

Online Appendix for
"Foreign Rivals are Coming to Town:
Responding to the Threat of Foreign Multinational Entry"
(For Online Publication)

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In this appendix, we discuss in detail the data collection processes, the audit and check procedures, and the variety of scenarios and definitions used in constructing the foreign investment news dataset. We also present a series of additional empirical analysis that supplements the main paper.

1 Data Collection

As described in Section 3 of the paper, our data collection process proceeded in three steps. First, we collected all investment-related news from Factiva. We searched the string "invest" (as either a whole word or part of whole words such as "invested" and "investment") in the text for all regions, all companies in manufacturing industries (including Food, Beverages, Tobaccos, Automobiles, Chemicals, Clothing and textiles, Computers, Electronics, machinery, telecommunications, and other industrial and consumer products), and the period of January 1, 2000-December 31, 2007. The search resulted in 146,663 investment-related news articles, which constitutes about 12 percent of all corporate and industrial news.¹

In the second step, we then manually screened each article, in particular, the text around the keywords to identify news about potential future investments. Investment news reports that

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¹In Section 5, we also expanded the data by supplementing with alternative data sources for a more comprehensive coverage.

contain "plan to", "agree to", "say they will", "sign an agreement", "expect", "consider", and other similar types of word were considered as news of future investments. A list of key words discussing a future investment is included below:

will invest; is set to invest; agree to invest; plan to invest; is to invest; intend to invest; decide to invest; would invest; could invest; may invest; want to invest; promise to invest; is going to invest; has announced an investment; should invest; plan on investing; interested in investing; announce an investment; will be investing; to be invested; will make a new investment; is to establish; would establish; will set up; to be set up; will be setting up; is to set up; is setting up; would like to build; will be built; will build; is to build; plan to build; will receive; will raise investments; will increase investments; will open; decide to open; about to open; to open a facility; to open a plant; will expand; aim to expand; are to expand; an expansion plan; to be expanded; will be expanded; is to acquire; will acquire; is ready to acquire; will pay; signed a letter of intent to; will buy; is to buy; apply to buy; will install; to construct; will begin construction; is to begin construction; is to start; will start; will undertake; in negotiations to; in initial talks to; is pushing forward to investment; will launch; will take control; will take a stake; would be spent on; will form; plan to develop; is to develop.

We also identified the companies involved in the investments and performed a background check on each company using business intelligence sources such as Orbis and Hoover's to distinguish between domestic and foreign investments and to identify the headquarters country of each firm as most news articles do not indicate the source country of investments. The vast majority of news also do not report the stake share of the MNCs; those that did all reported more than 10 percent. This step yielded 20,432 pieces of foreign investment news.

In the third step, we collected over 25 categories of investment and news characteristics from each piece of news by carefully reading each news text.

2 Data Verification and Auditing

Given the complexity of the information we are interested in, almost all the information had to be manually collected from the texts of the news. To ensure the accuracy of the data, we performed thorough cross-checks and audit procedures. First, for information available in a standardized format such as the news title, the news publication date and time, the publication title, the publication location, and the number of words, we used an automatic data-extraction program (Quick Macro) to verify the manually collected data. Second, information requiring little judgement, such as the name of the multinational firm, investment locations, investment industry names, investment value and currency, expected employment, output and revenue, was cross-checked at least once. Third, information requiring some judgement calls such as investment motive and investment contingency was collected and coded by two different people

at the same time and cross-checked by a third person.

After the data construction process, we also performed an audit procedure to further examine the accuracy of the data. The audit consisted of four steps. First, we drew an audit sample for each newspaper by randomly sampling 30 percent of the articles. Second, we assigned sample articles to two auditors with both auditors reviewing all the sampled articles. Third, auditors reviewed and coded articles in a randomized order to ensure that auditor "learning" does not lead to biases across papers or over time. Fourth, the three auditors together checked the results with the original data. We found very few minor differences in the coding and those differences did not affect our results.

3 Specific Scenarios and Definitions

Next we discuss how we treated various scenarios that arose in the data collection and the alternative definitions considered during the data construction and analysis.

3.1 Sequential Articles

Sometimes a sequence of articles could be published to describe either the same investment or different stages of an investment. In the former case, we recorded each news event and in the empirical analysis examine how either the total count of all news events, including those that are duplicate, or the total count of unique news events would affect domestic firm response. The number of times for which a single investment is reported could reflect the magnitude and the importance of the investment and in the meantime affect the size of the audience reached by the news. Weighing each investment with the frequency of news enables us to account for the varying size or importance of the investment. On the other hand, the count of unique news events allows us to measure unique information and examine how domestic firms respond to each unique news event. We found that the results are not sensitive to the measures used and the unique FDI news variable, as expected, exerts a slightly greater effect.

In cases where a sequence of articles were published regarding different stages of an investment, we recorded each article sequentially as it becomes available because each article conveys new information. Consider the following example of two sequential articles about Sweden's Electrolux. On February 20, 2003, a news article in Business Day (a publication in Thailand) described that "Sweden's Electrolux AB (ELUX) said Wednesday that it plans to invest about 500 million baht (\$1=THB43.072) in setting up its first manufacturing plant in Thailand." On October 13, 2004, Thai News Services announced that "Sweden's Electrolux, the world's biggest home appliance maker, said yesterday it plans to add 1,000 staff in Thailand and invest two billion baht (\$48 million) by 2006 to expand capacity in the country." In this case, Electrolux's announcement in February 2003 would first be recorded so we could examine how domestic firms in Thailand respond to this new entry threat after the news piece was published. Then as

Electrolux announced an expansion of investment in October 2004, the expansion news would be recorded as a separate entry as it represents new information to which firms in Thailand might respond. The investment amounts would also be recorded sequentially. In February 2003, 500 million baht would be recorded first as the expected amount of investment; in October 2004, an additional two billion baht would be recorded as an incremental investment.

There were very rare cases in which news sources announce multinationals' cancellation decisions. But when there were, they would not affect the earlier data entry since the cancellation information was not available then. In one robustness check, we examined how the length of the time window during which investment news information is effective would affect the domestic firm response; cancellation news was either taken into account or ignored in defining the effective time length of the news. We found that the results do not vary significantly between the two cases.

3.2 News Certainty

We also examined the level of uncertainty in FDI news. To identify news with uncertainty, we considered both conservative and liberal definitions. First, we considered only news that describe investment contingencies as news with uncertainty, such as the examples below: "TCL has sought the approval of Government of India to set up a 100 percent subsidiary in the country. It wants to invest Rs100 crore in its Indian operations;" "ExxonMobil is also considering joining Sinopec in other petrochemical projects and is waiting for government approval for a petrochemicals complex to be built in Fujian province in partnership with Fujian Petrochemical and Saudi Aramco;" "Metemteks considers setting a company in Iran in 2006 if the political situation in the country is appropriate;" "Renault will invest €300 million to boost diesel-engine production at its Valladolid, Spain plant if demand outstrips current expectations." This conservative definition yielded about 10 percent of the total news, but this could be driven by the fact that the contingency information is mostly unavailable even if the investment is still unconfirmed.

