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Global Market Power of Japanese Multinational Firms*

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Abstract

We examine how the global market power of multinational firms has evolved and what factors have driven this evolution. To this end, we estimate the markups of foreign subsidiaries and their parent firms using a matched subsidiary-parent dataset of Japanese multinational firms covering the period from 2001 to 2018. Our main findings are as follows. First, the markups of foreign subsidiaries did not exhibit a long-run upward trend. Second, sales growth among foreign subsidiaries tended to be concentrated in firms with lower markups, contributing to a decline in the aggregate markup. Third, the parent firms' markups had a sizable positive effect on the markups of their foreign subsidiaries. Fourth, certain host-country characteristics, such as GDP and the rule of law, were also associated with subsidiaries' markups.

Keywords: Global market power, Japan, markup, multinationals
JEL classification: D24, F23, L11

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1. Introduction

The rise in market power is one of the most important issues in many countries. A seminal work by De Loecker et al. (2020) showed that the market power of US firms in terms of markups increased over the period of 1980-2016. They further showed that the increase was driven mainly by the upper tail of the markup distribution and that there was a reallocation of market share from low-markup to high-markup firms. Recent studies find similar trends in other developed countries (Kouvavas et al., 2021; Diez et al., 2021). Such a rise of market power, especially that of a small number of large firms, has been associated with a decrease in labor share and a stagnation of business dynamism (Akcigit and Ates, 2021).

In light of recent concerns about rising market power, this study examines how the global market power of multinational firms has evolved, with a particular focus on Japanese multinationals. Japan provides a good research field as it has the second-largest stock of outward foreign direct investment (FDI), following the United States (United Nations, 2025) with destination countries ranging widely from developing and emerging to developed countries.[1] We provide new evidence on the evolution of foreign subsidiaries' markups using a matched subsidiary-parent dataset spanning the period 2001-2018. Foreign subsidiaries can exert market power in host countries through various channels, including product quality, the reputation of the parent firm, and monopolistic power. Despite their potential significance, studies on the markups of foreign subsidiaries remain limited, with the notable exception of Keller and Yeaple (2020). Our study aims to fill this gap by addressing two central questions. First, how has the global market power of Japanese multinational firms evolved over time? Second, what factors have driven the evolution of subsidiaries' markups?

To tackle these questions, we estimate subsidiaries' markups using an approach following De Loecker et al. (2020). While their method for obtaining output elasticities from estimating the production function is not directly applicable to our data due to data limitations, we instead use the share of the Cost of Goods Sold (COGS) in total costs at the industry-year level as a proxy for variable input elasticity. Under the assumption of variable input cost minimization, we estimate markups as the ratio of sales to COGS adjusted by this elasticity proxy.

Using the estimated markups, we first trace their evolution over time by calculating sales-weighted averages at the aggregate level. The results show that aggregate markups increased

[1] For the stock of outward foreign direct investment by destination country, see Balance of Paymens Related Statistics published by the Bank of Japan.

during the 2000s but declined in the 2010s, indicating no sustained upward trend. This contrasts with the continuous rise observed in U.S. multinational subsidiaries (Keller and Yeaple, 2020). Second, to investigate the underlying mechanisms of the evolution of the aggregate markup, we decompose the changes in markups into within-firm and reallocation effects, following Olley and Pakes (1996). The decomposition reveals a negative reallocation effect: sales growth was concentrated in subsidiaries with lower markups, contributing to a decline in the aggregate markup, especially in the 2010s.

Thirdly, to explore the drivers of the change in subsidiaries' markups over time, we regress the markups of subsidiaries on various subsidiary-, parent-, and host-country-level variables. In this analysis, we include subsidiary fixed effects as well as time-varying industry fixed effects to absorb differences in subsidiary-level variable input elasticity. The analysis yields several key findings. First, the parent firms' markups have a sizable positive effect on the markups of their foreign subsidiaries, suggesting the transmission of product attributes, brand reputation, and managerial skills from the parent to the subsidiaries. Second, certain host-country characteristics are associated with the subsidiaries' markups. Among these, higher GDP and stronger rule of law are positively associated with subsidiaries' markups, suggesting that better institutional environments help firms charge higher prices. Protection of property rights, in particular, appears to enable subsidiaries to raise markups. In contrast, GDP per capita is negatively associated with markups, possibly reflecting fierce competition in developed economies.

This study contributes to three strands of literature. First, it is related to the literature on the relationships between FDI and foreign subsidiaries' markups (Sembenelli and Siotis, 2008; Muraközy and Russ, 2015; Stiebale and Vencappa, 2018; Bircan, 2019; and Keller and Yeaple, 2020).[2] These studies, except for Keller and Yeaple (2020), examine the effects of foreign firms' mergers and acquisitions (M&A) on local target firms' markups and most of the studies find that target firms' markups increased after M&A. However, they do not closely study the relationship between target firms' markups and acquirers' characteristics.

Keller and Yeaple (2020) is the closest to this study. Using data on US-owned firms for the years 1999 to 2014, they show that the market power of manufacturing firms has risen

[2] Apart from subsidiaries' markups, which we focus on, a related issue is whether the presence of foreign-invested firms has a positive effect on local firms' markups through the technological spillover effect or a negative effect on them through competition pressure. Studies obtain mixed results. Using US manufacturing industry-level data, Chung (2001) find that the presence of foreign affiliates has a negative effect on the industry's markups, indicating inward FDI heighten competition. Using Spanish firm-level data, Sembenelli and Siotis (2008) obtain weak evidence that foreign presence dampens margins although they find positive spillover effects in the case of knowledge intensive industries. Using Chinese firm-level data, Yang (2023) find a positive spillover effect.

substantially, and mostly due to higher markups within firms while market share reallocation plays a minor role. They also examine how foreign subsidiaries' markups are related to the parent firm's characteristics such as sales and the degree of vertical integration and host-country characteristics such as labor productivity and market concentration. Besides the difference in home countries, this study differs from Keller and Yeaple (2020) in two ways. First, Keller and Yeaple (2020) measure markups as the ratio of sales to wage bills. This ratio is valid if labor can be freely and quickly adjusted. Given that this assumption is unlikely to hold due to strict labor regulations in Japan, we avoid using the wage bill ratio and instead adopt an alternative approach using the ratio of sales to COGS. Second, we examine the effect of parent firms' markups on their subsidiaries' markups. Since parent firms' markups are likely to reflect the product quality or reputation in the product market, they are likely to affect subsidiaries' markups.

The second related literature is the studies on the markups of multinational and exporting firms. Using panel data of manufacturing firms over the period 1994-2012 in Japan, Dobbelaere and Kiyota (2018) find that while exporters are more likely to operate in an imperfectly competitive product market, the opposite holds for multinationals. Using parent-foreign subsidiary matched data on Japanese firms from 1997 to 2018, Hosono et al. (2022) find that for manufacturing firms, the parent firms increase their markups as the ratio of foreign subsidiaries' sales to parent firms' sales, whereas they do not significantly change their markups in response to the initiation of foreign production. These studies examine parent firms' markups and not those of foreign subsidiaries.

Third, this study is also related to the literature on the markups of Japanese firms (Nakamura and Ohashi, 2019; Cabinet Office, 2023; Aoki et al., 2024). These studies find that the markups of Japanese firms did not tend to increase but were either stable or slightly declining. Aoki et al. (2024), for example, use financial statements of listed firms in Japan since the 1970s to find that markups have declined since the late 1990s. Unlike these studies, we focus on foreign subsidiaries of Japanese multinational firms. Interestingly, however, the evolution of the markups of foreign subsidiaries is similar to their parent firms in Japan in that both did not exhibit a sharp increasing trend. This may be because foreign subsidiaries' markups are affected by parent firms' markups as we find in our results.

The remainder of the study is structured as follows. Section 2 provides the framework for measuring markups and describes the data. Section 3 then provides the descriptive statistics and the decomposition results. Section 4 provides our estimation method and results. Section 5 concludes.

2. Methodology for estimating markups and data

2.1 Methodology for estimating markups

To estimate firm-level markups, we follow the production approach proposed by De Loecker and Warzynski (2012), which is based on a firm's cost minimization behavior. In this framework, the firm minimizes its cost for variable inputs. The problem faced by firm i is expressed as follows

$$\min TC_i = P_{Vi}V_i + R_iK_i$$
$$s.t.\, Q_i = Q_i(K_i, V_i),$$

where TC_i, V_i and P_{Vi} denote total costs, variable inputs and their prices, and K_i and R_i represent fixed inputs and their prices. The firm's production function is denoted by $Q_i(K_i, V_i)$.

