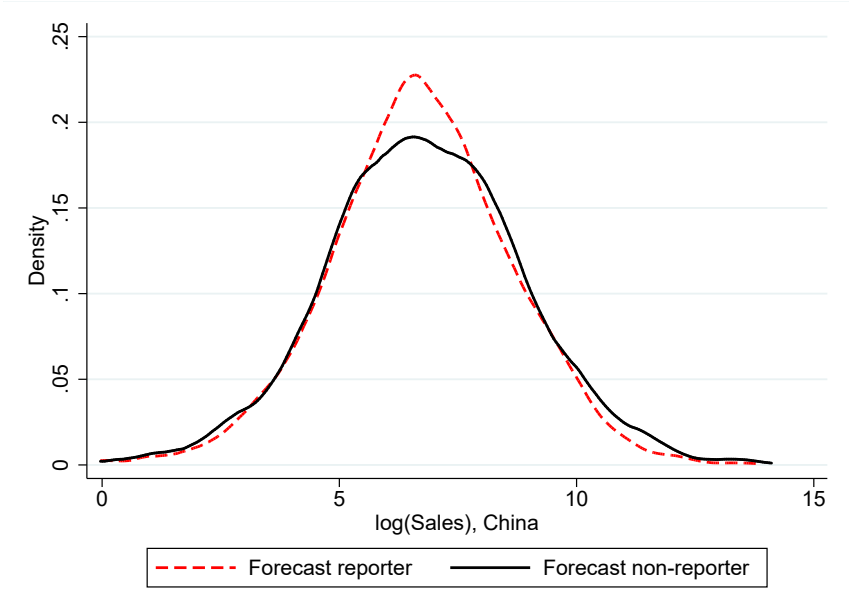

*Distribution of Log Sales of Reporting and Non-reporting Observations*

***Figure 5.*** *Employment Distribution of Reporting and Non-reporting Observations: Affiliates in China*



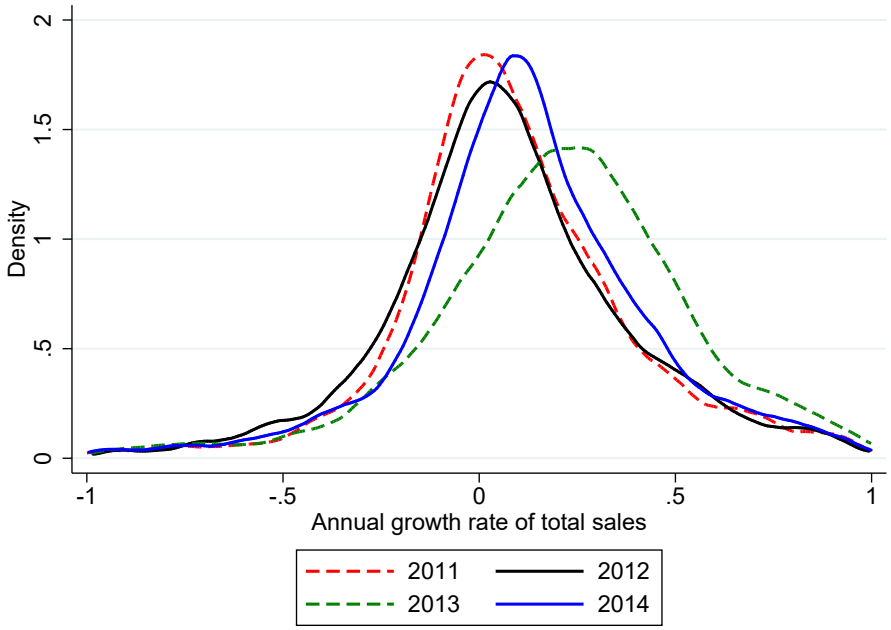

*Distribution of Log Employment of Reporting and Non-reporting Observations*

***Figure 6.*** *Sales Distribution of Reporting and Non-reporting Observations: Affiliates in China*




*Distribution of Log Sales of Reporting and Non-reporting Observations*

***Figure 7.*** *Distribution of Annual Growth Rate of Total Sales*




*Plotted from our unbalanced panel using the firm-level data of the Basic Survey of Overseas Business Activities released by the Ministry of Economy, Trade and Industry. Observations with growth rate equals* −100% *or higher than* 100% *are excluded.*