Second, we expanded the above group of news with uncertainty to include news with ambiguous language such as "intend to", "consider", "may invest", "want to invest", "could invest", and etc. in describing a future FDI activity. For example, "Swedish truck and bus manufacturer Scania could invest 50 million-100 million euros in building an assembly plant in Russia, Leif Ostling, the company's president, told reporters in St. Petersburg on Tuesday." Under this definition, the share of FDI news with uncertainty rises to 25 percent.

Third, we considered a more liberal definition of uncertainty by excluding news in which investments are "confirmed" or expected to occur on a clear date. News with "confirmed" investments would look like: "Chinese Tianjin Bridge Welding Materials Group recently received approval to set up a joint venture in Vietnam with an investment of \$300,000 (244,450 euro);" "Under the terms of the agreement, Volvo and partner China National Heavy-Duty Truck Corp

(CNHTC) will invest 1.6 billion yuan (US\$193.4 million) in the JV, based in Jinan, capital of Shandong;" "The world's number-two truck maker AB Volvo (VOLVb.ST) said it signed an agreement on Monday to invest \$105 million in an engine plant in China;" "Bayer Crop Science (BCS) of Germany has decided to invest Rs74 crore in Aventis Crop Science India (ACSI) to make the latter its wholly-owned subsidiary;" and "Taiwan-based China Steel Corp said it has won approval from local investment authorities to invest NT\$59.997 million (US\$1.73 million) in a heavy electric motor plant in Wuxi, Jiangsu Province." It is worth noting that even FDI news events that are "confirmed" or provide a clear start date could still face uncertainty and changes, as suggested by the materialization ratio (around 60 percent) of FDI news discussed in the paper. Under this definition, the share of uncertain FDI news rises to 48 percent.

3.3 Investment Motives

In the data, we also classified three main investment motives: domestic market access, export platform, and comparative advantage. FDI news describing domestic markets and demands as an investment factor is considered to exhibit a domestic-market-access motive. FDI news describing proximity to foreign markets and export incentives is considered to have an export-platform motive. Finally, FDI news mentioning costs, production factors, and related motives is considered to exhibit a comparative-advantage motive. Note not all pieces of news offer information on investment motives and these motives are not mutually exclusive as some FDI announcements can have more than one motive.

Examples of texts that describe domestic market access factors are:

"CARBO chief Mark Pearson said that demand for the company's products is growing in Russia and the new plant is being built to increase supplies, should demand increase further;" "DSM said that the investment is driven by the increasing demand for Dyneema UD in the US market for personal and especially vehicle security and protection against terrorism;" "Dai Nippon Toryo is responding to increased local demand on the part of Japanese automakers, including Mitsubishi Motors Corp;" "Glaverbel said it had decided on the move due to the strong demand for such coatings on the Italian construction market;" "Nissan's aggressive investment is aimed at catching up with other Japanese makers in cultivating customers in the rapidly growing Chinese car market;" "Our Tianjin project is mainly targeted at the potential customers of fiberglass materials in the construction of Beijing 2008 Olympic Games infrastructure projects;" "Our aim is to better serve the shipbuilding industry in China and thereby strengthen our market position in the low speed engines in rapidly growing Chinese shipbuilding market;" "We are interested in China as a location for the plant due to the large and expanding market there for fibres and textiles."

Examples of texts that describe export market factors are included below:

"to meet the increasing demand for consumer electronics and audio-visual equipment in Asian countries;" "Akzo Nobel aims to serve both the Russian market and the countries in eastern Europe;" "In order to tap the huge and fast-rising electrical auto-parts market across the Taiwan Strait;" "Mitsui Chemicals decided on the move with the aim of capitalizing on growing demand for paper diapers in Southeast Asian countries;" "Daikin opted for the Czech Republic because of its advantageous geographical position;" "Slovakia was chosen for the new facility on the basis of labor cost and transport cost to Continental's key customers in Europe;" "will produce products for both the local Chinese market and export globally;" "to meet local and export demand;" "The company chose Romania to build its new plant due to the country's skilled workforce, attractive production costs and its proximity to the European Union market."

Examples of texts that describe cost factors are included below:

"Wisher plans to capitalize on the cheap labor in mainland China to minimize its dyeing and finishing cost, the main reason for its investment;" "The company moved its plants from Italy and Germany to Poland in order to reduce costs;" "Daiken aims at becoming more competitive through low labour cost in China;" "Chinese base will be able to assemble these products 20-30 per cent cheaper than in Japan;" "This investment is an important step in Autoliv's strategy to move production to low-labour-cost countries;" "The combination of highly qualified labour and relatively low wages gives the company a chance to cut costs;" "Royal Greenland selected Poland because of the low salary level in the country, with an hourly wage of up to 20 crowns (\$3.4/2.7 euro) in the fish processing sector;" "The decision has been determined chiefly by the lower labour costs in Egypt, at \$150 (128 euro) monthly per employee, which will help Metemteks compete with Chinese producers."

As expected, the three motive variables are not mutually exclusive since investments can exhibit both motives as seen below:

"India is today a strategic market for Goodyear. We not only see a robust domestic market here, but also a potential cost-competitive high quality sourcing base for our global needs;" "Thailand has more appeal for electrical business investments because the size of the electrical appliance market here is so big, plus the wages are lower;" "Slovakia was chosen for the new facility on the basis of labor cost and transport cost to Continental's key customers in Europe;" "will produce products for both the local Chinese market and export globally;" "to meet local and export demand;" "The company chose Romania to build its new plant due to the country's skilled workforce, attractive production costs and its proximity to the European Union market."

4 Foreign Investment News: Stylized Facts

Our final sample consists of 20,432 pieces of foreign investment news. In this sub-section, we describe a number of stylized facts that emerge from the data.

4.1 News Composition

We proceed by first examining the composition of FDI news in several dimensions. First, we show in Figures 1 and 2 that host countries appearing most frequently in the FDI news include China, India, Russia, the United States, and Thailand and top industries include transportation, electrical products, chemicals, computer, and food. We also find in Table A.1 that 56 percent of FDI reported in the news was expected to occur from OECD countries to non-OECD countries and about 30 percent of FDI was expected to occur between OECD countries. Among multinationals that most frequently appear in FDI news are Siemens, Toyota, LG, Volkswagen, Nestle, Honda, GM, BASF, Hong Hai Precision, and Samsung, as seen in Figure 3.²

[Figures 1-3 inserted here]

Second, we examine the investment motive reported by the news, including local market access (FDI seeking to serve local markets), export-platform (FDI seeking to serve export markets), and comparative advantage (FDI seeking lower production costs). As shown in Table A.1, the three investment motives constitute, respectively, 39, 59, and 8 percent of total FDI news. The composition of investment motive, specifically the concentration of FDI news in export-platform and comparative advantage FDI, is consistent with the observation that North-South FDI accounts for over half of the news.

