Does ownership matter in mergers? A comparative study of the causes and consequences of mergers by family and non-family firms

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Abstract

Although the family firm is the dominant type among listed corporations worldwide, few papers investigate the behavioral differences between family and non-family firms. We analyze the differences in merger decisions and the consequences between them by using a unique Japanese dataset from a period of high economic growth. Empirical results suggest that family firms are less likely to merge than non-family firms are. Moreover, we find a positive relationship between pre-merger family ownership and the probability of mergers. Thus, ownership structure is an important determinant of mergers. Finally, we find that non-family firms benefit more from mergers than family firms do.

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1. Introduction

Since the seminal work by La Porta et al. (1999), several studies have demonstrated that the family firm is a dominant type among listed corporations around the world[1]. Recent papers on family firms focus on comparing the performance of family and non-family firms (Claessens et al., 2000; Faccio and Lang, 2002; Anderson and Reeb, 2003; Perez-Gonzalez, 2006; Villalonga and Amit, 2006; Bennedsen et al., 2007; King and Santor, 2008; Mehrotra et al., 2008). However, few papers investigate the differences in the strategies or behaviors of these firms.

We classify the growth strategies of firms into internal and external growth, the latter being based on M&A (merger and acquisition). Therefore, merger decisions by firms are related to their growth strategies and thus, to their performance. However, to the best of our knowledge, no studies have hitherto explored the differences between family and non-family firms' attitudes towards mergers or their growth strategies.

Therefore, in this paper, we investigate the differences between the merger decisions of family and non-family firms and their consequences. Mergers dilute family ownership concentration, depending on the relative size of the firm in relation to the counterpart[2].

[1] We define family firms as those in which the founder or his/her family members are among the ten largest shareholders *or* in the top management (CEO or chairman). Thus, our definition of family firms is the same as that of Mehrotra et al. (2008). On the basis of this definition, we identify family firms for each year during the observation period.

[2] In this paper, we define mergers as the integration of two or more firms into a legal unity. Acquisitions, which we do not consider in this paper, differ from mergers in that an acquired firm is not integrated into the acquiring firm but becomes its subsidiary, so that it does not disappear as a company. We focus on mergers because we cannot obtain reliable data on acquisitions.

Ownership concentration is one of the main features of family firms. Since mergers dilute family ownership, we expect family firms to show lower preference for mergers than non-family firms. The owner-managers of family firms may be reluctant to implement mergers for fear of losing control over the firm because of decreased ownership. In contrast, the managers of non-family firms, who have no or, at most, a negligible share in the ownership, do not face this problem[3].

In our analysis, we focus on the period 1955 to 1973, characterized by high economic growth in Japan, for the following reasons. First, for most countries, the empirical studies on mergers concentrate on recent periods, as is the case with Japanese research[4]. We fill this gap by focusing on the period of high economic growth, which we note for the first, although weak, merger wave in post-war Japan.

Second, this period is appropriate to analyze the growth strategies of firms. During this period, the GDP in Japan increased by an average annual rate of 9.48% in real terms. To cope with such a high growth in demand, firms in most sectors had to expand their capacity rapidly under liquidity constraints. Thus, the choice between internal and external growth was an important strategic concern during this period.

Third, the number of family and non-family firms is well balanced during this period. We identify two peaks of IPO (initial public offering) (1949–1950 and 1961–1964) during this period. After their closure during the war and the post-war confusion, the stock

[3] Kang and Shivdasani (1995) show that the ratio of managerial ownership is quite low in Japan, with a mean of 2% and a median of 0.3% in their sample.

[4] Ikeda and Doi (1983), Odagiri and Hase (1989), Kang et al. (2000), and Ushijima (2010) cover the periods 1964–1975, 1980–1987, 1977–1993, and 1994–2005, respectively. However, no studies consider the period from World War II to the end of high economic growth, although Ikeda and Doi (1983) partly cover it.

exchanges reopened in 1949, and the pre-war listed firms appeared once again (450 firms). Most of them (approximately 78%) were non-family firms. However, after the opening of the second section of the stock exchanges in 1961, numerous relatively young firms went public until 1964 (625 firms). Family firms comprised the majority (approximately 60%) of the IPO firms from 1961 to 1964. Thus, the Japanese listed firms in the 1960s provide quite an interesting dataset for research on family firms, with regard to the number and share of family firms.

As mentioned above, our dataset has an advantage in that it includes numerous newly listed, relatively young firms. According to Basu et al. (2009), ownership structure difference between family and non-family firms is more apparent among young firms than among mature ones. Thus, by focusing on newly listed firms in the 1960s, we expect to observe distinct differences between family and non-family firms in their ownership structure and strategy. In sum, our dataset provides excellent opportunities for merger research comparing family and non-family firms.

The first part of this paper compares the probabilities of mergers for family and non-family firms. We find that the former has a lower probability of merger than the latter, even after controlling for several factors that may affect merger decisions. This result suggests that family firms preferred internal growth to external growth during the period of high economic growth in Japan.

Moreover, we find a positive linear relationship between the pre-merger level of family ownership and the probability of mergers. Among family firms, those with a higher ratio of pre-merger family ownership are more likely to merge than those with a lower ratio of pre-merger family ownership are. Thus, the ownership structure is quite a powerful determinant of merger decisions.

Although family firms in general are averse to mergers, the fact that they nevertheless

undertake mergers leads to another interesting research question: the differences between family and non-family firms' merger performances. If family firms pay a higher opportunity cost for mergers in the form of dilution of control, we assume that they expect more advantages from mergers; this would compensate for the higher cost of mergers, as compared to non-family firms that have no such cost. However, contrary to our expectations, the results demonstrate that non-family firms show better merger performance than family firms.

The remainder of this paper proceeds as follows. We present our hypotheses in Section 2. We comprehensively describe our dataset in Section 3. We provide the regression results on the determinants of mergers in Section 4. We show the estimation results on operating performances around mergers in Section 5. Finally, we conclude the paper in Section 6.

2. Literature review and hypotheses

2.1. Determinants of mergers

We can consider the reasons for mergers from the perspectives of merged and merging firms. Several papers investigate the characteristics of merged firms from the former perspective (Hasbrouck, 1985; Morck et al., 1989; Martin and McConnell, 1991; Hernando et al., 2009). Numerous studies in this field find evidence of the disciplinary role of mergers that are often called hostile takeovers[5].