***Figure 8.*** *Trend of Average Sales of Japanese Affiliates*

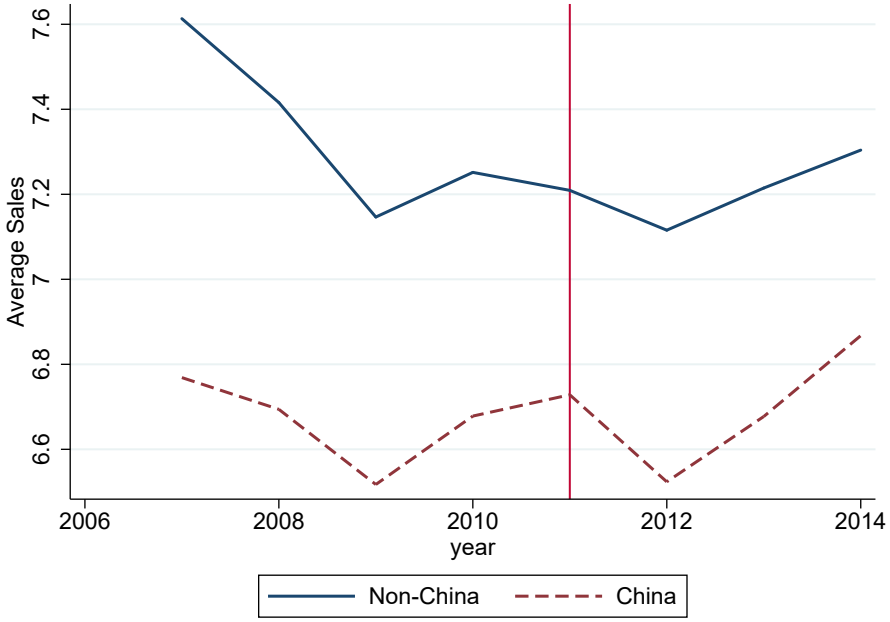



***Figure 9.*** *Trend of Average Log Investment of Japanese Affiliates*

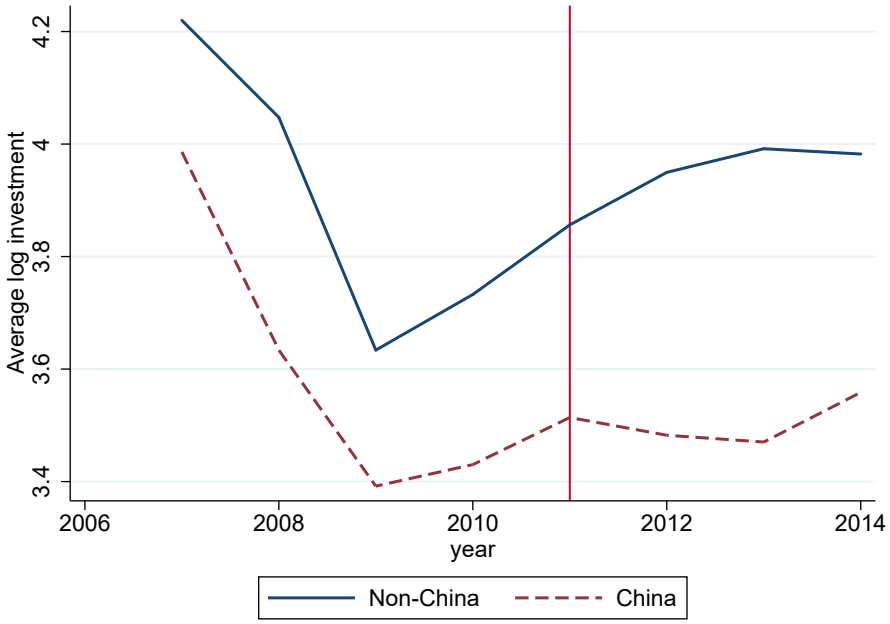