Third, we consider investment forms, including greenfield, mergers and acquisitions (M&As), and joint venture. We show in Table A.1 that greenfield FDI, M&As, and joint venture account for, respectively, 68, 7, and 14 percent of FDI news.³ The low share of M&As in the data is likely due to the fact that the majority of M&A news events concern completed M&A deals and are usually reported on the day or right after the deals are completed. According to Zephyr, a database reporting M&A news (along with IPO, private equity and venture capital news), over 75 percent of the cross-border M&A news events concern completed M&A deals; less than 25 percent are M&A rumors. However, even when rumors are circulated before the formal announcement, the time lag between rumors and formal announcements is usually very short. According to Zephyr, the average time window between a rumor and a completed deal is 28 days, leaving very little preparation time for domestic firms. In contrast, greenfield FDI is usually reported well in advance, on average 25 months ahead of the expected actual investment, allowing domestic firms significant time to react to the news.

Fourth, we consider the size distribution of potential investments and find large variations. While the maximum expected investment value and the maximum expected output are over \$100 billion and 80,000, respectively, the minimum investment value is less than \$1,000 and the minimum expected employment is 8. The average expected investment value and expected

²Figure 3 reports the total count of FDI news events pertaining to an MNC, including both entry and expansion news, unique and duplicate news. The top MNC list by the size of announced investments is different.

³These three forms of FDI do not add up to 1 as the form is not described in some news.

employment are \$355 million and 1,508, respectively. Across industries, lumber, printing and allied products, and chemicals have the lowest average expected employment, while leather, food, and electronic components have the highest average expected employment.

Finally, we separate FDI news described with certainty from those that reveal uncertainty or ambiguity about the foreign investment. As discussed earlier, we define uncertainty in several ways, including, for example, investments with reported contingencies (government approval, board-of-directors approval, and so on) and investments described with phrases such as "could invest", "want to invest", "may invest", "expect to invest", "intend to invest", and "consider to invest". We consider threats of FDI involving uncertainty to be less credible than the others. As reported in Table A.1, we find that investments described with uncertainty can account for about 48 percent of total FDI news. It is worth noting even FDI news that are "confirmed" or provide a clear start date could still be subject to changes down the road, as we observe below.

4.2 News versus Actual FDI

Now we compare the data of FDI news with the data of actual FDI obtained from two different sources, namely, Orbis and UNCTAD. To identify actual entry of foreign multinational firms, we explore the birth year of each foreign multinational establishment reported in Orbis. Identifying entry based on establishment dates offers a more accurate account of entry than counting foreign multinational subsidiaries newly appearing in the dataset because of data censoring and churning issues. According to the data, 21,930 new foreign multinational subsidiaries were established in 92 host countries and 149 manufacturing industries in 2000-2008.

As shown in Figure 4, we find a positive and significant correlation (around 0.4) between FDI news and actual FDI at the aggregate host-country level, based on either Orbis or UNCTAD. The correlation is lower when we compare FDI news with actual FDI at the city, industry, or the city-industry pair level. This suggests that there exist significant variations in the patterns of FDI news and actual FDI. FDI news in some countries, cities, and industries attract disproportionately high media attention. For example, China and India are two host countries that appear in FDI news more frequently than in actual FDI.⁴ The different patterns of FDI news and actual FDI offer us an important source of variation for establishing their respective effects on domestic firms. The correlation between FDI news and actual FDI, as shown in Figure 5, rises to 0.7 at the aggregate headquarter-country level, suggesting less variation in the headquarter-country dimension and that countries with more outward FDI news also tend to engage in more actual FDI overseas. Two exceptions are the U.S. and Japan, which attract considerably greater media attention than suggested by the levels of their actual FDI.

[Figures 4-5 inserted here]

⁴The media attention bias towards China and India was present not just in FDI news but also in general news reporting.

To dissect the correlations and understand the underlying factors, we take a closer look at the comparison. First, we consider medium and large investments and find that the correlations between FDI news and actual FDI are only slightly greater for investments with over \$1 million value or 100 expected employee, rising to 0.5 at the host-country level. In fact, the correlations for top investments (for example, investments with over \$10 million value or 500 expected employee) are found not necessarily higher than the correlations for medium investments.

Second, as shown in Figure 4, certain FDI host countries such as China and India appear in FDI news much more frequently than in actual FDI while some countries such as Germany and Romania are less frequently reported than shown in actual FDI. Similarly, certain headquarter countries such as the U.S. and Japan are reported much more frequently in FDI news than in actual FDI while some headquarter countries like Italy appear less frequently in the news than suggested by their actual FDI. In terms of bilateral country distribution, North-South FDI tends to receive more attention in the media than FDI between developed nations. Relating FDI news with country characteristics, we show in Figure 6 that countries with greater GDP and higher GDP and GDP-per-capita growth rates tend to be reported more frequently by the news whereas no significant correlation is observed between FDI news count and countries' GDP per capita. Across industries, FDI news tends to be more concentrated in capital intensive and skilled-labor intensive industries such as Motor Vehicles and Motor Vehicle Equipment, Communications Equipment, and Electronic Components and Accessories than actual FDI.

[Figure 6 inserted here]

Third, we track the reported FDI activities in Orbis based on the MNC name, investment city, industry, and expected start year of production. We find that around 60 percent of foreign multinational entry described in the news can be matched with the Orbis data, suggesting that a large share of FDI news events are likely not materialized. We performed a check on FDI news events that were not identified in the actual subsidiary data and found numerous anecdotal evidence confirming many of these news events were indeed not realized in the end.

Fourth, we compare the distributions of expected investment size and actual investments. As seen in Panels A-C of Figure 7, we find that the expected employment and investment size tend to exceed the actual materialized employment and investment; while expected output tends to be lower than actual output. In Panels D-F where we demeaned the data, we also find the distributions of expected employment, output, and investment tend to be more concentrated than the distributions of actual employment, output, and investment. These patterns suggest that FDI news tends to over-estimate or over-report the scale of the investment and job creation, but is relatively conservative about output.

[Figure 7 inserted here]

5 Alternative Data Sources

There are two other data sources, namely, SDC Platinum and Zephyr, that also report FDI-related announcements, specifically, cross-border M&A rumors and deals (along with IPO, private equity, and venture capital rumors and deals). For each M&A rumor and deal, the datasets report the acquirer name, country, target firm name, announcement date, deal status, deal type, deal value and etc. The data sources of these datasets include news publications, company press releases, stock exchange announcements, advisor submission and etc.