The first-order condition for the above cost minimization with respect to the variable input implies

$$P_{Vi} = \lambda_i \frac{\partial Q_i(K_i, V_i)}{\partial V_i},$$

where λ_i is the Lagrange multiplier, representing the marginal cost. The firm's markup, μ_i, is then given by

$$\mu_i = \frac{P_i}{\lambda_i} = \frac{P_iQ_i}{P_{Vi}V_i} * \varepsilon_{Vi},$$

where P_i denotes the output price and ε_{Vi} denotes the variable input elasticity defined as $\varepsilon_{Vi} = (\partial Q_i/Q_i)/(\partial V_i/V_i)$.

In many studies, the estimate of the variable input elasticity is obtained through the estimation of production function. The direct estimation of the production function is, however, challenging in this study due to data limitations on physical capital and output quantities. We, therefore, employ an alternative method using cost shares, following De Loecker et al. (2020) and Edmond et al. (2023). Assuming constant returns to scale and cost minimization for all inputs, the elasticity is expressed as

$$\hat{\varepsilon}_{Vi} = \frac{P_{Vi}V_i}{P_{Vi}V_i + R_iK_i}.$$

Therefore, the elasticity can be inferred from cost data by using the above assumptions. In our baseline analysis, we follow De Loecker et al. (2020) and use the industry-year median share of COGS in total costs proxied by Operating Expenses (OPEX), defined as the sum of COGS and Selling, General and Administrative (SGA).[3]

2.2 Data

Our empirical analysis combines two datasets collected by Japan's Ministry of Economy, Trade and Industry (METI): the Basic Survey on Overseas Business Activities (BSOBA) and the Basic Survey of Japanese Business Structure and Activities (BSJBSA). The BSOBA includes information on foreign subsidiaries with at least 10% ownership by a Japanese firm, or more than 50% ownership by another affiliated foreign firm. These surveys report financial data, including sales, COGS, and SGA. However, the detailed breakdown of expenses is limited. The industries are defined at the two-digit level. The BSJBSA covers firms with 50 or more employees and capital of at least 30 million yen. The BSJBSA includes manufacturers and selected service sectors, and provides financial data, trade values, and firm attributes.

In the regression analyses, we use host-country data. Specifically, we obtain macroeconomic data from the World Development Indicators of the World Bank and the Gravity database of the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), constructed by Head, Mayer, and Ries (2010) and Head and Mayer (2014).

3. Markups of Foreign Subsidiaries of Japanese Multinational Firms

We begin by analyzing the evolution of markups among Japanese foreign subsidiaries using the BSOBA data. We winsorize the markups at the top and bottom 1% of the markup distribution in each year to address outliers. The sales-weighted average markups are shown in Figure 1. The figure shows that the estimates of the aggregate markups for the foreign subsidiaries in all industries rose in the 2000s and then declined in the 2010s. The markups of the foreign subsidiaries belonging to the manufacturing industry slightly declined over the whole sample period, contrasting with the continuous increase observed among US subsidiaries as reported by

[3] De Loecker et al. (2020) obtain output elasticities from three alternative methods: estimating the production function, using cost shares, and assuming a constant elasticity (0.85). We checked the robustness by adopting a constant elasticity value of 0.85. This assumption has been shown to produce estimates consistent with more detailed structural approaches by De Loecker et al. (2020). The result is presented in Figure A1 in the Appendix, showing similar patterns to the results using the cost share approach, though the decline in the 2010s disappears.

Keller and Yeaple (2020).[4]

=== Figure 1 ===

Next, we decompose the change in aggregate markups into within- and between-firm components based on Olley and Pakes (1996)'s approach as follows:

$$\mu = \bar{\mu} + \sum_i \left(s_i - \frac{1}{N}\right)(\mu_i - \bar{\mu}).$$

In this equation, $\mu = \sum_i s_i \mu_i$ represents the aggregate markup, expressed by the markups of foreign subsidiary i, μ_i, and its sales share, s_i. $\bar{\mu} = \sum_i \mu_i / N$ represents the simple average of markups with the number of Japanese foreign subsidiaries, N. The change in this term is interpreted as the within-firm component. The second term in the equation shows the covariance between markups and sales shares. The aggregate markup takes a higher value when the sales shares are larger for the subsidiaries with higher markups. The change in this term, therefore, shows the between-firm component.

The result of the decomposition is reported in Table 1. The within terms are positive in many years during the sample period. Particularly, the increase is large for all industries in the 2000s. This result implies that Japanese multinationals set higher markups when producing in foreign countries over time. In contrast, the between-firm terms show negative values. The negative between-firm term indicates a negative reallocation effect: firms with lower markups expanded their sales, thereby pulling down the aggregate markup. This pattern was particularly prominent during the 2010s, suggesting that Japanese multinationals may have been more involved in price competition in the global market, and the sales were shifted to the firms setting lower markups, thereby lower prices in the 2010s. The foreign subsidiaries of Japanese multinationals have been making efforts to differentiate their products and charge higher markups, but the global market was in favor of firms with lower markups, which are typically associated with less differentiated products offered at lower prices.[5]

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[4] We also explored the changes in the quantiles of the subsidiaries' markups. The results are presented in Figure A2 in the Appendix. In all industries, the markups of the foreign subsidiaries in the upper tail show a slight increase throughout the sample period, while the corresponding markups in the manufacturing industry remain almost constant.

[5] The effects of entry and exit in foreign markets are not included in Table 1. These effects are not explicitly considered in the baseline analysis because the sample size of the BSOBA is limited, making it difficult to capture the entry and exit of foreign subsidiaries with precision. However, we attempted to explore these

=== Table 1 ===

Additionally, we analyze the role of host country, following the decomposition method proposed by Keller and Yeaple (2020). To apply this method, we first define the markups at the country level as

$$\mu_c = \sum_{i \in I_c} \frac{s_i}{\bar{s}_c} \mu_i,$$

where I_c denotes the set of subsidiaries located in country c. $\bar{s}_c = \sum_{i \in I_c} s_i$ is the sum of the sales shares of subsidiaries in country c. Similarly, the covariance of sales share and markups in country c is defined as

$$cov_c = \sum_{i \in I_c} \left(\frac{s_i}{\bar{s}_c} - \frac{1}{N_c} \right) (\mu_i - \bar{\mu}_c),$$

where N_c denotes the number of Japanese subsidiaries in country c, and $\bar{\mu}_c = \sum_{i \in I_c} \mu_i / N_c$ is the simple average of markups in country c. Then, $\mu_c = \bar{\mu}_c + cov_c$ holds for all countries.

By using these definitions, the globally aggregated markup is decomposed as

$$\mu = \sum_c \bar{s}_c \mu_c = \sum_c \bar{s}_c \bar{\mu}_c + \sum_c \bar{s}_c cov_c.$$

In this equation, the first term of the last equation $\sum_c \bar{s}_c \bar{\mu}_c$ is the weighted average of country-level markups. The second term $\sum_c \bar{s}_c cov_c$ is the weighted average of the covariance between the sales share and markups within a country. This term is positive when foreign subsidiaries with higher markups have larger sales shares within a country. We focus on the changes in these two terms to identify the key factors driving the evolution of aggregate markups. In particular, if

effects using the decomposition method proposed by Melitz and Polanec (2015). The results are reported in Table A1 in the Appendix. Negative reallocation effects in all industries are not clearly observed in Table A1, suggesting that changes in aggregate markups may be partially driven by entry and exit of the foreign subsidiaries. The negative net entry term in Table A1 implies that low-markup subsidiaries have entered the market, while high-markup subsidiaries have exited. In the manufacturing industry, we still observe negative reallocation effects among incumbent subsidiaries.

within-country changes are important, cross-country reallocation may not play a major role in the evolution of aggregate markups.[6]

The results of the above decompositions are presented in Table 2. The first column reports positive values throughout the entire period, especially during the 2000s, suggesting that the markups of individual foreign subsidiaries have been increasing. In contrast, the values in the second column are negative in the 2010s, indicating that the increase in sales among low-markup subsidiaries occurred within countries. In other words, the sales reallocation at the country level is not a major factor in explaining the evolution of aggregate markups.