Several papers provide possible reasons for mergers from the latter perspective, such as efficiency-related reasons that often involve economies of scale or synergies (Bradley et al., 1988), managers' self-serving attempts to over-expand (Jensen, 1986), an alternative to investment (Jovanovic and Rousseau, 2002), market inefficiency that arises from over-evaluation (Shleifer and Vishny, 2003), and unexpected shocks in the industry structure (Mitchell and Mulherin, 1996; Andrade et al., 2001), while Owen and Yawson (2010) analyze mergers from the viewpoint of corporate life cycle. To the best of our knowledge, however,

[5] Martynova and Renneboog (2008) provide a comprehensive survey of M&A studies.

no studies examine the differences between family and non-family firms' merger decisions.

Thus, the first purpose of this paper is to investigate the difference in merger probability between family and non-family firms, controlling for some factors that may affect merger decisions in general. We conduct a pooled probit analysis for this purpose.

Harris and Raviv (1988) and Stulz (1988) argue that managers' considerations on maintaining control affect the choice of investment finance: by cash (and debt) or stock. Corporate managers who value control prefer financing investments by cash or debt to issuing new stocks; this dilutes their holdings and increases the risk of losing control. Some papers support this hypothesis empirically (Amihud et al., 1990; Martin, 1996; Ghosh and Ruland, 1998; Chang and Mais, 2000; Faccio and Masulis, 2005)[6].

Mergers and stock-financed acquisitions have the same effects on family ownership. Before the amendment of the Japanese Commercial Law in 1999, mergers took place without any exceptions through the allotment of shares to the shareholders of merged firms. It means that all mergers in our sample had to pay for by stock. In this regard, we provide detailed information on the merger ratio (the ratio of evaluation of the shares of merger partners) of the sample firms in Appendix 1. Among 55 mergers by family firms during the observation period, 30 cases are one-to-one mergers, while in 22 cases the merger ratio is not equal to one. We cannot obtain information on the merger ratio for just three cases (5%).

As the owner-managers of family firms have higher private benefits from control than do the managers of non-family firms, we expect them to have passive attitudes towards

[6] Stulz (1988) argues that the control right matters more than the cash-flow right. However, La Porta et al. (1999) and Claessens et al. (2000) reveal that the separation of control right and cash-flow right is not distinct in Japan. Therefore, in this paper, we use the cash flow right as the proxy of the control right.

mergers compared to the managers of non-family firms[7]. Thus, we propose the following hypotheses.

Hypothesis 1: Family firms have more passive attitudes towards mergers than non-family firms do.

The pre-merger level of family ownership can also affect merger decisions. If the pre-merger family ownership is high enough to keep control after the merger, the owner-managers are not afraid of losing control through mergers, and thus, they are as likely to choose merger as a means of expanding strategy as non-family firms are[8].

Hypothesis 2: The pre-merger level of family ownership positively affects merger decisions.

2.2. Operating performances of mergers

The effect of mergers on operating performance may also differ between family and non-family firms. If the owner-managers of family firms tend to avoid mergers because of the potential risk of losing control, the fact that they nevertheless decide to proceed with the merger as a means of expansion may imply that we expect it to be profitable enough to compensate for the loss of control. Amihud et al. (1990) argue on the same lines, stating that managers with substantial ownership are averse to stock financing because of the potential risk of losing control. Therefore, the fact that they nevertheless use stock to finance acquisitions may be an indication to investors that the acquisition is at least not value-decreasing. Thus, the comparison of merger performance between them would provide

[7] Barclay and Holderness (1989) show that family ownership has a positive relationship with private benefits from control.

[8] Furthermore, we can argue that if the pre-merger level of family ownership is already extremely low to exercise sufficient control, the owner-managers are no longer concerned about losing control, and thus, they are as likely to choose a merger as non-family firms are. We discuss this possibility in a later section.

additional support to our arguments in favour of Hypotheses 1 and 2.

Previous studies on the effects of mergers on operating performance attempt to identify the sources of gains from mergers and determine whether one can ever realize the expected gains at the announcement of a merger. The results of previous studies on this issue are not consistent (Ikeda and Doi, 1983; Odagiri and Hase, 1989; Ravenscraft and Scherer, 1989; Healy et al., 1992; Carline et al., 2009). To the best of our knowledge, however, none of the existing studies directly examine the differences between family and non-family firms with regard to merger performance[9].

The second purpose of this paper is to fill this gap by considering a large dataset of Japanese firms. According to our argument, mergers by family firms should demonstrate better performance than those by non-family firms because of the selection bias mentioned above. Thus, we postulate the next hypothesis.

Hypothesis 3: Family firms achieve a higher operating performance after the merger than non-family firms do.

3. Sample and data

3.1. Sample firms

The main objective of this paper is to investigate the differences between family and non-family firms' attitudes towards mergers during the period of high economic growth (1955–1973) in Japan. From the DBJ (Development Bank of Japan) database, we select 1,359 firms that went public between 1949 and 1965 in the Japanese stock markets[10]. However, for

[9] Ben-Amar and Andre (2006) and Basu et al. (2009) investigate the relationship between family ownership and stock market evaluation. Lewellen et al. (1985) and Hubbard and Palia (1995) show that managerial ownership has a positive relationship with reactions from the stock market.

[10] After World War II, the Japanese stock exchanges reopened in 1949 and most pre-war

86 firms, we cannot obtain ownership or board data, which are necessary to identify family firms. After excluding them, 1,273 firms remain, which comprise both family and non-family firms.

Then, we further exclude 27 family firms that changed to non-family firms by 1973[11]. Moreover, we exclude 44 subsidiaries of other listed companies, assuming that mergers of subsidiaries are largely decided by the parent companies rather than by the subsidiaries themselves[12]. Thus, we obtain a final sample of 1,202 firms, comprising 509 family firms (42%) and 693 non-family firms (58%). They are all Japanese listed firms in the 1960s.

3.2. Merger events

We collect data on the merger events of the sample firms from various sources, including company annual reports. In the first step, we obtain 448 cases during the observation period (1955–1973)[13]. From these, we first exclude 55 cases that occurred before the IPO for the lack of financial data on these events. We again exclude nine cases (type 1) of reunion of firms that were originally united but were divided by law into two or more companies in 1947 (such as the cases of Mitsubishi Heavy Industries in 1964 and Nippon Steel in 1970) and the integration of subsidiaries and related companies (type 2: 131 cases).