***Figure 10.*** *Trend of Average Log (Investment Plus One) of Japanese Affiliates*

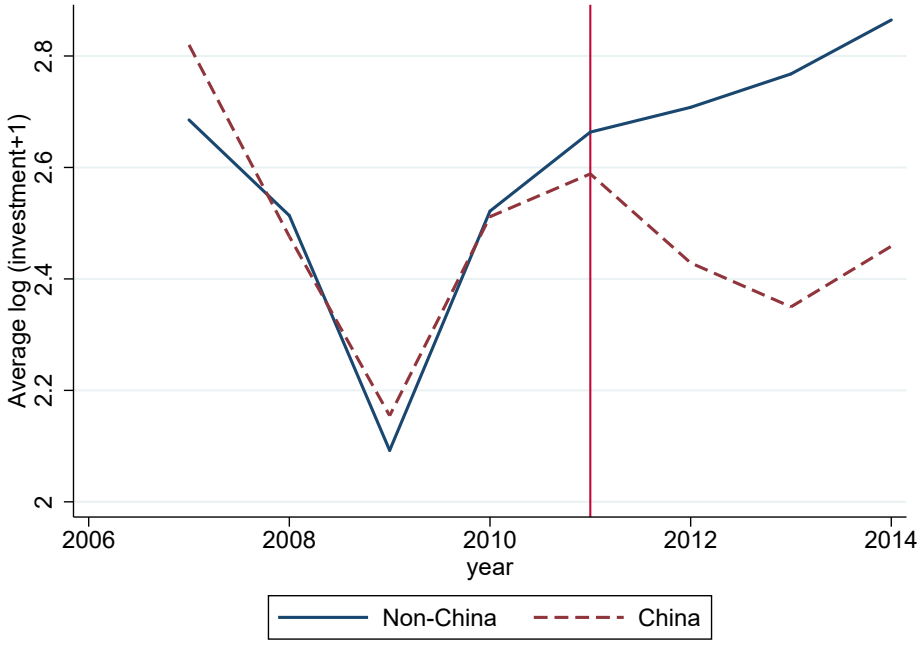
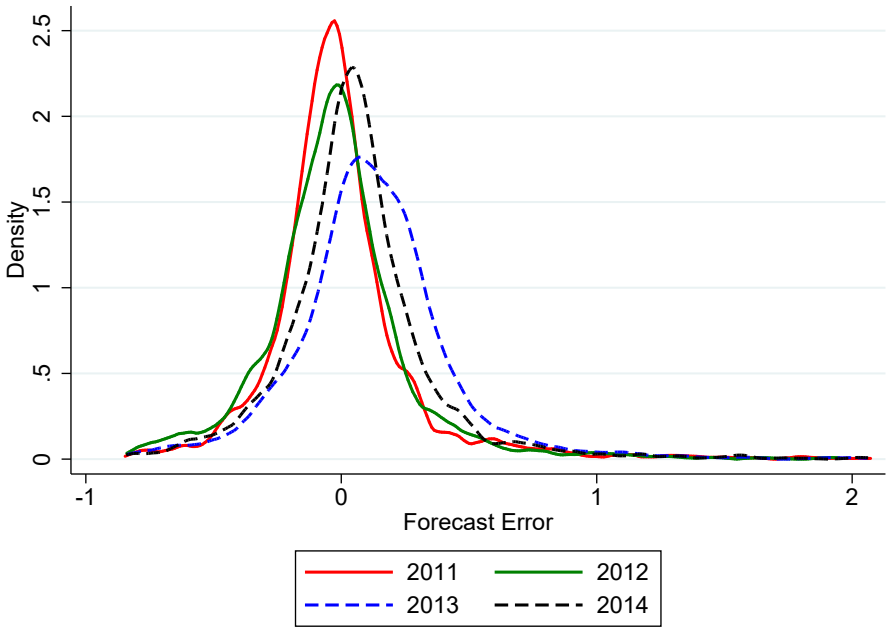
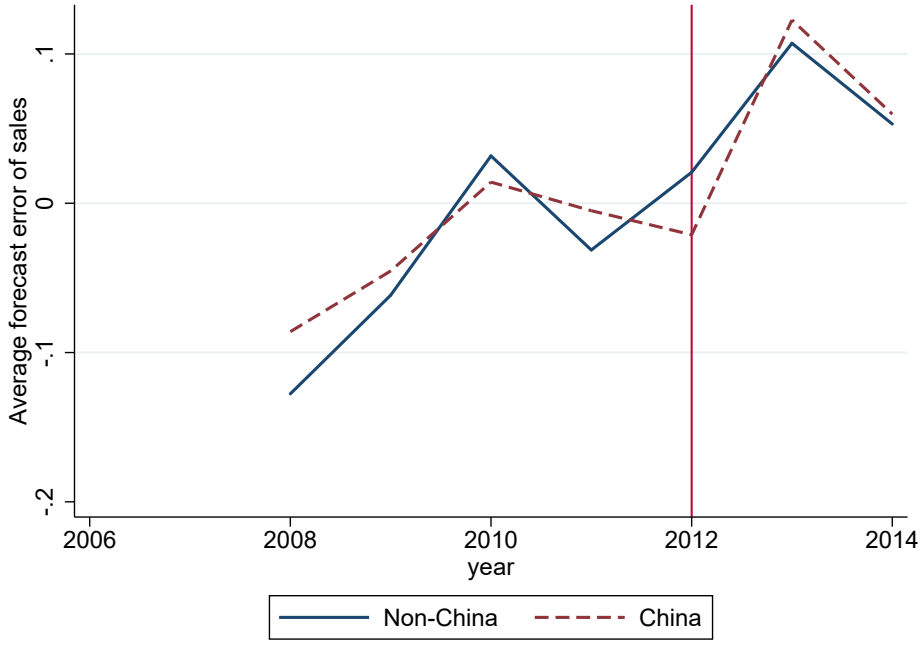