=== Table 2 ===

Additionally, we apply a similar method to decompose the aggregate markups into parent firm-level terms rather than the country-level terms. If sales reallocation across subsidiaries within multinationals is a major driver of the evolution of aggregate markups, the second term would play an important role. The results are presented in Table 3. The first column reports positive values during the 2000s and negative values during 2010s. The second column also reports negative values in the 2010s, indicating that the decline in the aggregate markup in the 2010s is explained both within and between multinationals in all industries. On the contrary, the negative reallocation is not observed for the manufacturing industry.

=== Table 3 ===

4. Estimation

4.1 Estimation method

In this section, we examine the determinants of subsidiaries' markups. We first provide the explanation of the estimation method. Using the indices of foreign subsidiary i, parent firm f,

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[6] Keller and Yeaple (2020) further decompose the two terms into two components each, as follows

$$\mu = \bar{\bar{\mu}} + \sum_c \left(\bar{s}_c - \frac{1}{C}\right)(\bar{\mu}_c - \bar{\bar{\mu}}) + \overline{cov} + \sum_c \left(\bar{s}_c - \frac{1}{C}\right)(cov_c - \overline{cov}).$$

In this equation, the first term $\bar{\bar{\mu}} = \sum_c \bar{\mu}_c / C$ is the simple average of country-level markups with the number of countries C. The second term is the covariance between the country share and country mean markups. This term is positive when the total sales of foreign subsidiaries are higher in the countries with higher average markups. The third term $\overline{cov} = \sum_c cov_c / C$ is the average of within-country covariance. This term is positive when the sales are larger for the foreign subsidiaries with higher markups within a country. The last term represents the covariance between country sales share and within-country covariance. This term is positive when the total sales are larger in countries with higher covariance. We applied this method and presented the results in Tables A2 and A3 in the Appendix.

country c, industry s, and year t, we estimate the following equation:

$$\ln \mu_{it} = \boldsymbol{x_{it}\beta_1} + \boldsymbol{x_{ft}\beta_2} + \boldsymbol{x_{ct}\beta_3} + \delta_i + \delta_{st} + u_{it}.$$

The dependent variable, $\ln \mu_{it}$, is the logarithm of the markup, computed using the sales-to-COGS ratio. We winsorize the top and bottom 1% of the distribution of the markups by year to mitigate the influence of outliers.

Vectors of variables, $\boldsymbol{x_{it}}$, $\boldsymbol{x_{ft}}$, and $\boldsymbol{x_{ct}}$, denote explanatory variables at the subsidiary-year, parent firm-year, and host country-year levels, respectively. The set of subsidiary-year variables includes export and import dummies, dummies for export/import with Japan, employment, and an R&D dummy. The set of parent firm-year variables includes the markups, employment, total assets, firm age, advertising expenses, an R&D dummy, sales growth rate from the previous year, cash flow, manufacturing dummy, and commerce dummy. The set of host country-year variables includes GDP, GDP per capita, GDP growth rate, inflation rate, real effective exchange rate, index of the rule of law, a dummy for FTA with Japan, total sales and the number of Japanese subsidiaries located in the host country. We take natural logarithms of the employment of subsidiary and parent firm, markups, total assets, advertising expenses, GDP, GDP per capita, total sales and the number of Japanese subsidiaries in the host country.

We also control for various dimensions of fixed effects. We include subsidiary and industry-year fixed effects in all estimations. These fixed effects control for the differences in variable input elasticities across subsidiaries and industry-years. We also include parent firm-year and host country-year fixed effects when we focus on the effects of the variables in a certain dimension. In these cases, we drop the corresponding set of variables that exhibit perfect multicollinearity with the fixed effects. In all estimations, standard errors are clustered at the subsidiary level.

4.2 Parent-subsidiaries comparisons

Before presenting the estimation results, we visualize the relationship between markups of foreign subsidiaries and their parent firms. To this end, we estimate the markups of Japanese parent firms using the BSJBSA. The sample includes firms with and without foreign subsidiaries. The markups are calculated using the median cost share and winsorized at the top and bottom 1% of the markup distribution.

We show the evolution of parent firms' markups before examining the relationship. The sales-weighted markups are shown in Figure 2. Our results show that markups among parent firms increased moderately over the sample period, with a more noticeable rise in the 2000s and a

flattening in the 2010s. These patterns are consistent across both the full sample and the subset of manufacturing firms.

=== Figure 2 ===

We further compare the markups of parent firms with their matched foreign subsidiaries. In Figure 3, we plot the logs of markups of parent firms and their foreign subsidiaries in 2018. The figure shows a positive correlation between the markups of parent firms and their subsidiaries, and the markups of subsidiaries tend to be higher for parent firms with higher markups. This relationship suggests a transmission of product attributes or managerial skills from the parent to the subsidiaries.

=== Figure 3 ===

4.3 Estimation results

In this subsection, we present the results from the regression analyses. Table 4 presents the estimation results. In columns (1) and (2), we include all variables with subsidiary and industry-year fixed effects. In columns (3) and (4), we focus on the effects of parent firm variables by controlling for the country-year fixed effects. In columns (5) and (6), we focus on the effects of country-level variables by controlling for the parent firm-year fixed effects. Finally, in columns (7) and (8), we control for both fixed effects to explore the effects of subsidiary variables. In columns (1), (3), (5), and (7), the foreign subsidiaries in all industries are included in the sample. In columns (2), (4), (6), and (8), the foreign subsidiaries in the manufacturing industry are included in the sample.[7]

First, as for the foreign subsidiary variables, we find that employment has positive effects on the markups, suggesting that larger firms have greater market power. Additionally, the coefficient for the R&D dummy is also positive and statistically significant in all industries. The foreign subsidiaries conduct R&D to enhance product differentiation and charge higher prices.

Next, we examine the set of parent-level variables. We find that the higher parent firm markups are significantly associated with higher subsidiary markups in all industries and manufacturing. This result is consistent with Figure 2, suggesting the importance of product

[7] We check the robustness of the results by excluding the subsidiaries located in tax havens. The definition of tax haven follows Bilir and Morales (2020). The results are reported in Table A4 in the Appendix, and we obtained qualitatively similar results to the baseline estimations.

quality and brand reputation in influencing subsidiaries' pricing strategies. On the contrary, the coefficients for advertising expenses and R&D dummy are not significant. The factors determining the markups of foreign subsidiaries are sufficiently captured by the markups of the parent firms. We also find that some other parent-level variables such as total assets and cash flow are also associated with the markups of foreign subsidiaries.

Lastly, we find that host countries' characteristics are also associated with the markups of foreign subsidiaries. Specifically, GDP and the rule of law are positively associated with subsidiaries' markups. This result suggests that better institutional environments support pricing power, and the protection of property rights seems to enable foreign subsidiaries to raise markups. On the other hand, GDP per capita is negatively associated, possibly reflecting fierce competition in developed economies.[8] Similarly, the negative coefficients for the number of Japanese foreign subsidiaries may reflect the competitive environment for Japanese multinational firms. The coefficients for inflation are unexpectedly negative, suggesting that the markups tend to be lower in economies where prices are less rigid.

=== Table 4 ===

Furthermore, we estimate the equation by adding the interaction term between parent markups and GDP per capita. This specification is motivated by Table 7 in Keller and Yeaple (2020), where they examined the interaction effects between firm-level and country-level competitiveness by including an interaction term between parent firms' sales in the US and GDP per worker. We construct a similar term by multiplying parent markups by GDP per capita. The estimation results are reported in Table 5. The coefficients on the interaction terms are positive and statistically significant, except for column (4), suggesting that the positive correlation between parent firms' and their subsidiaries' markups is stronger in high-income countries. The transmission of parent markups to foreign subsidiaries appears limited in developing countries, as the foreign subsidiaries of Japanese multinationals are often engaged in products and production processes that differ from those of their parent firms. This vertical FDI structure may explain why our results seemingly contradict the negative coefficients on the interaction term reported by Keller and Yeaple (2020).

=== Table 5 ===

[8] Keller and Yeaple (2020) also interpret a higher GDP per capita as a more competitive market.