To supplement our data, we have included and examined M&A news reported in Zephyr. As discussed earlier, we notice that, first, over 75 percent of the cross-border M&A announcements in Zephyr are completed M&As and less than 25 percent of the announcements are rumors. As expected, announcements of M&As, even though sometimes proceeded by rumors, are usually not made until the day the deals are completed. Even when rumors are circulated before the formal announcements, the time lag between rumors and formal announcements is usually very short. According to both SDC Platinum and Zephyr, the average time window between a rumor and a completed deal is around 30 days (36 in SDC Platinum and 28 days in Zephyr), leaving very little preparation time for domestic firms to make significant and meaningful responses.

Our dataset consists of both greenfield FDI and M&A, with the former accounting for 68 percent of all FDI news. When comparing the M&A portion of our data with the Zephyr M&A data, we found high correlations between the two sources in cross-country patterns. For example, the two datasets have a correlation of 0.91 across headquarter countries and 0.75 across host countries. Unlike M&A, greenfield FDI is usually reported well in advance, with an average time window of 25 months according to our data, allowing domestic firms sufficient time to react to the news. This is confirmed in our analysis.

When separately considering greenfield FDI and M&A, we found that while domestic firms respond significantly to greenfield FDI news, little reactions were observed in response to M&A news. Similarly, when incorporating Zephyr’s data into the analysis, we constructed M&A news and actual M&A events (at the country-industry-level) and found that news events on prospective M&A deals do not lead to statistically significant responses.

6 Heterogeneous Firm Response

In this Section, we report additional analysis on the heterogeneity of domestic firms’ responses and how they might vary (i) within each industry, (ii) across industries, and (iii) across countries.

Cross-Firm Heterogeneity In Section 5.4 of the paper, we explored how domestic firm responses to the threats of multinational competition might vary within each industry depending on their productivity level. Here, we incorporate a unique dataset from Orbis that reports top direct competitors of MNCs and investigate how news of an MNC’s new FDI activity (e.g.,

Toyota’s new investment in China) might affect the behavior of the MNCs’ top competitors, most of which are MNCs themselves (e.g., GM’s existing subsidiary in China), and how the responses of these global players might differ from those of average domestic firms. Given that top competitors are firm-specific, this also offers us an additional dimension of firm variation to identify the effect of FDI news. Our analysis in Table 1 shows that top competitors respond to the news by increasing local advertising expenses rather than innovation, suggesting increased marketing efforts to expand the local customer base. This is not surprising since these firms are most likely already competing with one another in other locations; a new Toyota subsidiary in China is hence more likely to influence GM’s marketing—than TFP and innovation decisions—in China.

[Tables 1-2 inserted here]

Next, we examine how firm responses to FDI threats could vary across different types of firms depending on the firm’s operation structure. For example, single-plant firms are likely to be more affected by the threat of foreign multinational competition due to their location concentration; similarly, firms that sell only domestically could respond more strongly to future competition in product markets. These hypotheses are confirmed in Table 2 in which we find that, compared to the baseline result reported in the paper, the estimated effect of FDI news is significantly stronger for single-plant firms as well as non-exporting and non-multinational firms in the host country (albeit to a lesser degree). Since our firm-specific measures rely on firm variations in product composition, we also separately consider multi-product firms and find similar results.

Cross-industry Heterogeneity Responses to the threat of foreign competition could also vary across industries. Aghion et al. (2005), for example, show that more competition may foster innovation for firms operating at similar technological levels, i.e., in the so-called "neck-to-neck" industries. In contrast, for technologically-laggard firms, the Schumpeterian effect of competition—where product market competition lowers post-innovation profit margins—could dominate and competition may dampen the innovation incentives. We explore this prediction by constructing two measures of "neck-to-neckness" for each country-industry pair: (i) the average productivity distance of domestic firms to the industry’s top productivity level, i.e., $mean[(TFP_i - \max TFP) / \max TFP]$ (following the methodology of Aghion et al., 2005); and (ii) the skewness of domestic firm productivity.⁵

As shown in Table 3, we find that firm TFP responses increase significantly with the extent to which an industry’s competition is "neck-to-neck" as predicted by Aghion et al. (2005). Industries with more "neck-to-neckness", reflected by either a lower average distance to the

⁵We also considered alternate definitions of productivity frontier including, for example, the mean of the top 95 percentile and excluding outliers and did not find the results to be sensitive.

productivity frontier or a more-left-skewed productivity distribution, show more productivity upgrading in response to foreign multinational threats. This result suggests that when domestic firms within a country and an industry are mostly concentrated toward the productivity frontier, the threat of foreign multinational competition leads to strong incentive to innovate and upgrade productivity, which subsequently helps domestic firms better compete with foreign rivals after the rivals actually enter. In contrast, technologically-laggard industries, featuring a greater concentration of unproductive domestic firms and a more right-skewed productivity distribution, have reduced incentives to innovate and upgrade productivity.⁶

[Table 3 inserted here]

Cross-country Heterogeneity Next we examine how domestic firms’ responses to FDI news might vary across FDI source and destination countries, specifically, between developed and developing host countries and between developed and developing source countries. We find in Table 4 that domestic firms in developing countries respond significantly to FDI news with, on average, a 4.3-percent increase in productivity. The productivity response in developed host countries, by comparison, is greater in magnitude, around 7.7 percent. Across FDI source countries, we find that domestic firms respond primarily to news of multinationals from developed countries; news events on FDI originating from developing countries does not exert a significant effect.

[Table 4 inserted here]

7 Additional Robustness Analysis

Exploring the Substance of News Given that the investment reported in the news could appear in various parts of the article (front, middle or last paragraphs), the position in which the investment information is first provided could offer another useful way for examining the importance of information. For each news article, we have recorded the position of the paragraph in which the investment was first described. Interacting that measure with the FDI news variable, we find that news articles in which information of the investment is provided in earlier paragraphs have a stronger effect on domestic firm responses.⁷

⁶We also exploited how the impact of FDI threats could vary depending on the potential degrees of localized product and factor markets. For example, industries whose domestic product markets are relatively shielded from foreign competition by high transportation cost could have incentives to react more strongly to the threat of foreign multinational firms coming to town. Industries with a greater dependence on local labor markets could also feel more threatened by increasing competition in labor markets by foreign multinational firms. We hence separately considered industries with higher-than-median levels of freight cost intensity and industries with higher-than-median levels of labor intensity and found that these industries indeed exhibit stronger TFP responses to FDI news. Each FDI news event led to 10.3 and 8.4 percent productivity growth in high freight-cost and high labor-intensity industries, respectively.

⁷An alternative explanation for the result that incumbents are responding more strongly to information described in the headline or an early paragraph is that those information is more important and valuable to the

Many FDI news articles also report the target markets of prospective foreign multinational firms. It is plausible to anticipate FDI threats targeted to host-country markets to exert a greater impact on the product market competition faced by domestic firms than FDI threats targeted to export markets. We hence sought to identify the motives and target markets of each prospective foreign multinational investment whenever the information is available and examined how domestic firm responses could vary systematically. As shown in Table 5, we find only news events on foreign investments targeted to domestic markets affect domestic firms' TFP, R&D and investment decisions. News events on export-platform investments, in contrast, have no significant influence.