***Figure 11.*** *Distribution of Forecast Errors of Annual Total Sales*




*Constructed from our unbalanced panel using the Basic Survey of Overseas Business Activities released by the Ministry of Economy, Trade and Industry. Forecast error is calculated as* $\frac{Realized\ Sales - Projected\ Sales}{Projected\ Sales}$*. Therefore, any positive value of forecast error implies that a firm underestimates its sales and vice versa.*

***Figure 12.*** *Trend of Average Forecast Error Made by Japanese Affiliates*



## Online Appendix: Not for Publication

***Table 17.*** *Drop in total sales (2009 excluded)*

| | (1) $\log(sales)_{sub}$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{sub}$ | (4) $\log(sales)_{sub}$ |
|---|---|---|---|---|
| $I_{year \geq 2012}$*China | -0.062*** | | -0.046*** | |
| | [0.017] | | [0.012] | |
| $I_{year=2012}$*China | | -0.063*** | | -0.049*** |
| | | [0.014] | | [0.010] |
| $I_{year=2013}$*China | | -0.072** | | -0.035 |
| | | [0.034] | | [0.026] |
| $I_{year=2014}$*China | | -0.096** | | -0.036 |
| | | [0.045] | | [0.034] |
| $\log(emp)_{sub}$ | | | 0.448*** | 0.448*** |
| | | | [0.064] | [0.064] |
| $N$ | 114586 | 114586 | 108331 | 108331 |
| adj. $R^2$ | 0.930 | 0.930 | 0.942 | 0.942 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2008 and 2010-2014.

***Table 18.*** *Drop in investment (2009 excluded)*

| | (1) $\log(invest)$ | (2) $\log(invest)$ | (3) $\log(invest+1)$ | (4) $\log(invest+1)$ | (5) $I_{invest>0}$ | (6) $I_{invest>0}$ |
|---|---|---|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.158*** | | -0.143*** | | -0.014** | |
| | [0.035] | | [0.037] | | [0.006] | |
| $I_{year=2012}$*China | | -0.140*** | | -0.137*** | | -0.017*** |
| | | [0.038] | | [0.039] | | [0.006] |
| $I_{year=2013}$*China | | -0.227*** | | -0.246*** | | -0.029*** |
| | | [0.078] | | [0.071] | | [0.008] |
| $I_{year=2014}$*China | | -0.192* | | -0.272*** | | -0.049*** |
| | | [0.112] | | [0.102] | | [0.011] |
| Lagged $\log(capital)_{sub}$ | -0.211*** | -0.211*** | -0.218*** | -0.218*** | -0.020* | -0.020* |
| | [0.048] | [0.048] | [0.060] | [0.060] | [0.011] | [0.011] |
| Lagged $\log(capital)^2_{sub}$ | 0.028*** | 0.028*** | 0.029*** | 0.029*** | 0.002** | 0.002** |
| | [0.005] | [0.005] | [0.007] | [0.007] | [0.001] | [0.001] |
| $N$ | 46836 | 46836 | 68241 | 68241 | 68241 | 68241 |
| adj. $R^2$ | 0.774 | 0.774 | 0.790 | 0.790 | 0.642 | 0.642 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

Time span: 2007-2008 and 2010-2014.