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listed firms appeared once again. In 1961, the second section of the stock exchanges opened; it continued to attract numerous IPOs of relatively young firms, which were dominated by family firms, until 1964. Our sample comprises only the IPOs before 1965 because few firms went public from 1966 to 1973. Okamuro et al. (2008) provide more detailed information on the trend of IPOs in post-war Japan.

[11] These firms did not merge during our observation period.

[12] To check for robustness, we estimate the same model using a sample that include these 44 firms, and we obtain almost the same results.

[13] They do not include mergers for changing the nominal stock price.

We then focus on the remaining 253 cases (type 3) of mergers between independent firms, among which 55 and 198 cases were by family and non-family firms, respectively. Table 1 provides detailed information on the selection process of the sample firms and merger events.

[Insert Table 1 here]

3.3. Summary statistics

Table 2 provides the definitions of the main variables. Table 3 shows the summary statistics of these variables and the results of the significance test between family and non-family firms[14]. We find several significant differences between family and non-family firms.

[Insert Table 2 here]

With regard to the merger dummy, we find a significant difference between family and non-family firms. The average annual probability of mergers by non-family firms is 2% and that by family firms is 0.7%[15]. The result of the significance test shows that the difference is

[14] See Appendix 2 for the correlation matrix of the main variables. Consistent with Hypothesis 1, the family firm dummy is negatively correlated with the merger dummy, which is statistically significant at the one percent level.

[15] The average annual probability of mergers is 1.4% for the entire sample. It means that mergers were rare events in Japan during our observation period. Though the probability of mergers is indeed quite low in our sample, we have good reasons to believe that the results based on our sample are representative enough to generalize about the difference in merger propensity between family and non-family firms. First, we collect the merger events from the annual reports of all listed firms of the 1960s. Thus, we construct a comprehensive sample of mergers by listed firms during this period. Second, our sample shows a merger trend (moving average for three years) similar to the overall trend in Japan based on the dataset of the Japan Fair Trade Commission (JFTC; see Appendix 3). Third, considering the rare event bias (King and Zeng, 2003), we check the robustness of our results with an alternative estimation and

statistically significant at the one percent level. This indicates that family firms are more passive towards mergers than non-family firms are.

Family firms are more profitable than non-family firms both by accounting and market measures. Furthermore, they achieve higher growth in sales and employee numbers and record a higher cash-flow ratio than non-family firms. The latter has a larger size, higher leverage, and higher rate of blockholder ownership than family firms; this indicates that they have a closer relationship with financial institutions than family firms do.

[Insert Table 3 here]

3.4. Relative size and family ownership dilution

We postulate that family firms are averse to mergers for fear of losing control. The extent of control loss after the merger depends on the size of target firms. The owner-managers of family firms have an incentive to pick up counterparts that are small enough to keep control after the merger. Therefore, we should check the relative size of the merging and merged firms before conducting regression analysis. Table 4 provides this information[16].

The mean of the relative size is 0.26, while the median is 0.11. Thus, the targets of the mergers by the sample firms are much smaller than the sample firms themselves. Neither the mean nor the median of the relative size is statistically different at the five percent level between family and non-family firms. Thus, we find no differences between them with regard to the relative size of the merging and the merged firms.

[Insert Table 4 here]

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obtained similar results.

[16] Non-listed firms dominate the targets of mergers in our sample firms. Thus, we cannot obtain any information on these firms, except for the amount of capital. We calculate the relative firm size using the size of capital. Among the 253 mergers in our sample, only 60 cases are between listed firms, among which 5 cases are by family firms.

In order to check the extent of the control rights lost by family firms after the merger, we employ the matching-pair method and choose the pairs using industry and size criteria. We match each family firm that merged with another family firm from the same industry and of a similar size that did not merge[17]. However, because of the difficulty in finding matching pairs[18], we eventually find 22 matching pairs among 55 merger events. We compare these 22 matching pairs of family firms with regard to the changes in family ownership and firm size around the merger process by using the DD (Difference-in-Differences) method.

Table 5 provides the results of DD analysis based on the sub-sample of family firms. The left-hand side of the table shows the results on family ownership, and the right-hand side displays those on firm size. Family ownership decreases by about 8.9% around the merger (average value of three years after the merger minus the corresponding value before merger); this is statistically significant at the one percent level. During the same period, family ownership of the control group (non-merging family firms) does not decrease significantly. The DD result shows that the difference between the changes in family ownership of the merger group and the control group is about 7.9% and is statistically significant at the five percent level. Thus, we find considerable dilution of family ownership around the merger compared to the control group without any merger experience. We can thus conclude that the merger affects family control rights significantly.

[17] We classify the industries following the classification used in the DBJ database of listed firms. The DBJ applies two-digit classification to manufacturing and one-digit classification to other industries, because manufacturing firms have been the large majority of listed firms in Japan.

[18] Mitchell and Mulherin (1996) find that takeovers and restructuring in a particular industry tend to cluster within a narrow range during the sample period. We find a similar trend in our sample; this makes it difficult to identify an appropriate control group.

The DD result on firm size shows no difference between the merging and non-merging family firms around the merger. This indicates that the matching process functions effectively.

[Insert Table 5 here]

4. Regression analysis

4.1. Estimation model

To examine the different attitudes of family and non-family firms towards mergers, we estimate the following regression model:

$$\text{Merger dummy}_{it} = \beta_0 + \beta_1 \text{Family dummy}_{it} + \beta_{2-9} \text{Control variables}_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable is the probability that firm *i* will merge in year *t*, represented by the *merger dummy* that takes on the value one if firm *i* merges with another independent firm in year *t*, and zero otherwise.

Among the independent variables, the most important is the *family firm dummy*, which takes on the value one if a firm is a family firm, and zero otherwise. We consider several control variables that we think will affect the merger decision. We derive these variables from the previous studies on the determinants of mergers reviewed in Section 2.1.

Jensen (1986) argues that the managers of firms with unused borrowing power and large free cash flow are more likely to undertake low-benefit or even value-destroying mergers. Lang et al. (1991) and Harford (1999) empirically examine this problem. This free cash flow theory predicts that such acquirers tend to perform exceptionally well before the acquisition. On the basis of this theory, we use *ROA* (return on asset: the ratio of operating income to total assets) and *cash flow* (the ratio of cash plus short-term securities to total assets) as control variables and postulate that the values of these variables have a positive relationship with merger probability.