5. Conclusion

In this study, we examined how the global market power of Japanese multinational firms has evolved and what factors have driven this evolution. To this end, we estimated the markups of foreign subsidiaries and their parent firms using a matched subsidiary-parent dataset of Japanese multinational firms covering the period from 2001 to 2018. We first showed that the markups of foreign subsidiaries did not exhibit a long-run upward trend. Next, we decomposed the change in aggregate markups and found that sales growth among foreign subsidiaries tended to be concentrated in firms with lower markups. In the regression analysis, we found that some characteristics at the subsidiary, parent-firm, and host-country levels were associated with the markups of foreign subsidiaries. Our findings may help explore the sources and consequences of the rise in market power in future analyses.

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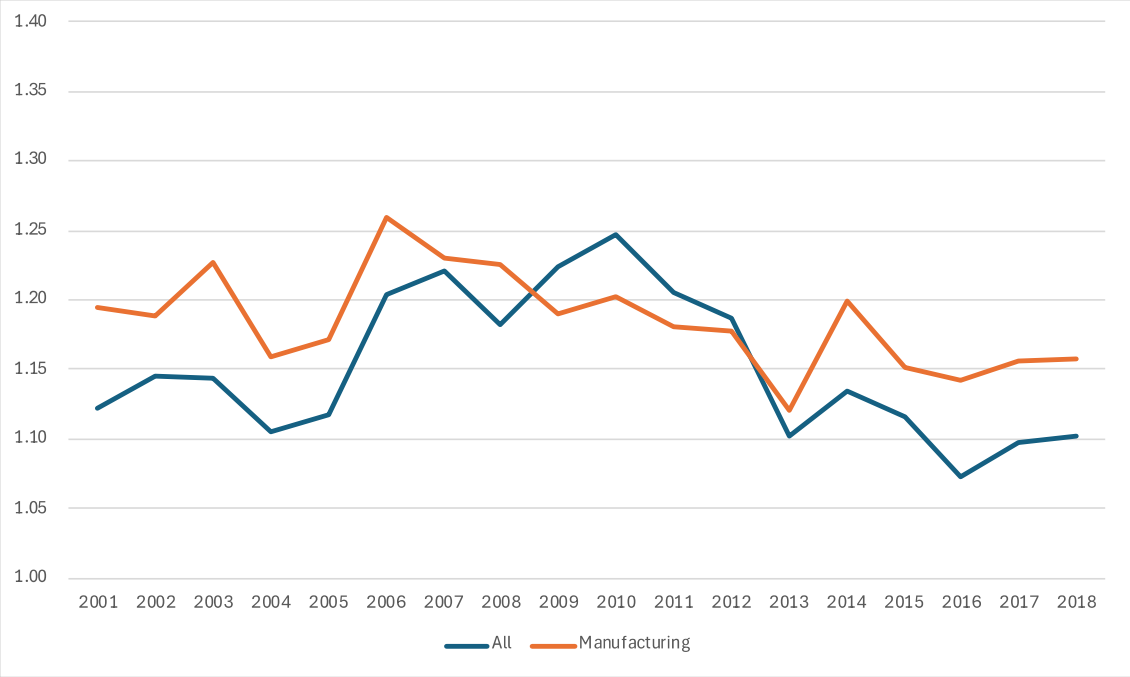
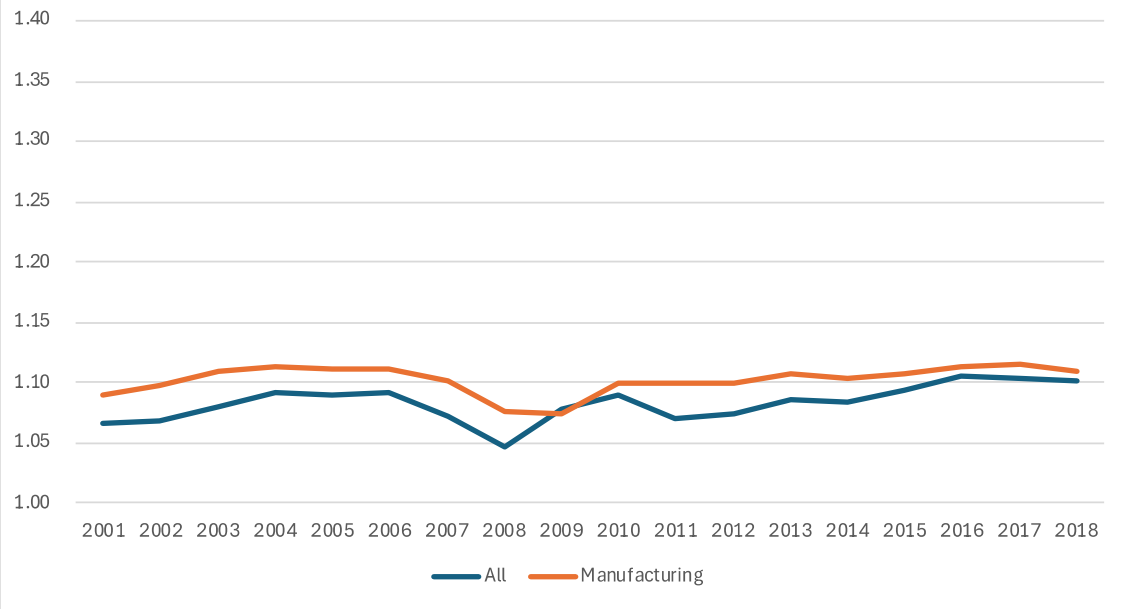
Figure 1. Markups of foreign subsidiaries



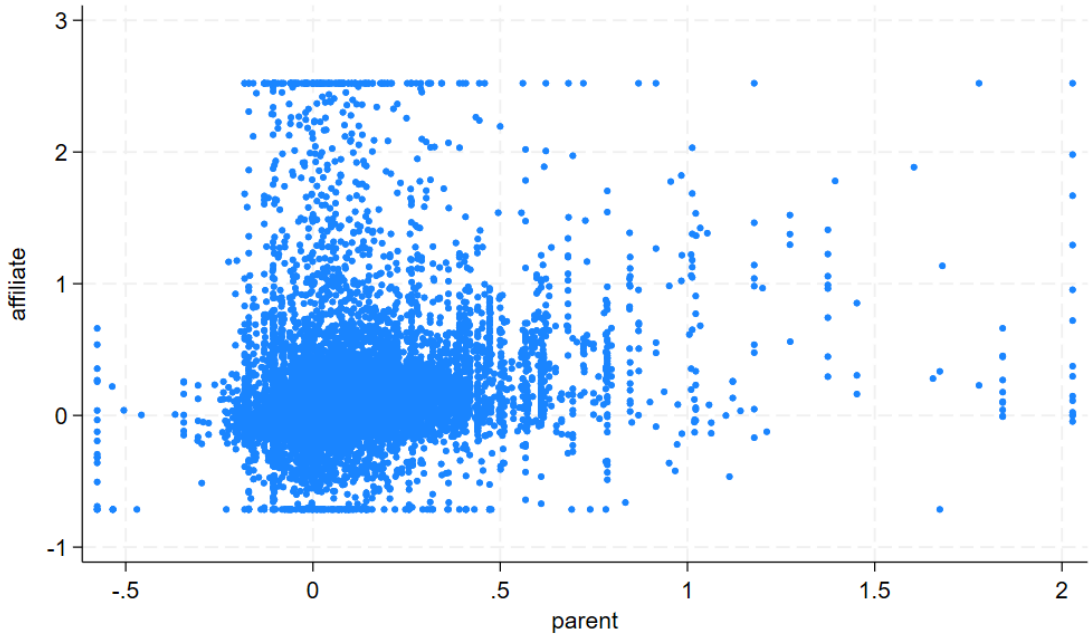
Source: Authors' calculation, using BSOBA (METI).

Figure 2. Markups of parent firms



Source: Authors' calculation, using BSJBSA (METI).

Figure 3. Markups of parent firms and foreign subsidiaries in 2018



Source: Authors' calculation, using BSJBSA and BSOBA (METI).