***Table 19.*** *Drop in projected sales (2009 excluded)*

| | (1) $\log(sales)_{fore.}$ | (2) $\log(sales)_{fore.}$ | (3) $\log(sales)_{fore.}$ | (4) $\log(sales)_{fore.}$ | (5) $\log(sales)_{fore.}$ | (6) $\log(sales)_{fore.}$ |
|---|---|---|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.074*** | | | -0.060*** | | |
| | [0.024] | | | [0.021] | | |
| $I_{year=2012}$*China | | -0.078*** | -0.043*** | | -0.064*** | -0.039*** |
| | | [0.022] | [0.015] | | [0.019] | [0.014] |
| $I_{year=2013}$*China | | -0.085** | -0.045** | | -0.058* | -0.040* |
| | | [0.040] | [0.022] | | [0.034] | [0.022] |
| $I_{year=2014}$*China | | -0.135*** | -0.083*** | | -0.084** | -0.069** |
| | | [0.050] | [0.029] | | [0.041] | [0.027] |
| $\log(sales)_{sub}$ | | | 0.624*** | | | 0.571*** |
| | | | [0.022] | | | [0.034] |
| $\log(emp)_{sub}$ | | | | 0.454*** | 0.453*** | 0.189*** |
| | | | | [0.088] | [0.088] | [0.054] |
| $N$ | 78616 | 78616 | 77545 | 75620 | 75620 | 74734 |
| adj. $R^2$ | 0.936 | 0.936 | 0.964 | 0.946 | 0.946 | 0.966 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2008 and 2010-2014.

***Table 20.*** *Change in forecast errors (2009 excluded)*

| | (1) $FE_{sales}$ | (2) $FE_{sales}$ | (3) $FE_{sales}$ | (4) $FE_{sales}$ | (5) $FE_{sales}$ | (6) $FE_{sales}$ |
|---|---|---|---|---|---|---|
| $I_{year \geq 2013}$*China | 0.052*** | | | 0.056*** | | |
| | [0.011] | | | [0.010] | | |
| $I_{year=2013}$*China | | 0.052*** | 0.060*** | | 0.056*** | 0.059*** |
| | | [0.012] | [0.009] | | [0.011] | [0.010] |
| $I_{year=2014}$*China | | 0.051*** | 0.059*** | | 0.059*** | 0.061*** |
| | | [0.010] | [0.008] | | [0.009] | [0.008] |
| $\log(sales)_{sub}$ | | | 0.178*** | | | 0.208*** |
| | | | [0.009] | | | [0.011] |
| $\log(emp)_{sub}$ | | | | 0.015* | 0.015* | -0.060*** |
| | | | | [0.008] | [0.008] | [0.013] |
| $N$ | 57937 | 57937 | 57937 | 55740 | 55740 | 55740 |
| adj. $R^2$ | 0.248 | 0.248 | 0.306 | 0.251 | 0.251 | 0.316 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Top and bottom one percent observations of FEs are trimmed.
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2007-2008 and 2010-2014.

***Table 21.*** *Drop in total sales (starting from 2010)*

| | (1) $\log(sales)_{sub}$ | (2) $\log(sales)_{sub}$ | (3) $\log(sales)_{sub}$ | (4) $\log(sales)_{sub}$ |
|---|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.031** | | -0.042*** | |
| | [0.014] | | [0.013] | |
| $I_{year=2012}$*China | | -0.040*** | | -0.018 |
| | | [0.015] | | [0.014] |
| $I_{year=2013}$*China | | -0.039 | | 0.012 |
| | | [0.029] | | [0.025] |
| $I_{year=2014}$*China | | -0.053 | | 0.031 |
| | | [0.049] | | [0.037] |
| $\log(emp)_{sub}$ | | | 0.381*** | 0.381*** |
| | | | [0.058] | [0.058] |
| $N$ | 85788 | 85788 | 81016 | 81016 |
| adj. $R^2$ | 0.948 | 0.948 | 0.956 | 0.956 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2010-2014.