In addition, Jensen (1986) argues that debt reduces the agency costs of free cash flow by reducing the cash flow available for spending at the discretion of managers. If this effect

works, *leverage* (the ratio of long-term debt to total assets) will have a negative relationship with merger probability. Therefore, we include this variable in the estimation model.

Jovanovic and Rousseau (2002) find that a firm's investment in M&A, as compared to its direct investment, responds to its Tobin's Q level more sensitively. They predict that high-Q firms usually buy low-Q firms, which Lang et al. (1989) and Servaes (1991) investigate empirically. On the basis of these arguments, we expect that the values of *Tobin's Q* and the *high Q dummy*, which takes on the value one if the value of Tobin's Q is above the median, and zero otherwise, have a positive relationship with merger probability.

Odagiri and Hase (1989) reveal that Japanese managers choose M&A as a complement to internal growth efforts or that they undertake M&A when internal resource constraints hamper internal growth efforts. We include *capital expenditure* as a proxy for internal growth efforts and expect its value to be positively related to merger probability.

In addition, we control for the blockholder effect. Just as shareholding family members tend to avoid mergers for fear of losing their control, we postulate that even the blockholders (large corporate shareholders plus financial institutions) may hesitate to agree to a merger decision because of the dilution of their ownership. Thus, we add the variable *blockholder ownership* to control for this effect. We control for the effect of firm size by using the variable *firm size* (total assets in natural logarithms). Further, we control for industry and year effects by industry and year dummies. Except for these dummy variables, all independent variables are lagged for one year.

We conduct binary probit analysis with pooled data instead of panel data analysis (panel probit) because the value of the family dummy remains unchanged during the observation period[19]. If we find a negative and significant relationship between merger probability and

[19] As mentioned in footnote 15, mergers are quite rare events in our sample, with an average annual probability of 1.4%. Considering the rare event bias, we alternatively conduct the rare

the family firm dummy after controlling for other variables, Hypothesis 1 holds.

4.2. Regression results (Hypothesis 1)

Table 6 provides the regression results. The *family firm dummy* has a negative and significant effect on merger probability in all specifications; this suggests that family firms are less likely to merge than non-family firms are. Contrary to Jensen (1986), the coefficients of ROA have a negative sign and are statistically significant at the one percent level in all specifications. In contrast to Jovanovic and Rousseau (2002), *Tobin's Q* and the *high Q dummy* have negative and significant effects on merger probability: The firms with a lower opportunity for growth have a more positive attitude towards the merger. We find very weak evidence for the tendency of Japanese managers to choose mergers as a complement to internal growth efforts, as Odagiri and Hase (1989) argue.

Blockholder ownership has a negative and significant effect on merger probability; this suggests that blockholders may also be averse to mergers for fear of losing control. *Firm size* has a strong and positive effect on merger probability.

In sum, family firms are less likely to merge than non-family firms are. Merger firms are large, have a low potential for growth and profitability, and are independent of blockholders.

[Insert Table 6 here]

4.3. Family ownership and merger probability (Hypothesis 2)

The regression result in the previous section indicates that family firms are significantly less likely to merge even after controlling for other firm characteristics. A major difference between family and non-family firms is that the CEO and other directors can be large shareholders only in family firms. As large shareholders, family members in the top

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event logit estimation according to King and Zeng (2003). The results are quite similar to those of the usual probit estimation reported in Table 6. The results of the rare event logit estimation are available from the authors upon request.

management may fear that they would lose control over their firms after a merger; in contrast, this is not the case for the board members of non-family firms because they hold no, or a negligible amount of, shares.

However, the situation may be different among family firms. The higher the shareholding ratio of family members before a merger, the more likely are the family members to maintain their position after the merger, despite the dilution of ownership. Family firms with a sufficiently high ratio of family ownership may show a similar probability to merge to non-family firms when they confront the same opportunity for a merger.

In order to investigate the relationship between the merger decision and pre-merger family ownership, we estimate the following regression model:

$$\text{Merger dummy}_{it} = \beta_0 + \beta_1 \text{Family firm dummy}_{it} + \beta_2 \text{Family ownership}_{it} + \beta_{3-10} \text{Control variables}_{it} + \varepsilon_{it} \quad \textbf{(2)}$$

We check the above arguments by a full-sample estimation using both variables *family firm dummy* and *family ownership*. If we find a negative relationship between merger probability and the *family firm dummy* and a positive relationship between merger probability and family ownership after controlling for other variables, Hypothesis 2 holds. Table 7 displays the results.

The regression results show that indeed the *family firm dummy* has a negative and significant effect while *family ownership* has a positive and significant effect on merger probability; this indicates that among family firms, the higher the family ownership the more ready are the family members to merge. We can calculate from the marginal effects of these variables that family firms have the same probability of undertaking a merger as non-family firms when the family ownership ratio is above 90%. Thus, most family firms are less likely to merge than non-family firms are[20].

[20] To calculate it, we estimate marginal effects at mean values for these variables using probit

[Insert Table 7 here]

4.4. Non-linear relationship between family ownership and merger decisions

We confirmed a positive and linear relationship between family ownership and merger probability in the previous section. However, the relationship between family ownership and merger decisions can also be non-linear. If the pre-merger level of family ownership is already too low to exercise sufficient control, the owner-managers are no longer concerned about losing control, and thus, they are as likely to choose a merger as non-family firms are. In this respect, Martin (1996) finds that the acquirer's managerial ownership is not related to the probability of stock financing over low and high ranges of ownership, but is negatively related over a middle range.

We check the possibility of non-linear relationships with two additional regressions: First, we include the square term of family ownership in the model for the sub-sample of family firms. Second, following Martin (1996), we include the dummies of low and high family ownership ratios, using the dummy for the middle range as a baseline reference. However, we do not find enough evidence for such non-linearity from these analyses [21].