Table 1. Decomposition of foreign subsidiaries' markups

	All industries			Manufacturing		
	overall	within	between	overall	within	between
2002	2.37	1.21	1.16	-0.48	-0.31	-0.16
2003	-0.15	1.95	-2.10	3.76	3.72	0.04
2004	-3.93	0.67	-4.60	-6.73	-0.81	-5.92
2005	1.25	0.79	0.46	1.26	1.02	0.24
2006	8.61	5.40	3.21	8.78	3.83	4.95
2007	1.74	0.58	1.16	-3.02	1.04	-4.06
2008	-3.86	-1.51	-2.35	-0.37	-3.75	3.37
2009	4.12	-0.43	4.54	-3.52	2.52	-6.04
2010	2.39	2.54	-0.15	1.21	-0.92	2.13
2011	-4.13	-1.09	-3.04	-2.23	-1.81	-0.41
2012	-1.81	2.96	-4.78	-0.23	2.46	-2.69
2013	-8.61	-4.56	-4.05	-5.78	-4.06	-1.72
2014	3.30	3.69	-0.39	7.82	2.91	4.91
2015	-1.89	-3.27	1.38	-4.71	-3.87	-0.84
2016	-4.34	-1.00	-3.33	-0.88	2.17	-3.05
2017	2.55	2.93	-0.38	1.28	2.68	-1.40
2018	0.42	-0.59	1.01	0.23	-2.62	2.84
Total	-1.97	10.28	-12.25	-3.62	4.19	-7.81
2000s	12.53	11.21	1.33	0.89	6.33	-5.44
2010s	-14.50	-0.93	-13.58	-4.50	-2.14	-2.37

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table 2. Decomposition of changes in markups by countries

	All industries		Manufacturing	
	Country mean	Country covariance	Country mean	Country covariance
2002	1.07	1.30	-0.38	-0.09
2003	1.62	-1.77	2.83	0.93
2004	1.67	-5.60	0.54	-7.27
2005	1.35	-0.10	1.26	0.00
2006	6.55	2.06	2.63	6.16
2007	0.29	1.45	0.91	-3.94
2008	-1.02	-2.85	-4.48	4.10
2009	-0.64	4.75	2.49	-6.01
2010	3.24	-0.86	-0.09	1.30
2011	-1.00	-3.13	-1.64	-0.58
2012	2.31	-4.12	1.45	-1.68
2013	-4.78	-3.83	-3.56	-2.22
2014	2.72	0.58	3.70	4.13
2015	-4.17	2.28	-5.00	0.29
2016	0.46	-4.80	1.74	-2.62
2017	1.32	1.23	3.35	-2.07
2018	-0.60	1.02	-3.18	3.40
Total	10.42	-12.39	2.56	-6.18
2000s	14.15	-1.61	5.71	-4.82
2010s	-3.73	-10.78	-3.14	-1.36

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table 3. Decomposition of changes in markups by parent firms

	All industries		Manufacturing	
	Parent mean	Parent covariance	Parent mean	Parent covariance
2002	3.44	-1.07	-2.09	1.61
2003	1.98	-2.13	5.59	-1.83
2004	0.47	-4.40	-3.33	-3.41
2005	0.69	0.56	3.71	-2.45
2006	6.91	1.69	7.15	1.64
2007	1.50	0.24	-2.82	-0.21
2008	-2.21	-1.65	-1.97	1.59
2009	-3.31	7.42	-5.11	1.59
2010	3.18	-0.80	2.66	-1.45
2011	-2.05	-2.09	-5.72	3.50
2012	2.74	-4.55	3.09	-3.32
2013	-5.32	-3.29	-2.43	-3.36
2014	1.08	2.22	1.96	5.87
2015	-3.25	1.36	-0.84	-3.87
2016	-1.96	-2.38	-2.03	1.15
2017	4.65	-2.10	1.52	-0.24
2018	-2.49	2.91	-1.66	1.89
Total	6.06	-8.03	-2.31	-1.31
2000s	12.66	-0.12	3.80	-2.91
2010s	-6.59	-7.91	-6.11	1.61

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table 4. Estimation results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	All	Manufacturing	All	Manufacturing	All	Manufacturing	All	Manufacturing
Foreign subsidiary variables								
Export dummy	0.00604	0.00273	0.00492	0.005	0.00943	0.012	0.00703	0.0135
	[0.00491]	[0.00661]	[0.00424]	[0.00565]	[0.00539]*	[0.00729]	[0.00460]	[0.00606]**
Import dummy	-0.0107	-0.0119	-0.00604	-0.00238	-0.0205	-0.0247	-0.0189	-0.0146
	[0.00949]	[0.0103]	[0.00810]	[0.00850]	[0.0112]*	[0.0112]**	[0.00945]**	[0.00940]
Dummy for exports to Japan	0.00829	0.00497	0.00771	0.00157	0.00541	0.00671	0.00348	-0.00206
	[0.00486]*	[0.00598]	[0.00417]*	[0.00516]	[0.00535]	[0.00626]	[0.00453]	[0.00535]
Dummy for imports from Japan	-0.0107	0.00636	-0.00371	0.00632	-0.0151	0.00771	-0.0046	0.012
	[0.00915]	[0.0104]	[0.00771]	[0.00851]	[0.0103]	[0.0112]	[0.00854]	[0.00931]
Employment	0.00444	0.0251	0.00616	0.0279	0.00399	0.0262	0.00517	0.0298
	[0.00314]	[0.00390]***	[0.00274]**	[0.00336]***	[0.00321]	[0.00400]***	[0.00279]*	[0.00332]***
R&D dummy	0.0129	0.00595	0.0104	0.00424	0.0132	0.00456	0.0104	0.00447
	[0.00605]**	[0.00613]	[0.00498]**	[0.00494]	[0.00647]**	[0.00652]	[0.00533]*	[0.00532]
Parent firm variables								
Markups	0.0737	0.0535	0.0667	0.0586				
	[0.0201]***	[0.0271]**	[0.0175]***	[0.0231]**				
Export dummy	-0.00122	-0.00381	-0.00347	-0.0111				
	[0.00768]	[0.00946]	[0.00641]	[0.00724]				
Import dummy	0.00646	0.00214	0.00972	0.00818				
	[0.00601]	[0.00693]	[0.00496]*	[0.00559]				
Employment	0.00697	-0.00243	0.00563	0.00198				
	[0.00860]	[0.0102]	[0.00722]	[0.00859]				
Total assets	-0.0194	-0.0119	-0.0209	-0.0211				
	[0.00896]**	[0.0119]	[0.00768]***	[0.00959]**				
Firm age	-0.0115	-0.00611	-0.0155	-0.00639				
	[0.00857]	[0.0108]	[0.00757]**	[0.00915]				
Advertisement	0.00186	0.000306	0.000452	-0.000362				
	[0.00237]	[0.00273]	[0.00207]	[0.00234]				
R&D dummy	0.00744	-0.0095	0.00683	-0.00461				
	[0.00607]	[0.00769]	[0.00531]	[0.00682]				
Sales growth	0.00987	0.0147	0.00506	0.00588				
	[0.00655]	[0.00880]*	[0.00576]	[0.00789]				
Cashflow	-0.00262	0.0604	-0.00544	0.0856				
	[0.0135]	[0.0305]**	[0.0131]	[0.0291]***				
Manufacturing dummy	-0.0318	-0.0362	-0.0191	-0.0386				
	[0.0187]*	[0.0263]	[0.0163]	[0.0219]*				
Commerce dummy	-0.0367	-0.0381	-0.026	-0.047				
	[0.0205]*	[0.0276]	[0.0177]	[0.0234]**				
Host country variables								
GDP	0.0441	0.00799			0.0589	0.0312		
	[0.0215]**	[0.0260]			[0.0234]**	[0.0209]		
GDP per capita	-0.046	-0.000932			-0.0614	-0.0215		
	[0.0199]**	[0.0239]			[0.0214]***	[0.0200]		
GDP growth rate	0.0000915	-0.000151			0.0000283	0.0000147		
	[0.000180]	[0.000234]			[0.000193]	[0.000235]		
Inflation rate	-0.000992	-0.00207			-0.00184	-0.00333		
	[0.000908]	[0.00114]*			[0.000929]**	[0.00111]***		
Real effective exchange rate	0.0199	-0.0289			0.0222	-0.0636		
	[0.0271]	[0.0278]			[0.0308]	[0.0311]**		
Rule of Law	0.0227	0.0514			0.0156	0.0349		
	[0.0141]	[0.0152]***			[0.0153]	[0.0162]**		
FTA dummy	-0.000706	0.00227			0.00676	0.0125		
	[0.00849]	[0.0109]			[0.00925]	[0.0107]		
Total sales of Japanese subsidiaries	0.00697	0.0159			0.00436	0.0226		
	[0.00769]	[0.0114]			[0.00799]	[0.0125]*		
Number of Japanese subsidiaries	-0.0425	-0.00134			-0.0438	-0.00967		
	[0.0180]**	[0.0182]			[0.0195]**	[0.0212]		
Subsidiary fixed effect	yes	yes	yes	yes	yes	yes	yes	yes
Industry-year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes
Parent-year fixed effect	no	no	no	no	yes	yes	yes	yes
Country-year fixed effect	no	no	yes	yes	no	no	yes	yes
N	122,774	63,699	166,169	90,529	121,520	59,886	169,301	88,781
Adj R-squared	0.561	0.475	0.541	0.459	0.614	0.586	0.594	0.560

Notes: Standard errors are in parentheses and clustered at subsidiary level. *** p<0.01, ** p<0.05, * p<0.1. In columns (1), (3), (5), and (7), the foreign subsidiaries in all industries are included in the sample. In columns (2), (4), (6), and (8), the foreign subsidiaries in manufacturing are included in the sample.