[Table 5 inserted here]

Measures of Productivity and FDI News In our main analysis, we estimate firm productivity using a recent methodology developed by Gandhi et al. (2017). We have also compared our results using other productivity estimates including simple labor productivity, solow productivity, and Olley and Pakes (1996). As shown in Table 6, the results are qualitatively similar across the different productivity estimates.

As discussed in the paper, as in most existing empirical work in the literature, we do not observe firm-level physical output quantities and prices. Such information is especially difficult to obtain for the large cross-section of countries considered in this paper. We therefore estimate firm productivity based on the output value (instead of physical output) produced by each firm given its inputs.⁸ If (actual) foreign multinational competition reduces domestic firm markups or raises input costs, the estimated effects on revenue-based TFP measures could be biased downward. This could potentially explain the limited evidence on productivity spillover from foreign multinational firms in both this and previous studies. It is, however, worth noting that the central findings of the paper—that domestic firms engage in TFP upgrading, innovation, as well as product churning in response to the threat of foreign multinational competition—do not depend on the measures of productivity.

Next, we also consider an alternative measure of FDI news by normalizing the count of FDI news events and scaling it by host country population. We find in Table 7 that the results are qualitatively similar. A 1-percentage-point increase in the normalized ratio of FDI news is associated with 0.96 percent increase in TFP.

incumbents and hence exerts a greater effect.

⁸Note that even if price or physical output information were observed, the relationship between prices and markups would still be unclear. Higher prices can reflect higher quality, instead of higher markups. De Loecker (2011) introduces a methodology that uses detailed product-level information to recover the markups and the output-based productivity of firms. However, this approach requires specific assumptions regarding the mechanisms through which demand shocks affect prices and productivity. Another related point is that as in most firm-level datasets, our data do not report firm revenue and cost information by product for multi-product firms and hence do not allow us to estimate product-specific firm productivity. See De Loecker, Goldberg, Khandelwal, and Pavcnik (2016) for methodologies to estimate markups from production data with multi-product firms.

[Tables 6-7 inserted here]

Large FDI News Bias A plausible concern that could arise in our analysis is that media might have the tendency to report large investments or investments undertaken by large companies, which could then introduce an upward bias in our estimated effects of FDI news. We address the issue and its potential implications in several ways. First, we examine the correlations between the expected size of FDI (measured by investment value, output, or employment) and the frequency of being reported and find them to be generally lower than 0.2. The correlations of the expected size of FDI with the influence of the news publications (measured by circulation volume) are about 0.1, while the correlations with the content length of the news (measured by the word count) are about 0.05. These observations suggest that—among FDI events reported in the news—large FDI events do not systematically receive large media attention.

Second, we measured actual FDI entry also based on the information from news sources. By measuring both anticipated and actual FDI from the news, we address the concern that the FDI news variable might capture only large FDI activities whereas the actual entry variable from Orbis includes FDI activities of all scales. We found that the findings remain similar.

Third, we re-performed our main analysis by separately focusing on FDI news with less-than-median expected investment value, output, or employment. We find that, on average, these relatively small-scale FDI news events exert a quantitatively similar impact on domestic firm responses.

Data Coverage Our analysis spans across a wide sample of countries; however, the degree of coverage, in terms of news publications and domestic firms, can vary significantly across countries. In this sub-section, we examine the robustness of the results by restricting the analysis to countries with the best data coverage.

First, we acknowledge that Factiva, albeit being the most comprehensive news archive in the world, varies in its news coverage across countries. In many countries, Factiva covers both national and subnational local news publications (for example, our final sample of FDI news covers 181 publications in the U.S., 131 in the U.K., and 82 in Russia, while the complete coverage of Factiva—with or without FDI news—is much broader in all countries). However, in other—often less developed—countries, Factiva covers primarily national and major local news publications. To address this issue, we perform our main analysis for the top 10 countries with the largest number of news publications in Factiva and find that our main findings remain largely similar (column (2) of Table 7).

Second, we also address the varying coverage of Orbis across countries. As noted before, while the coverage of Orbis is fairly comprehensive in countries such as France, Spain, Italy, Romania, Ukraine, and South Korea, it can be less satisfactory in others. We examine the sensitivity of the results by focusing on 15 countries with the largest firm coverage. As shown in column (3) of Table 7, we find that the main result does not change qualitatively.