5. Operating performance of mergers (Hypothesis 3)

Amihud et al. (1990) find that the negative abnormal returns associated with stock

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regression models. For example, in specification (1) of Table 7, the marginal effect of the family firm dummy is −0.0089 (the probability of merger by family firms is 0.89% lower than that by non-family firms after controlling for other factors in the model), while that of family ownership is 0.0001 (a 1 point increase in family ownership enhances merger probability by about 0.01%). Thus, when the family ownership ratio is around 90%, the negative effect of the family firm dummy can just be compensated. The estimation results with marginal effects at mean values are available upon request from the authors.

[21] These unreported results are available from the authors upon request.

financing are concentrated mainly in firms with low managerial ownership and argue that, given the great potential cost to managers of losing control under stock financing, the fact that they still employ this method of payment may be an indication to investors that the acquisition is not value-decreasing.

Following this argument, we postulate that the effect of mergers on the operating performance may also differ between family and non-family firms. If the owner-managers of family firms tend to avoid mergers because of the potential risk of losing control, the fact that they nevertheless decide to proceed with the merger as a means of expansion may imply that this merger plan may be profitable enough to compensate for the loss of control.

In addition, if the fear of losing control increases with pre-merger family ownership, this may affect post-merger operating performances. In order to check this, we divide family firms into high (higher than median) and low (lower than median) ownership groups according to the pre-merger family ownership level.

Using Japanese M&A data, Kang et al. (2000) show that the expected returns at the announcement of a merger have a strong positive association with the strength of the acquirer's relationships with banks. They conclude that close ties with informed creditors such as banks facilitate investment policies that enhance shareholder wealth. Following this argument, we classify non-family firms into high (higher than median) and low (lower than median) ownership groups according to the pre-merger financial ownership level.

We conduct DD analysis to analyze the relative merger performance of family firms[22]. We consider the following four industry-adjusted variables as performance measures: ROA,

[22] As Mitchell and Mulherin (1996) point out, merger activity clusters in the industries within a narrow range of time. Therefore, we cannot consider several merger events. Hence, our final sample for DD analysis comprises 131 merger events, among which 30 cases are by family firms.

Tobin's Q, sales growth, and employment growth. We calculate these industry-adjusted measures by subtracting the industry mean from the observed value for each firm and year. We calculate the industry mean from the DBJ database without including the data of the observed firm itself.

Table 8 presents the DD analysis results for the three-year averages of the performance variables around mergers and between firm types. The values in this table show the differences between the three-year averages of firm profitability in the pre- and post-merger periods[23]. We find some differences in merger performances between family and non-family firms: The latter shows a significant improvement of 0.6% in industry-adjusted ROA (column 2). In contrast, family firms exhibit a significant deterioration of performance with regard to Tobin's Q and employment growth (column 3).

The DD results on family and non-family firms exhibit significant differences between industry-adjusted ROA and Tobin's Q (columns (2) – columns (3)). The DD results for the high and low ownership groups of non-family firms do not show performance differences (columns (4) – columns (5)). While we obtain similar results for family firms, we can attribute these results to a few observations (columns (6) – columns (7)). The DD results for non-family firms and the low-ownership group of family firms show significant differences in industry-adjusted ROA (columns (2) – columns (6)), while those for non-family firms and the high-ownership group of family firms exhibit significant differences in industry-adjusted employment growth (columns (2) – columns (7)).

In sum, contrary to Hypothesis 3, family firms underperform as compared to non-family firms with regard to merger performance. We confirm that family firms are less likely to merge than non-family firms are. We assume that, if they are passive towards mergers for the fear of losing control rights, mergers realized by family firms should at least be profitable

[23] We obtain similar results by using two-year averages instead of three-year averages.

enough to compensate for this loss. However, on average, they obtain lower gains from mergers than non-family firms do. These results are rather puzzling.

[Insert Table 8 here]

6. Concluding remarks

This paper investigates the causes and consequences of mergers in Japan during the period of high economic growth (1955–1973) for comparison between family and non-family firms. Specifically, we focus on the large number of family firms that went public during the first half of the 1960s. Although family firms have hitherto been prevalent among Japan's listed firms, previous studies on M&A consider neither family firms nor the period of high economic growth.

Using a pooled dataset of family and non-family firms that went public between 1949 and 1965, we find that almost 80% of the mergers between independent firms from 1955 to 1973 were conducted by non-family firms, and that they were also significantly more 'merger-intensive' than family firms (Table 3), even after controlling for several firm- and industry-specific factors (Table 6). Family ownership is a key determinant of merger decisions and has a linear positive relationship with merger probability (Table 7).

Next, we examine the difference merger performance between family and non-family firms in order to provide support for the above findings. However, contrary to our expectations, we find that family firms underperform as compared to non-family firms with regard to an improvement in operating performance around the merger (Table 8).

We refer to some limitations of our study to suggest future research directions. First, we conduct this study using insufficient information on merger partners because most of them are small, unlisted firms. Moreover, this study lacks detailed information on the merger process. For further research, we require more detailed and precise information on the relationship of merger partners, as well as the motivation for and the process of mergers.

Second, we restrict our target to mergers and do not consider acquisitions, even though there have been much more acquisitions than mergers in Japanese history. We cannot reject the possibility that mergers and acquisitions are substitutions, and that family firms are less likely to merge with, but more likely to acquire, other firms than non-family firms, because acquisitions using cash, by definition, do not influence the ownership structure of the acquiring firms. Last but not the least, it is important to extend this line of research to mergers in other periods, particularly in recent years, in order to examine the generality of our findings.

Despite these limitations, this paper primarily confirms distinct differences between the corporate strategies of family and non-family firms, specifically in the propensity and effects of mergers. Thus, our study provides a new perspective in the literature of M&A. In this regard, a major implication of this study is that we should not neglect the aspect of corporate ownership and control in studying and discussing M&A.

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Table 1: Selection process of sample firms and merger events

Process	Observation	Sample	Family firms	Non-family firms
1. Number of firms that went public before 1965	1359	1359	.	.
2. Number of firms for which we could not obtain ownership or board data	86	1273	537	736
3. Number of firms that were converted into non-family firms by 1973	27	1246	510	736
4. Number of firms that are subsidiaries of other listed firms	44	1202	509	693
5. Number of firms in the final sample		1202	509	693

Process	Observation	Family firms	Non-family firms
Total number of merger events	448	330	118
Number of merger events before IPO	55	28	27
Number of merger events after IPO	393	302	91
Type 1	9	8	1
Type 2	131	96	35
Type 3	253	198	55
Total	393	302	91

Type 1 is reunion of firms that were originally united but were divided by law into two or more companies in 1947.Type 2 merger is integration of subsidiaries and related companies. Type 3 is merger between independent firms , among which 55 and 198 cases were by family and non-family firms, respectively.