Source: Authors' estimation, using BSJBSA and BSOBA (METI).

Table 5. Estimation results with interaction term

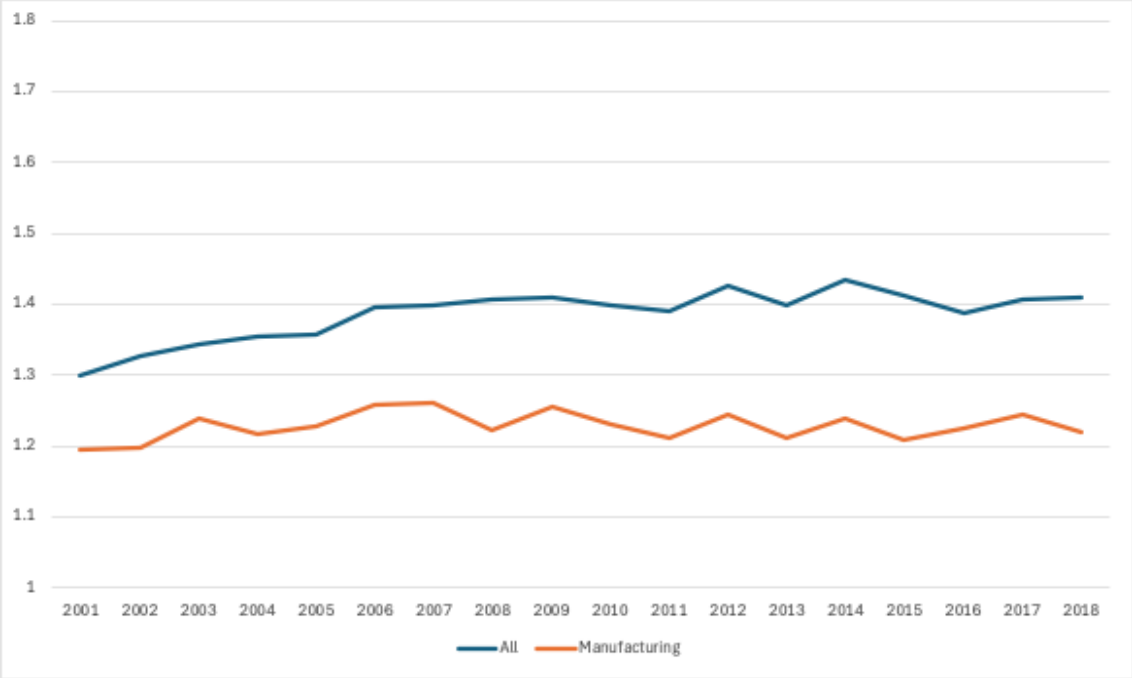
	(1)	(2)	(3)	(4)
Sample	All	Manufacturing	All	Manufacturing
Parent firm variables				
Markups	-0.0293	-0.0564	-0.00905	0.0173
	[0.0523]	[0.0536]	[0.0395]	[0.0443]
Markups * GDP per capita	0.0345	0.0394	0.0277	0.0166
	[0.0153]**	[0.0187]**	[0.0124]**	[0.0165]
Export dummy	-0.00107	-0.00353	-0.00331	-0.0109
	[0.00768]	[0.00945]	[0.00642]	[0.00723]
Import dummy	0.00623	0.00196	0.0096	0.00817
	[0.00601]	[0.00693]	[0.00496]*	[0.00559]
Employment	0.00726	-0.00176	0.00593	0.00223
	[0.00860]	[0.0102]	[0.00723]	[0.00862]
Total assets	-0.0202	-0.0131	-0.0215	-0.0214
	[0.00900]**	[0.0120]	[0.00771]***	[0.00963]**
Firm age	-0.0112	-0.00554	-0.0152	-0.0063
	[0.00857]	[0.0108]	[0.00757]**	[0.00918]
Advertisement	0.00196	0.000396	0.000479	-0.000357
	[0.00237]	[0.00273]	[0.00207]	[0.00234]
R&D dummy	0.00749	-0.00959	0.0067	-0.00458
	[0.00607]	[0.00769]	[0.00532]	[0.00682]
Sales growth	0.01	0.0145	0.00499	0.00572
	[0.00655]	[0.00879]*	[0.00576]	[0.00789]
Cashflow	-0.000716	0.0666	-0.00446	0.0878
	[0.0139]	[0.0305]**	[0.0133]	[0.0291]***
Manufacturing dummy	-0.028	-0.0296	-0.0187	-0.036
	[0.0189]	[0.0268]	[0.0163]	[0.0220]
Commerce dummy	-0.0331	-0.0323	-0.0263	-0.0447
	[0.0206]	[0.0281]	[0.0178]	[0.0236]*
Foreign subsidiary variables	yes	yes	yes	yes
Host country variables	yes	yes	no	no
Subsidiary fixed effect	yes	yes	yes	yes
Industry-year fixed effect	yes	yes	yes	yes
Parent-year fixed effect	no	no	no	no
Country-year fixed effect	no	no	yes	yes
N	122,774	63,699	165,759	90,441
Adj R-squared	0.561	0.475	0.541	0.458

Notes: Standard errors are in parentheses and clustered at subsidiary level. *** p<0.01, ** p<0.05, * p<0.1. In columns (1) and (3), the foreign subsidiaries in all industries are included in the sample. In columns (2) and (4), the foreign subsidiaries in manufacturing are included in the sample.

Source: Authors' estimation, using BSJBSA and BSOBA (METI).

Appendix

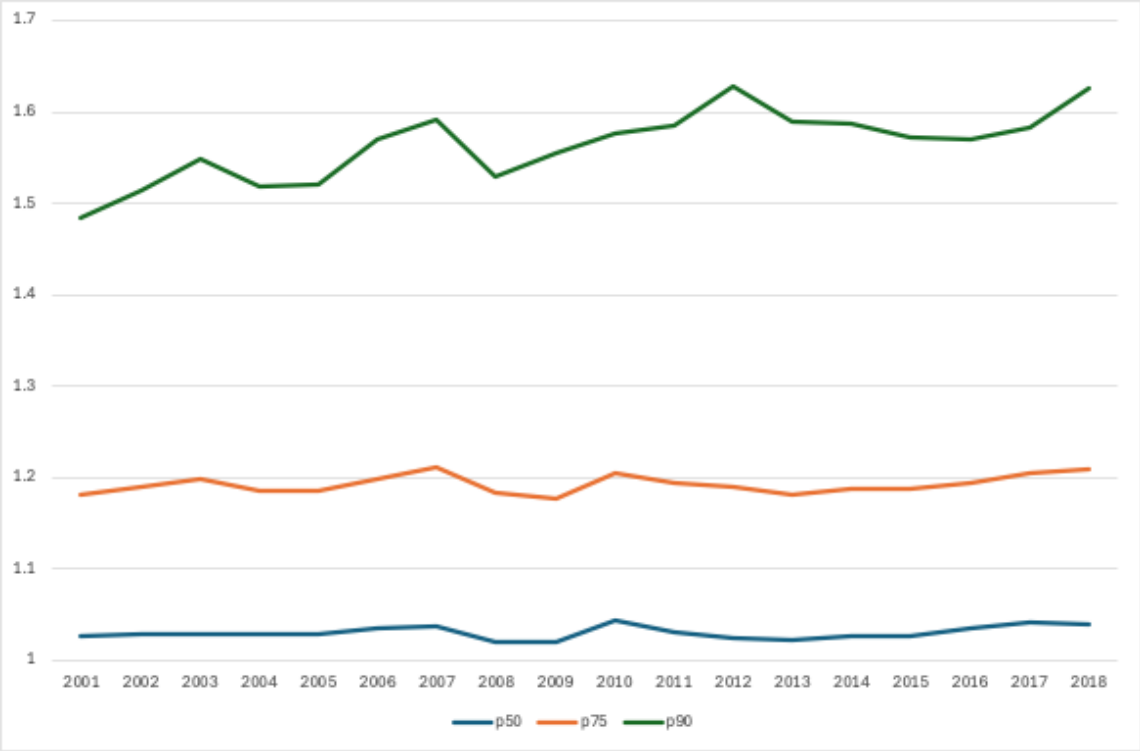
Figure A1. Markups of foreign subsidiaries with constant variable-input elasticity