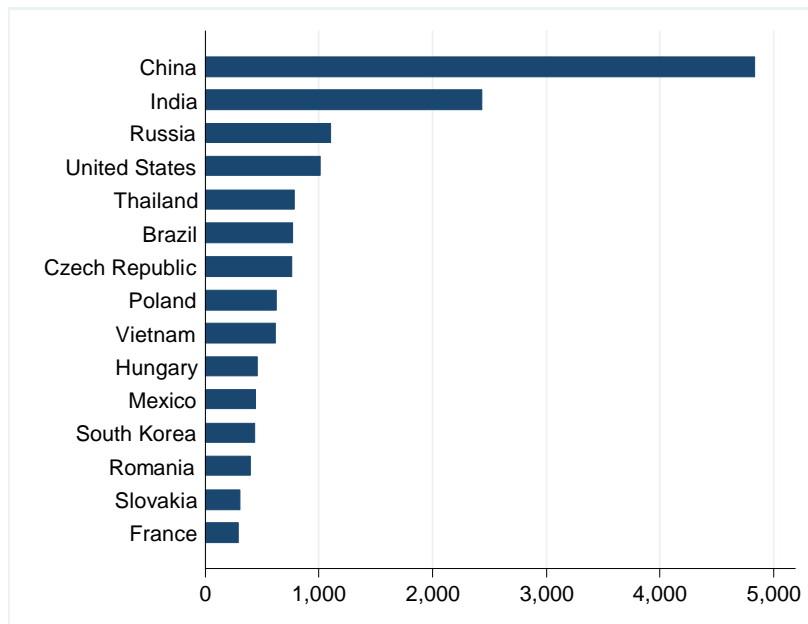


Figure 1: Top host countries by FDI news events

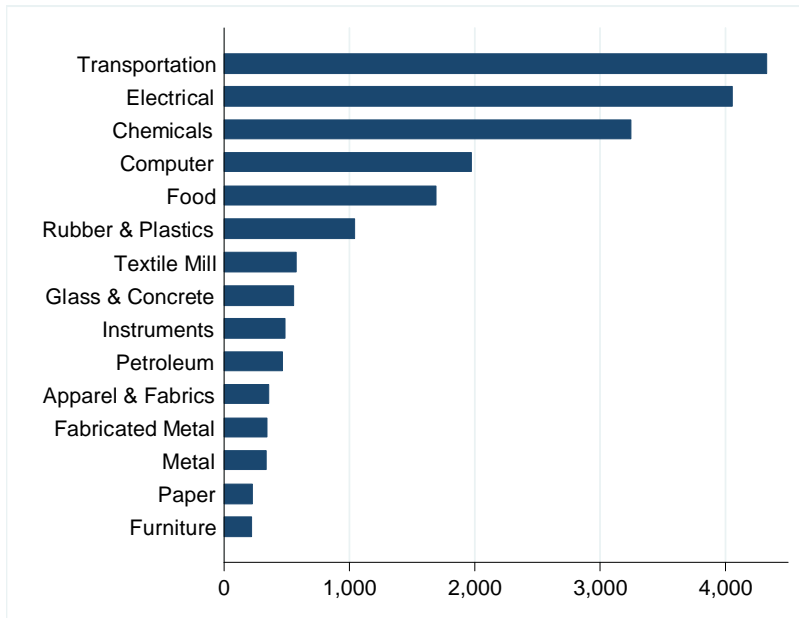


Figure 2: Top industries by FDI news events

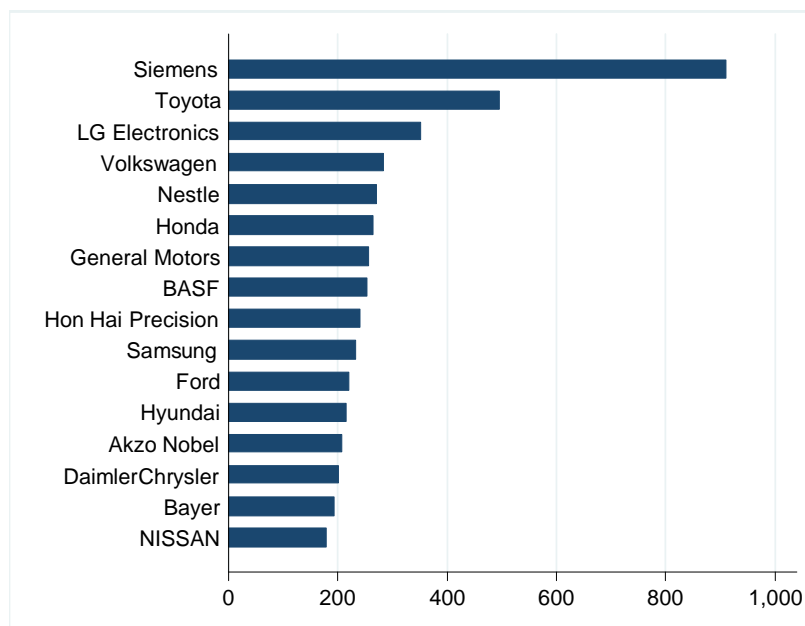


Figure 3: Top multinational firms by FDI news events

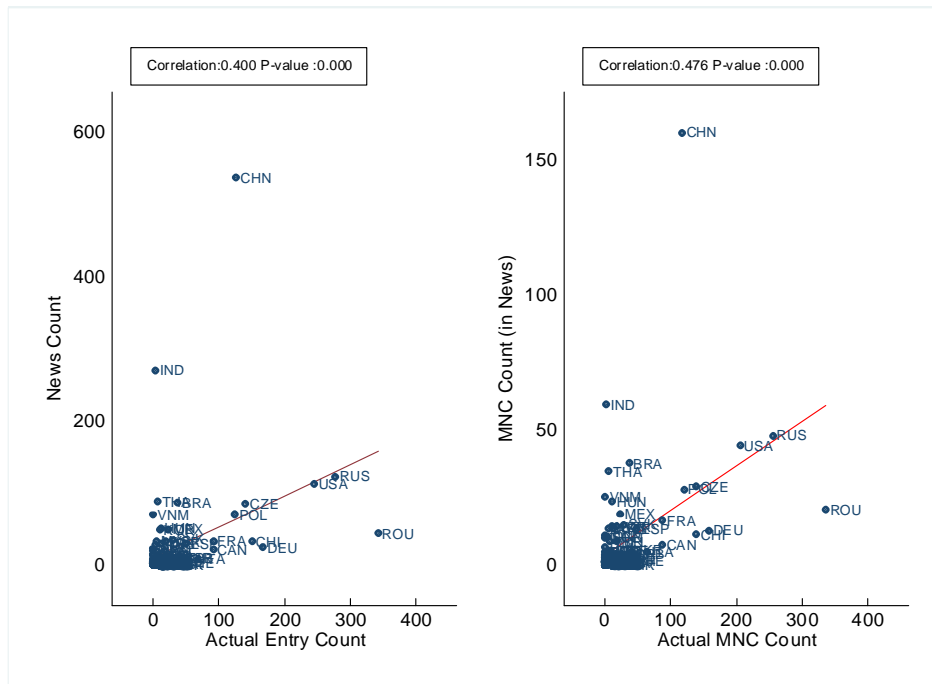


Figure 4: Correlations between FDI news and actual FDI across host countries

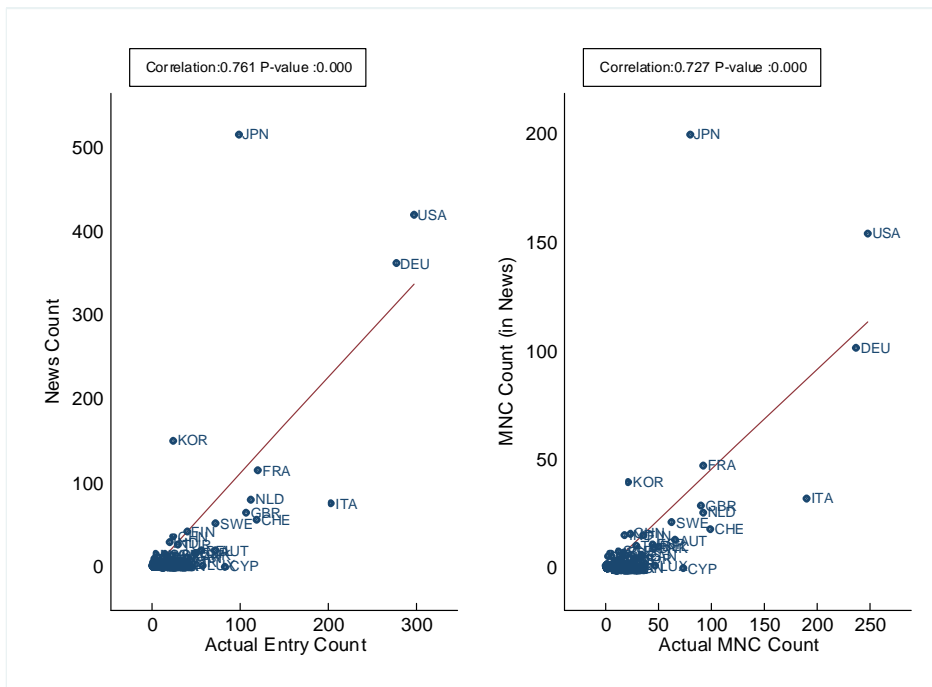


Figure 5: Correlations between FDI news and actual FDI across headquarter countries