Table 2: Definition of variables

Merger dummy	Dummy variable that takes on the value one if firm i merged with another independent firm in year t, and zero otherwise
Family firm dummy	Dummy variable that takes on the value one if the firm is a family firm, and zero otherwise
ROA	Operating income divided by the book value of total assets
Tobin's Q	The sum of the market value of equity and the book value of liabilities divided by the book value of total assets
High Q dummy	Dummy variable that takes on the value one if the firm's Q is above median, and zero otherwise
Firm size	The book value of total assets in natural logarithm
Leverage	The ratio of long-term debt to the book value of total assets
Cash flow	Cash plus short-term securities divided by the book value of total assets
Sales growth	The annual nominal growth ratio of sales
Employment growth	The annual nominal growth ratio of the number of employees
Capital expenditure	(fixed asset (t) − fixed asset (t-1) + depreciation) divided by the book value of total sales
Blockholder ownership	The sum of shareholding by financial institutions and business corporations among the ten largest shareholders relative to the total shares
Family ownership	The sum of shareholding by family members among the ten largest shareholders relative to the total shares

Table 3: Summary statistics and univariate test

Variables	Group	Mean	Median	Max	Min	SD	T-test
	Entire sample	1.418	0.000	100.000	0.000	11.825	1.291***
Merger dummy	Non-family firms	2.013	0.000	100.000	0.000	14.046	(5.37)
	Family firms	0.722	0.000	100.000	0.000	8.465	[9025]
	Entire sample	7.620	6.878	30.679	-13.739	4.739	-1.417***
ROA	Non-family firms	6.967	6.459	30.679	-13.508	4.213	(14.09)
	Family firms	8.385	7.426	30.679	-13.739	5.186	[9025]
	Entire sample	1.238	1.156	3.989	0.748	0.298	-0.090***
Tobin's Q	Non-family firms	1.196	1.121	3.989	0.793	0.273	(14.41)
	Family firms	1.287	1.198	3.989	0.748	0.319	[9025]
	Entire sample	16.375	16.206	22.036	12.059	1.505	0.843***
Firm size	Non-family firms	16.763	16.623	22.036	12.059	1.574	(28.11)
	Family firms	15.919	15.781	20.635	12.969	1.277	[9025]
	Entire sample	13.912	11.360	66.749	0.000	11.676	6.098***
Leverage	Non-family firms	16.721	14.383	66.749	0.000	12.914	(26.32)
	Family firms	10.623	8.703	59.484	0.000	8.981	[9025]
	Entire sample	18.506	18.089	46.343	0.829	6.408	-2.527***
Cash flow	Non-family firms	17.342	17.082	46.343	0.829	6.067	(18.94)
	Family firms	19.869	19.441	46.343	2.615	6.527	[9025]
	Entire sample	17.287	15.834	109.871	-49.008	15.890	-2.127***
Sales growth	Non-family firms	16.307	14.998	105.881	-49.008	15.207	(6.31)
	Family firms	18.435	16.987	109.871	-44.565	16.583	[9025]
	Entire sample	2.598	1.746	68.047	-60.561	10.368	-1.340***
Employment growth	Non-family firms	1.981	1.162	68.047	-60.561	9.836	(6.08)
	Family firms	3.322	2.469	68.047	-58.646	10.915	[9025]
	Entire sample	5.160	3.096	90.331	-74.299	9.122	1.644***
Capital expenditure	Non-family firms	5.918	3.335	90.331	-74.299	10.268	(8.78)
	Family firms	4.273	2.883	73.934	-46.872	7.468	[9025]
	Entire sample	31.973	29.670	92.990	0.000	18.142	16.991***
Blockholder ownership	Non-family firms	39.799	38.215	92.990	0.000	17.016	(50.68)
	Family firms	22.808	20.870	79.380	0.000	14.827	[9025]
	Entire sample	8.174	0.000	88.300	0.000	13.571	-17.747***
Family ownership	Non-family firms	0.000	0.000	0.000	0.000	0.000	(75.45)
	Family firms	17.747	13.370	88.300	0.000	15.164	[9025]

This table provides the summary statistics of our main variables and the results of the significance test. See Table 2 for the definitions of variables. Outliers are excluded by using four sigma criteria for each year and variable. T-statistics are reported in parentheses and the number of observations are reported in square brankets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Table 4: Relative firm size

Group	Obs	Mean	Median	Max	Min	SD	T-test
Entire sample	244	0.261	0.112	2.143	0.000	0.379	0.094
Non-family firms	190	0.282	0.110	2.143	0.000	0.402	(1.97)
Family firms	54	0.188	0.120	1.333	0.001	0.277	[244]

This table provides the relative firm size between merging and merged firms and the results of the univariate test. See Table 2 for the definition of variables. T-statistic is reported in the parentheses and the number of observations in the square bracket. The data on the size of target firms are not available for nine cases.

Table 5: Difference-in-differences (DD) analysis on family ownership change

	Family ownership			Firm size		
	Merging family firms	Non-merging family firms	Difference	Merging family firms	Non-merging family firms	Difference
Average value for 3 years before merger	27.163	18.311	-8.851***	15.730	15.711	0.019
	[22]	[22]	(3.14)	[22]	[22]	(0.11)
Average value for 3 years after merger	18.295	17.370	-0.924	16.496	16.340	0.155
	[22]	[22]	(0.38)	[22]	[22]	(0.89)
Difference	-8.867***	-0.940	-7.926**	0.765***	0.628***	0.137
	(3.34)	(0.36)	(2.14)	(4.13)	(3.97)	(0.56)

This table provides DD results on the changes in family ownership and firm size around merger events. See Table 2 for the definition of variables. T-statistics are reported in parentheses and the number of observations are reported in square brankets. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Table 6: Estimation results 1: Family firms and merger decisions