***Table 22.*** *Drop in investment (starting from 2010)*

| | (1) $\log(invest)$ | (2) $\log(invest)$ | (3) $\log(invest+1)$ | (4) $\log(invest+1)$ |
|---|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.095** | | -0.045 | |
| | [0.047] | | [0.044] | |
| $I_{year=2012}$*China | | -0.046 | | -0.014 |
| | | [0.058] | | [0.049] |
| $I_{year=2013}$*China | | -0.083 | | -0.035 |
| | | [0.140] | | [0.102] |
| $I_{year=2014}$*China | | 0.007 | | 0.020 |
| | | [0.212] | | [0.158] |
| Lagged $\log(capital)_{sub}$ | -0.252*** | -0.251*** | -0.223*** | -0.223*** |
| | [0.053] | [0.052] | [0.074] | [0.074] |
| Lagged $\log(capital)^2_{sub}$ | 0.023*** | 0.022*** | 0.018** | 0.018** |
| | [0.006] | [0.006] | [0.007] | [0.007] |
| $N$ | 39885 | 39885 | 57429 | 57429 |
| adj. $R^2$ | 0.789 | 0.789 | 0.809 | 0.809 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

Time span: 2010-2014.

***Table 23.*** *Drop in projected sales (starting from 2010)*

| | (1) $\log(sales)_{fore.}$ | (2) $\log(sales)_{fore.}$ | (3) $\log(sales)_{fore.}$ | (4) $\log(sales)_{fore.}$ | (5) $\log(sales)_{fore.}$ | (6) $\log(sales)_{fore.}$ |
|---|---|---|---|---|---|---|
| $I_{year\geq 2012}$*China | -0.021* | | | -0.031** | | |
| | [0.011] | | | [0.012] | | |
| $I_{year=2012}$*China | | -0.034* | -0.018 | | -0.027 | -0.010 |
| | | [0.018] | [0.019] | | [0.018] | [0.020] |
| $I_{year=2013}$*China | | -0.022 | -0.003 | | -0.002 | 0.011 |
| | | [0.034] | [0.028] | | [0.034] | [0.031] |
| $I_{year=2014}$*China | | -0.048 | -0.025 | | -0.009 | 0.003 |
| | | [0.047] | [0.038] | | [0.042] | [0.038] |
| $\log(sales)_{sub}$ | | | 0.534*** | | | 0.487*** |
| | | | [0.027] | | | [0.034] |
| $\log(emp)_{sub}$ | | | | 0.417*** | 0.417*** | 0.207*** |
| | | | | [0.082] | [0.082] | [0.053] |
| $N$ | 57620 | 57620 | 56746 | 55424 | 55424 | 54701 |
| adj. $R^2$ | 0.952 | 0.952 | 0.969 | 0.958 | 0.958 | 0.971 |

Standard errors are in parentheses.
Standard errors are clustered at the country level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Parent-level Controls: log(sales) and log(equity).
Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.
China and non-China specific linear time trends are included.
Time span: 2010-2014.

***Table 24.*** *Change in forecast errors (starting from 2010)*

| | (1) $FE_{sales}$ | (2) $FE_{sales}$ | (3) $FE_{sales}$ | (4) $FE_{sales}$ | (5) $FE_{sales}$ | (6) $FE_{sales}$ |
|---|---|---|---|---|---|---|
| $I_{year\geq 2013}$*China | 0.057*** | | | 0.056*** | | |
| | [0.015] | | | [0.014] | | |
| $I_{year=2013}$*China | | 0.058*** | 0.056*** | | 0.057*** | 0.052*** |
| | | [0.015] | [0.014] | | [0.014] | [0.013] |
| $I_{year=2014}$*China | | 0.063*** | 0.058** | | 0.066*** | 0.053** |
| | | [0.021] | [0.024] | | [0.022] | [0.025] |
| $\log(sales)_{sub}$ | | | 0.209*** | | | 0.238*** |
| | | | [0.013] | | | [0.015] |
| $\log(emp)_{sub}$ | | | | 0.012 | 0.012 | -0.063*** |
| | | | | [0.008] | [0.008] | [0.013] |
| $N$ | 48619 | 48619 | 48619 | 46767 | 46767 | 46767 |
| adj. $R^2$ | 0.240 | 0.240 | 0.304 | 0.240 | 0.240 | 0.311 |

Standard errors are in parentheses.

Standard errors are clustered at the country level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Top and bottom one percent observations of FEs are trimmed.

Parent-level Controls: log(sales) and log(equity).

Country-level controls: log(GDP), log(GDP per capita), and annual GDP growth rate.

China and non-China specific linear time trends are included.

Time span: 2010-2014.