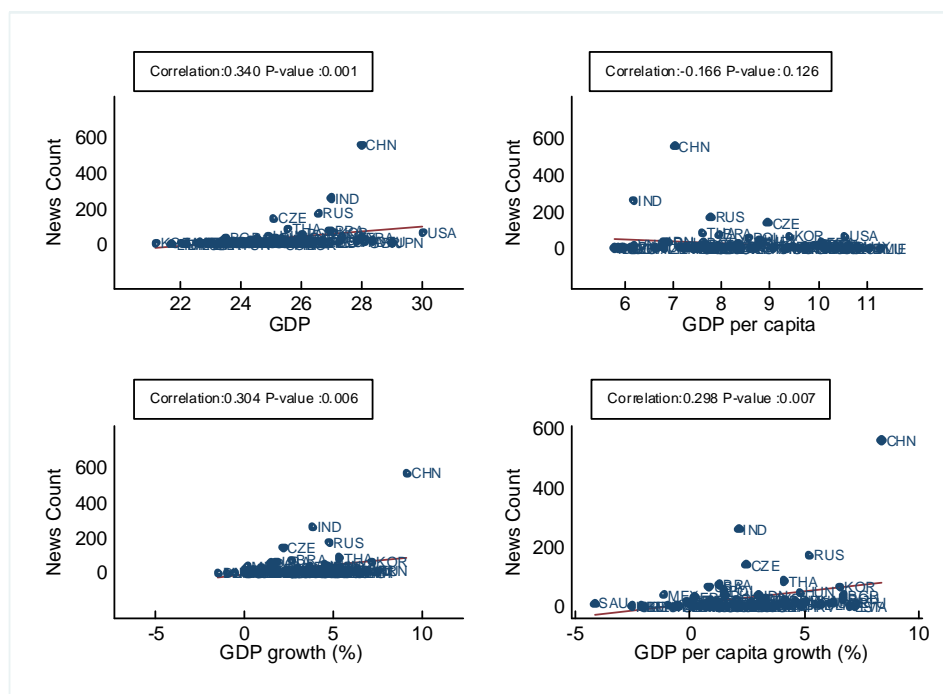


Figure 6: Correlations between FDI news and host country characteristics

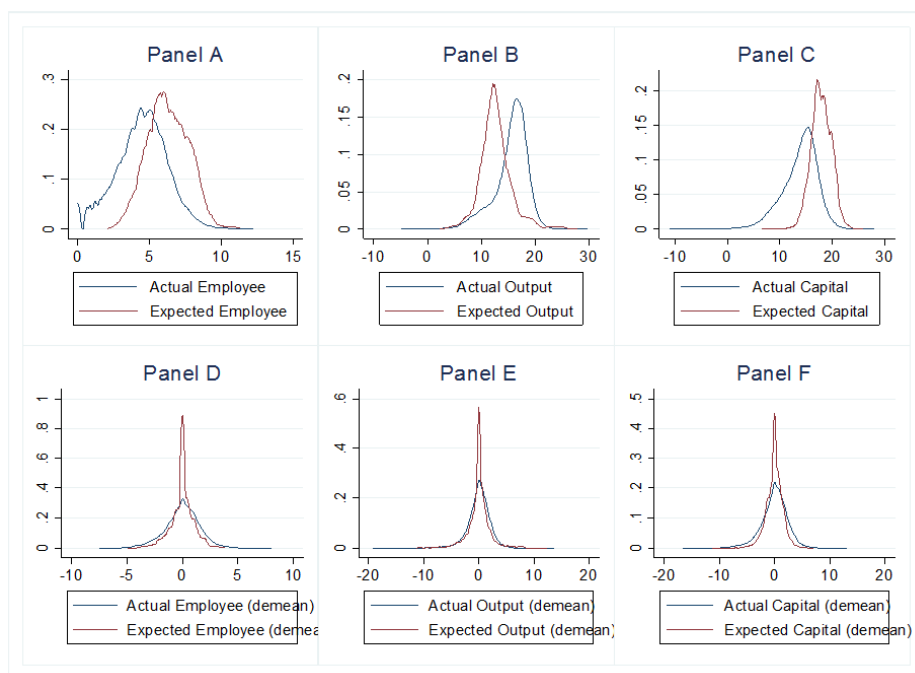


Figure 7: The distributions of expected and actual investments

Table 1: Global Direct Competitors' Responses to FDI News

	(1)	(2)
Dependent variable	TFP growth	Advertising growth
Sample	Top firms	Top firms
FDI news by direct competitors	-0.049 (0.085)	0.011** (0.004)
Ever threatened by director competitors	0.032 (0.046)	-0.003 (0.002)
Size	(0.014) (0.011)	0.000 (0.001)
Capital intensity	0.015 (0.015)	0.000 (0.000)
Age	0.000 (0.001)	0.000 (0.001)
City-industry-year FE	Yes	Yes
City-industry-year cluster	Yes	Yes
Obs	2,238	2,234
R square	0.748	0.658

Notes: This table reports global top direct competitors' response to FDI news. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 2: Heterogeneous Firm Responses to FDI News by Firm Type

	(1)	(2)	(3)	(4)
Dependent variable	TFP growth	TFP growth	TFP growth	TFP growth
Sample	Single-plant	Multi-product	Non-exporting	Non-MNC
FDI news (unique)	0.071*** (0.037)	0.059** (0.029)	0.055*** (0.020)	0.060* (0.036)
Actual FDI	-0.001 (0.007)	0.010 (0.012)	(0.004) (0.007)	(0.004) (0.007)
Domestic news	-0.005 (0.028)	0.036** (0.016)	0.007 (0.013)	-0.035 (0.027)
Size	0.105*** (0.001)	0.109*** (0.001)	0.114*** (0.001)	0.010*** (0.001)
Capital intensity	-0.011*** (0.001)	0.012*** (0.001)	0.027*** (0.001)	-0.011*** (0.001)
Firm FE	Yes	Yes	Yes	Yes
City-industry-year FE	Yes	Yes	Yes	Yes
City-industry cluster	Yes	Yes	Yes	Yes
Source	Full	Full	Full	Full
Obs	1,146,186	628,772	1,375,033	1,190,852
R square	0.267	0.292	0.351	0.266

Notes: This table reports heterogeneous firm response to FDI news by firm type. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 3: Heterogeneous TFP Responses to FDI News across Industries

Dependent variable	(1)	(2)
Sample	TFP growth	TFP growth
	All	All
FDI news	0.050*	0.009
	(0.028)	(0.007)
*TFP ave. distance to frontier	-0.008**	
	(0.004)	
TFP skewness		-0.012
		(0.007)
Actual FDI	-0.001	-0.001
	(0.003)	(0.003)
Domestic news	0.006	0.005
	(0.004)	(0.004)
Size	0.117***	0.116***
	(0.001)	(0.001)
Capital intensity	0.036***	0.035***
	(0.001)	(0.001)
Firm FE	Yes	Yes
City-industry-year FE	Yes	Yes
City-industry cluster	Yes	Yes
Source	Full	Full
Obs	1,499,977	1,602,222
R square	0.345	0.350