	Expected signs	(1)	(2)	(3)	(4)	(5)
Family firm dummy	−	-0.285***	-0.293***	-0.278***	-0.291***	-0.282***
		(2.99)	(3.12)	(2.93)	(3.07)	(2.97)
ROA	+	-0.038***			-0.038***	-0.035***
		(3.78)			(3.54)	(3.16)
Cash flow	+	0.003			0.004	0.004
		(0.42)			(0.53)	(0.55)
Leverage	−	-0.004			-0.006	-0.006
		(0.98)			(1.29)	(1.40)
Tobin's Q	+		-0.191*		-0.016	
			(1.73)		(0.15)	
High Q dummy	+			-0.174**		-0.082
				(2.29)		(0.98)
Capital expenditure	+		0.005	0.005	0.006	0.006*
			(1.37)	(1.44)	(1.62)	(1.76)
Blockholder ownership	−	-0.006**	-0.006**	-0.006**	-0.006**	-0.006**
		(2.10)	(2.30)	(2.29)	(2.19)	(2.20)
Firm size	+ / −	0.197***	0.183***	0.186***	0.196***	0.198***
		(6.41)	(6.59)	(6.72)	(6.36)	(6.40)
Constant		-4.707***	-4.836***	-4.616***	-4.990***	-4.729***
		(7.92)	(9.04)	(8.96)	(8.16)	(7.89)
Observation		9025	9025	9025	9025	9025
Probability >χsquare		0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R-square		0.1076	0.1001	0.1014	0.1092	0.1098
Year dummy		Yes	Yes	Yes	Yes	Yes
Industry dummy		Yes	Yes	Yes	Yes	Yes

This table provides the estimation results on the determinants of mergers. See Table 2 for the definition of variables. With the exceptions of industry and year dummies, all variables are lagged for one year. Outliers are excluded by using four sigma criteria for each year and variable. T-statistics are reported in parentheses. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Table 7: Estimation results 2: Relationship between family ownership and merger decisions

	Expected signs	(1)	(2)	(3)	(4)	(5)
Family firm dummy	−	-0.407***	-0.404***	-0.386***	-0.417***	-0.409***
		(3.37)	(3.41)	(3.24)	(3.47)	(3.38)
Family ownership	+	0.008*	0.007*	0.007*	0.008**	0.008**
		(1.93)	(1.77)	(1.71)	(1.99)	(1.99)
ROA	+	-0.039***			-0.039***	-0.036***
		(3.91)			(3.58)	(3.24)
Cash flow	+	0.002			0.003	0.003
		(0.35)			(0.47)	(0.49)
Leverage	−	-0.005			-0.007	-0.007
		(1.16)			(1.51)	(1.62)
Tobin's Q	+		-0.205*		-0.032	
			(1.88)		(0.30)	
High Q dummy	+			-0.179**		-0.086
				(2.35)		(1.02)
Capital expenditure	+		0.005	0.005	0.006*	0.006*
			(1.41)	(1.47)	(1.71)	(1.85)
Blockholder ownership	−	-0.004	-0.005*	-0.005*	-0.004	-0.004
		(1.57)	(1.78)	(1.78)	(1.63)	(1.64)
Firm size	+ / −	0.207***	0.192***	0.195***	0.206***	0.208***
		(6.64)	(6.56)	(6.68)	(6.61)	(6.64)
Constant		-4.907***	-5.015***	-4.798***	-5.186***	-4.940***
		(8.13)	(8.86)	(8.78)	(8.31)	(8.10)
Observation		9025	9025	9025	9025	9025
Probability >χsquare		0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R-square		0.1100	0.1021	0.1034	0.1117	0.1123
Year dummy		Yes	Yes	Yes	Yes	Yes
Industry dummy		Yes	Yes	Yes	Yes	Yes

This table provides the estimation results on the relationship between pre-merger family ownership and merger decisions. See Table 2 for the definition of variables. With the exceptions of industry and year dummies, all variables are lagged for one year. Outliers are excluded by using four sigma criteria for each year and variable. T-statistics are reported in parentheses. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Table 8: Difference-in-differences (DD) analysis on merger performances

	Total	Non-family firms	Family firms	Non-family firms		Family firms		Difference-in-differences				
				Low	High	Low	High					
Differences in	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(2) − (3)	(4) − (5)	(6) − (7)	(2) − (6)	(2) − (7)
	0.003	0.006**	-0.010	0.007*	0.005	-0.016*	-0.003	0.016***	0.002	-0.013	0.022***	0.009
Industry-adjusted ROA	(0.98)	(2.28)	(1.53)	(1.76)	(1.46)	(1.76)	(0.38)	(2.63)	(0.35)	(1.03)	(2.85)	(1.22)
	[131]	[101]	[30]	[50]	[51]	[15]	[15]	[131]	[101]	[30]	[116]	[116]
	-0.018	0.000	-0.071**	0.020	-0.018	-0.054	-0.091*	0.071*	0.038	0.037	0.054	0.091
Industry-adjusted Tobin's Q	(0.99)	(0.00)	(2.35)	(0.63)	(0.64)	(1.65)	(1.81)	(1.72)	(0.91)	(0.63)	(1.00)	(1.59)
	[121]	[92]	[29]	[44]	[48]	[15]	[14]	[121]	[92]	[29]	[107]	[106]
	0.024**	0.022*	0.031	0.023	0.020	0.040	0.022	-0.010	0.003	0.019	-0.019	0.000
Industry-adjusted sales growth	(2.28)	(1.79)	(1.52)	(1.35)	(1.19)	(1.30)	(0.78)	(0.39)	(0.11)	(0.45)	(0.55)	(0.01)
	[131]	[101]	[30]	[50]	[51]	[15]	[15]	[131]	[101]	[30]	[116]	[116]
	-0.015*	-0.009	-0.038**	0.004	-0.020	-0.011	-0.067**	0.029	0.024	0.056	0.002	0.058**
Industry-adjusted employee growth	(1.75)	(0.89)	(2.03)	(0.29)	(1.46)	(0.54)	(2.13)	(1.42)	(1.24)	(1.56)	(0.07)	(2.09)
	[131]	[101]	[30]	[50]	[51]	[15]	[15]	[131]	[101]	[30]	[116]	[116]

This table presents the DD results of performance measures for mergers and across firm types for the three-year averages. See Table 2 for the definition of variables. The column value is the change in performance around merger. Changes in performance are calculated as the differences between the three-year averages of post-and pre-merger performances. Outliers are excluded by using four sigma criteria for each year and variable. T-statistics are reported in parentheses and the numbers of observation are in square brackets. Numbers of observations vary for missing values. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Appendix 1: Number of mergers by firm type, merger ratio and year