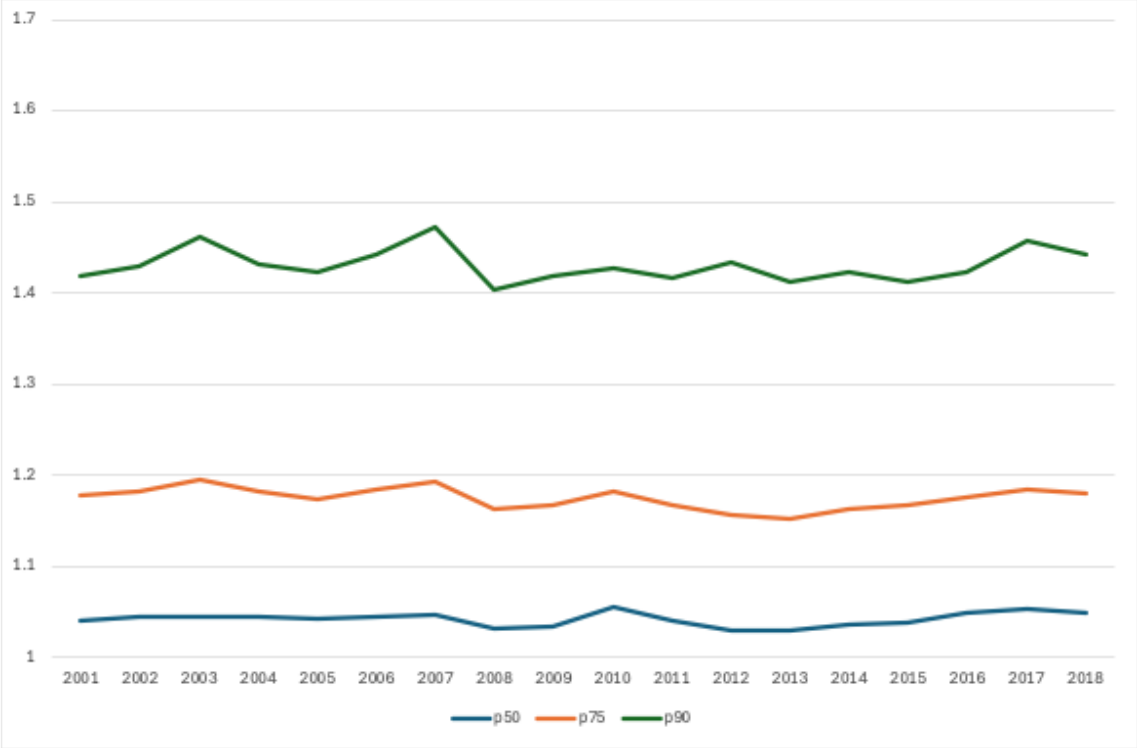
Source: Authors' calculation, using BSOBA (METI).

Figure A2. Quantiles of foreign subsidiaries' markups

A. All industries



B. Manufacturing



Source: Authors' calculation, using BSOBA (METI).

Table A1. Decomposition of foreign subsidiaries' markups including net entry term

	All industries				Manufacturing			
	overall	within	between	net entry	overall	within	between	net entry
2002	2.37	1.28	3.19	-2.10	-0.48	0.78	3.15	-4.41
2003	-0.15	-0.93	-1.18	1.96	3.76	1.76	-0.40	2.40
2004	-3.93	2.58	-3.66	-2.84	-6.73	1.69	-6.19	-2.23
2005	1.25	-0.72	3.57	-1.60	1.26	-0.81	2.56	-0.50
2006	8.61	3.03	4.04	1.54	8.78	2.67	6.20	-0.09
2007	1.74	-0.12	1.92	-0.07	-3.02	2.28	-5.68	0.38
2008	-3.86	-3.24	-2.14	1.52	-0.37	-3.08	-0.82	3.52
2009	4.12	-1.30	6.52	-1.10	-3.52	0.49	-4.42	0.41
2010	2.39	2.99	2.16	-2.76	1.21	0.79	0.92	-0.50
2011	-4.13	-0.71	0.73	-4.15	-2.23	-0.57	-1.79	0.13
2012	-1.81	-0.06	-2.32	0.57	-0.23	1.81	-2.97	0.93
2013	-8.61	-4.50	-2.41	-1.70	-5.78	-3.98	1.71	-3.52
2014	3.30	2.56	-1.46	2.21	7.82	2.66	-0.21	5.37
2015	-1.89	-3.28	0.77	0.62	-4.71	-3.48	-0.92	-0.31
2016	-4.34	-0.75	-2.70	-0.89	-0.88	2.16	-3.06	0.02
2017	2.55	2.11	-1.00	1.44	1.28	2.27	-1.83	0.84
2018	0.42	-2.10	1.27	1.25	0.23	-2.89	3.14	-0.02
Total	-1.97	-3.15	7.30	-6.12	-3.62	4.55	-10.61	2.44
2000s	12.53	3.57	14.43	-5.46	0.89	6.57	-4.67	-1.01
2010s	-14.50	-6.72	-7.13	-0.65	-4.50	-2.01	-5.93	3.45

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table A2. Further decomposition of changes in markups by countries

	All industries				Manufacturing			
	Change in country mean	Reallocation by country mean	Change in covariance within country	Reallocation by country covariance	Change in country mean	Reallocation by country mean	Change in covariance within country	Reallocation by country covariance
2002	7.00	-5.93	2.21	-0.92	1.62	-2.00	6.27	-6.37
2003	14.59	-12.97	-6.47	4.70	2.00	0.84	-3.99	4.92
2004	-17.29	18.96	1.55	-7.14	-5.46	6.01	-2.37	-4.90
2005	3.12	-1.76	3.97	-4.07	3.00	-1.74	1.91	-1.91
2006	5.26	1.30	-1.74	3.79	4.24	-1.62	6.97	-0.81
2007	-9.09	9.38	2.23	-0.78	5.08	-4.17	-9.77	5.83
2008	-0.16	-0.85	-2.80	-0.05	-9.36	4.89	1.64	2.46
2009	-7.91	7.27	5.22	-0.47	-3.32	5.81	4.68	-10.69
2010	19.49	-16.25	-3.96	3.10	10.90	-10.99	1.58	-0.28
2011	-13.12	12.12	-3.09	-0.04	-11.31	9.67	-1.67	1.09
2012	3.71	-1.41	-0.96	-3.16	6.84	-5.38	3.78	-5.46
2013	4.27	-9.05	-10.36	6.53	-1.01	-2.55	-8.82	6.60
2014	-0.93	3.65	3.14	-2.56	1.59	2.11	-2.92	7.05
2015	-6.40	2.23	8.48	-6.19	-4.19	-0.81	5.43	-5.14
2016	2.13	-1.66	-2.26	-2.54	-1.49	3.23	1.04	-3.65
2017	3.85	-2.53	-6.38	7.61	2.51	0.84	-5.25	3.18
2018	2.82	-3.42	3.97	-2.95	8.06	-11.24	6.80	-3.39
Total	11.34	-0.92	-7.26	-5.13	9.68	-7.12	5.28	-11.46
2000s	15.00	-0.85	0.22	-1.83	8.70	-2.99	6.91	-11.73
2010s	-3.66	-0.07	-7.48	-3.30	0.99	-4.13	-1.63	0.27