Notes: This table reports domestic firms' heterogeneous TFP response to FDI news across industries depending on their levels of "neck-to-neckness". The dependent variable is a domestic firm's log change of TFP. The variable "FDI news" is the average number of unique FDI news events a firm is exposed to across its products. The variable "actual FDI" is the average number of actual entry a firm faces across its products. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 4: Heterogeneous TFP Responses to FDI News across Countries

	(1)	(2)
Dependent variable	TFP growth	TFP growth
Sample	All	All
FDI news		
- Developing host countries	0.043** (0.018)	
- Developed host countries	0.077* (0.042)	
- Developing source countries		-0.002 (0.033)
- Developed source countries		0.043** (0.017)
Actual FDI	-0.003 (0.007)	-0.004 (0.005) 0.005
Domestic news	0.013 (0.011)	0.007 (0.010)
Size	0.116*** (0.001)	0.202*** (0.001)
Capital intensity	0.035*** (0.001)	0.032*** (0.001)
Firm FE	Yes	Yes
City-industry-year FE	Yes	Yes
City-industry cluster	Yes	Yes
Source	Full	Full
Obs	1,609,542	1,609,542
R square	0.350	0.350

Notes: This table reports heterogeneous TFP responses to FDI news in developed v.s. developing countries. The dependent variable is a domestic firm's log change of TFP. The variable "FDI news" is the average number of unique FDI news events a firm exposed to across its products. The variable "actual FDI" is the average number of actual entry a firm faces across its products. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 5: The Content of News: FDI Motives

	(1)	(2)	(3)
Dependent variable	TFP growth	RD growth	Investment growth
Sample	News with info	News with info	News with info
FDI news (local market)	0.145*** (0.031)	0.358** (0.177)	0.385*** (0.144)
FDI news (export market)	0.003 (0.143)	-0.111 (0.276)	-0.307 (0.292)
Actual FDI count	0.051** (0.022)	0.081 (0.107)	-0.079 (0.084)
Domestic news	0.004 (0.007)	0.098** (0.043)	0.038 (0.030)
Size	0.050*** (0.002)	-0.042*** (0.009)	-0.092*** (0.005)
Capital intensity	-0.021*** (0.002)	-0.009 (0.007)	-0.057*** (0.005)
Age			
Firm FE	Yes	Yes	Yes
City-industry-year FE	Yes	Yes	Yes
City-industry cluster	Yes	Yes	Yes
Source	Full	Full	Full
Obs	601,707	437,643	919,643
R square	0.444	0.398	0.011

Notes: This table examines domestic firms' TFP response to the information embodied in the news, specifically, information on the motives (target markets) of FDI. The dependent variable is a domestic firm's log change of TFP. The variable "FDI news" is the average number of unique FDI news events a firm is exposed to across its products. The variable "actual FDI" is the average number of actual entry a firm faces across its products. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 6: TFP Response to FDI News: Alternative Productivity Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Labor prod. growth	Solow prod. growth	Solow prod. growth	Olley-Pake prod. growth	Olley-Pake prod. growth	Olley-Pake prod. growth
Sample	All	All	All	All	All	All
FDI news (all)	0.008*** (0.002)		0.007*** (0.002)		0.006*** (0.002)	
FDI news (unique)		0.034*** (0.012)		0.033*** (0.016)		0.048*** (0.017)
Actual FDI	0.002 (0.008)	0.002 (0.008)	-0.002 (0.011)	-0.003 (0.011)	-0.003 (0.007)	-0.003 (0.007)
Domestic news	0.019* (0.010)	0.019* (0.010)	0.021 (0.014)	0.022 (0.014)	0.013 (0.011)	0.014 (0.011)
Size	0.171*** (0.001)	0.171*** (0.001)	0.067*** (0.001)	0.067*** (0.001)	0.118*** (0.001)	0.067*** (0.001)
Capital intensity	-0.138*** (0.001)	-0.138*** (0.001)	0.347*** (0.001)	0.347*** (0.001)	0.035*** (0.001)	0.035*** (0.001)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
City-industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes
City-industry cluster	Yes	Yes	Yes	Yes	Yes	Yes
Source	Full	Full	Full	Full	Full	Full
Obs	1,987,960	1,987,960	2,025,630	2,025,630	1,609,799	1,609,799
R square	0.381	0.381	0.413	0.413	0.351	0.351

Notes: This table examines domestic firms' TFP responses to firm-specific measures of FDI threats and actual FDI in Chinese and non-Chinese data samples. The dependent variable is a domestic firm's log change of TFP. The variables "FDI news (all)" and "FDI news (unique)" are, respectively, the average number of all or unique FDI news events a firm is exposed to across its products. The variable "actual FDI" is the average number of actual entry a firm faces across its products. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table 7: Additional Robustness Analysis

	(1)	(2)	(3)
Robustness	Normalized	Top countries	Top countries
Dependent variable	news	by publications	by firms
Sample	TFP growth	TFP growth	TFP growth
	All	All	All
FDI news	0.964*** (0.338)	0.050*** (0.018)	0.051*** (0.018)
Actual FDI	-0.003 (0.007)	0.015 (0.017)	-0.001 (0.007)
Domestic news	0.014 (0.011)	0.022* (0.011)	0.014 (0.011)
Size	0.116*** (0.001)	0.153*** (0.002)	0.118*** (0.001)
Capital intensity	0.035*** (0.001)	0.186*** (0.002)	0.039*** (0.001)
Firm FE	Yes	Yes	Yes
City-industry-year FE	Yes	Yes	Yes
City-industry cluster	Yes	Yes	Yes
Source	Full	Full	Full
Obs	1,609,542	557,970	1,473,447
R square	0.350	0.773	0.354

Notes: This table reports additional robustness analysis. The dependent variable is a domestic firm's log change of TFP. The variable "FDI news" is the average number of unique FDI news events a firm faces across its products. The variable "actual FDI" is the average number of actual entry a firm faces across its products. All variables on the right hand side are lagged by one year. All regressions include firm and city-industry-year fixed effects. Standard errors are clustered at the city-industry level and reported in the parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Table A.1: The Composition of FDI News Events

Form	Share	Motive	Share
Greenfield	0.68	Local market access	0.39
Mergers and acquisitions	0.07	Export platform	0.59
Joint venture	0.14	Comparative advantage	0.08
Country	Share	Credibility	Share
North-North	0.31	FDI with certainty	0.52
North-South	0.56	FDI with uncertainty	0.48
South-North	0.02		
South-South	0.11		

Notes: This table reports the share of FDI news events in each category.