	Family firms			Non-family firms		
Year	Equal mergers	Others	N.A.	Equal mergers	Others	N.A.
1955	0	0	0	3	6	2
1956	2	1	0	5	2	2
1957	0	1	0	3	4	0
1958	1	3	0	4	2	0
1959	0	0	0	2	0	0
1960	0	0	0	3	6	2
1961	4	0	1	5	1	2
1962	3	3	0	7	2	1
1963	5	0	0	7	5	0
1964	0	0	0	11	13	0
1965	3	1	0	3	7	1
1966	1	1	0	5	6	3
1967	0	2	0	2	3	0
1968	5	3	0	6	8	0
1969	0	3	0	4	4	0
1970	2	1	1	5	6	3
1971	1	2	0	7	3	2
1972	2	1	1	6	2	4
1973	1	0	0	5	3	0
Total	30	22	3	93	83	22

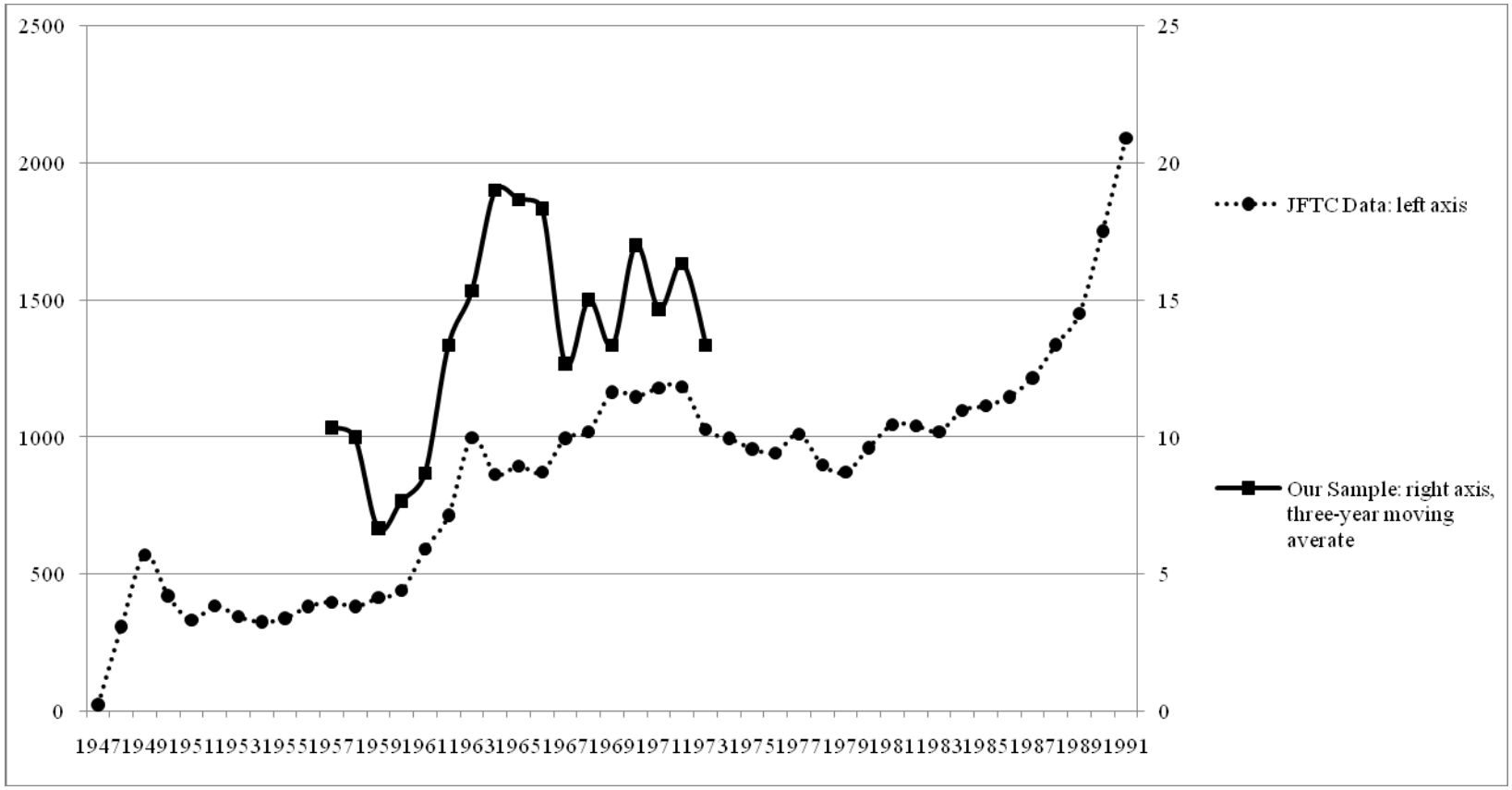
Equal mergers are those in which the merger ratio is 1:1. N. A. denotes that no information on merger ratio was available.

Appendix 2: Correlation matrix of the main variables

	Variables	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
A1	Merger events dummy	1									
A2	Family firm dummy	-0.054***	1								
A3	ROA	-0.036**	0.149***	1							
A4	Cash flow	-0.042***	0.197***	0.117***	1						
A5	Leverage	0.042***	-0.260***	-0.225***	-0.304***	1					
A6	Tobin's Q	-0.013	0.152***	0.491***	0.053***	-0.246***	1				
A7	High Q dummy	-0.015	0.195***	0.447***	0.098***	-0.234***	0.562***	1			
A8	Capital expenditure	0.064***	-0.090***	0.027	-0.191***	0.398***	0.088***	0.068***	1		
A9	Blockholder ownership	0.001	-0.467***	-0.129***	-0.056***	0.244***	-0.154***	-0.175***	0.050***	1	
A10	Firm size	0.089***	-0.280***	-0.189***	-0.254***	0.316***	-0.053***	-0.057***	0.163***	0.092***	1

This table reports correlation coefficients of the variables and their statistical significance. All variables are described in Table 2. Asterisks denote statistical significance at the 1% (***), 5% (**), and 10% (*) levels, respectively.

Appendix 3: Number of mergers in Japan after World War II



Data source: Japan Fair Trade Commission (1999)