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table A3. Further decomposition of changes in markups by parent firms

	All industries				Manufacturing			
	Change in parent mean	Reallocation by parent mean	Change in covariance within parent	Reallocation by parent covariance	Change in parent mean	Reallocation by parent mean	Change in covariance within parent	Reallocation by parent covariance
2002	1.66	1.78	1.22	-2.29	1.68	-3.77	1.22	0.40
2003	0.15	1.83	0.43	-2.56	3.12	2.48	1.28	-3.11
2004	0.30	0.17	-1.65	-2.74	-0.49	-2.84	-0.96	-2.45
2005	4.59	-3.90	-1.08	1.64	4.01	-0.31	-0.25	-2.19
2006	1.60	5.32	0.95	0.75	-0.39	7.54	0.02	1.61
2007	4.45	-2.95	0.51	-0.27	2.88	-5.69	0.91	-1.12
2008	-1.93	-0.28	-0.57	-1.08	-1.50	-0.47	-1.11	2.70
2009	1.20	-4.51	0.01	7.41	3.32	-8.43	0.79	0.80
2010	-1.55	4.73	0.43	-1.23	-5.52	8.18	-0.62	-0.83
2011	1.87	-3.91	-0.87	-1.21	2.25	-7.97	0.58	2.92
2012	3.65	-0.91	0.33	-4.89	5.34	-2.25	0.06	-3.39
2013	-3.49	-1.82	0.61	-3.90	-3.33	0.90	-0.32	-3.03
2014	5.99	-4.91	-0.37	2.58	1.90	0.05	0.52	5.34
2015	-6.80	3.55	0.36	1.00	-8.70	7.86	-0.40	-3.47
2016	0.23	-2.19	-0.25	-2.13	3.62	-5.65	0.18	0.97
2017	3.33	1.32	-0.02	-2.07	3.46	-1.94	-0.33	0.09
2018	-2.08	-0.42	0.66	2.25	-2.96	1.30	0.67	1.22
Total	13.17	-7.10	0.71	-8.74	8.69	-11.00	2.24	-3.55
2000s	10.47	2.18	0.25	-0.37	7.11	-3.31	1.28	-4.19
2010s	2.69	-9.29	0.46	-8.37	1.58	-7.69	0.97	0.64

Notes: The changes are shown in percentage.

Source: Authors' calculation, using BSOBA (METI).

Table A4. Estimation results without subsidiaries in tax havens

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	All	Manufacturing	All	Manufacturing	All	Manufacturing	All	Manufacturing
Foreign subsidiary variables								
Export dummy	0.00722	0.00219	0.00581	0.00458	0.0106	0.0109	0.00714	0.0127
	[0.00538]	[0.00685]	[0.00458]	[0.00588]	[0.00595]*	[0.00758]	[0.00504]	[0.00639]**
Import dummy	-0.0116	-0.0115	-0.00831	-0.00202	-0.0223	-0.0222	-0.0221	-0.014
	[0.0106]	[0.0110]	[0.00880]	[0.00889]	[0.0130]*	[0.0122]*	[0.0106]**	[0.0100]
Dummy for exports to Japan	0.00724	0.00434	0.00634	0.000955	0.00694	0.00786	0.00456	-0.00183
	[0.00543]	[0.00633]	[0.00456]	[0.00541]	[0.00603]	[0.00670]	[0.00502]	[0.00569]
Dummy for imports from Japan	-0.0103	0.00701	-0.00155	0.00658	-0.0126	0.00637	-0.000409	0.0122
	[0.0103]	[0.0111]	[0.00837]	[0.00893]	[0.0118]	[0.0123]	[0.00943]	[0.00994]
Employment	0.00381	0.026	0.00575	0.0295	0.0059	0.0286	0.00649	0.0325
	[0.00363]	[0.00431]***	[0.00305]*	[0.00361]***	[0.00377]	[0.00448]***	[0.00318]**	[0.00368]***
R&D dummy	0.0144	0.00438	0.0113	0.00305	0.0152	0.00336	0.0108	0.00343
	[0.00637]**	[0.00631]	[0.00517]**	[0.00506]	[0.00704]**	[0.00688]	[0.00568]*	[0.00558]
Parent firm variables								
Markups	0.0829	0.0655	0.0727	0.0648				
	[0.0224]***	[0.0290]**	[0.0191]***	[0.0247]***				
Export dummy	-0.00192	-0.00661	-0.005	-0.013				
	[0.00850]	[0.00997]	[0.00691]	[0.00749]*				
Import dummy	0.00763	0.00339	0.0109	0.00961				
	[0.00675]	[0.00747]	[0.00540]**	[0.00589]				
Employment	0.0162	0.00431	0.0118	0.00543				
	[0.00858]*	[0.0106]	[0.00725]	[0.00893]				
Total assets	-0.0179	-0.0157	-0.0184	-0.0226				
	[0.00999]*	[0.0126]	[0.00834]**	[0.0100]**				
Firm age	-0.0142	-0.00548	-0.0177	-0.00528				
	[0.00981]	[0.0116]	[0.00835]**	[0.00963]				
Advertisement	0.00062	0.00109	-0.000589	0.000156				
	[0.00257]	[0.00290]	[0.00219]	[0.00245]				
R&D dummy	0.00204	-0.0108	0.00301	-0.00465				
	[0.00637]	[0.00824]	[0.00550]	[0.00717]				
Sales growth	0.00787	0.0142	0.00302	0.00592				
	[0.00732]	[0.00964]	[0.00628]	[0.00849]				
Cashflow	-0.00259	0.057	-0.00464	0.0867				
	[0.0142]	[0.0329]*	[0.0139]	[0.0312]***				
Manufacturing dummy	-0.04	-0.0407	-0.0272	-0.0455				
	[0.0204]*	[0.0292]	[0.0175]	[0.0236]*				
Commerce dummy	-0.0404	-0.0474	-0.0326	-0.0581				
	[0.0222]*	[0.0306]	[0.0189]*	[0.0253]**				
Host country variables								
GDP	0.00762	-0.0163			0.0471	0.0283		
	[0.0340]	[0.0695]			[0.0267]*	[0.0342]		
GDP per capita	-0.0261	0.024			-0.0596	-0.0189		
	[0.0315]	[0.0600]			[0.0258]**	[0.0307]		
GDP growth rate	0.000155	0.0000128			0.000201	0.000188		
	[0.000199]	[0.000246]			[0.000218]	[0.000255]		
Inflation rate	-0.00116	-0.00269			-0.0016	-0.00371		
	[0.000967]	[0.00118]**			[0.000970]*	[0.00116]***		
Real effective exchange rate	0.0334	-0.0272			0.0251	-0.0663		
	[0.0282]	[0.0289]			[0.0327]	[0.0325]**		
Rule of Law	0.0251	0.0571			0.0257	0.0458		
	[0.0165]	[0.0176]***			[0.0182]	[0.0188]**		
FTA dummy	0.00476	0.00677			0.0119	0.0184		
	[0.0105]	[0.0144]			[0.0110]	[0.0126]		
Total sales of Japanese subsidiaries	-0.000847	0.00209			-0.00156	0.0149		
	[0.00956]	[0.0105]			[0.0102]	[0.0113]		
Number of Japanese subsidiaries	-0.00802	0.0253			-0.0251	0.00961		
	[0.0193]	[0.0212]			[0.0198]	[0.0208]		
Subsidiary fixed effect	yes	yes	yes	yes	yes	yes	yes	yes
Industry-year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes
Parent-year fixed effect	no	no	no	no	yes	yes	yes	yes
Country-year fixed effect	no	no	yes	yes	no	no	yes	yes
N	105,240	58,527	147,518	85,010	101,205	53,978	147,929	82,508
Adj R-squared	0.559	0.467	0.539	0.45	0.615	0.58	0.593	0.551

Notes: Standard errors are in parentheses and clustered at subsidiary level. *** p<0.01, ** p<0.05, * p<0.1. In columns (1), (3), (5), and (7), the foreign subsidiaries in all industries are included in the sample. In columns (2), (4), (6), and (8), the foreign subsidiaries in manufacturing are included in the sample.

Source: Authors' estimation, using BSJBSA and BSOBA (METI).