THE VALUE OF CORPORATE DIVERSIFICATION: EVIDENCE FROM POST-MERGER PERFORMANCE IN JAPAN*

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Abstract

The issue of choice between specialization and diversification in corporate business activity has become the center of large body of corporate finance literature in recent years. U.S. empirical evidence on the effects of diversification after merger is mixed, suggesting that the diversification benefits of mergers change over time. This is the first paper to examine the long-term operating performance following mergers of manufacturing firms traded on the Tokyo Stock Exchange for the period from 1969 to 1992. Using a unique data set that includes the pre-merger performance of the target and acquirer firms, we find that the long-term operating performance following the mergers is positive but insignificant. However, the long-term performance is significantly greater following diversifying mergers, and there is a remarkable degree of consistency between the pre-merger and post-merger performance. Our results are consistent with the view by Hubbard and Palia (1999) who examine the mergers occurring in the U.S. during the 1960s, and find the positive abnormal returns in bidder firms of diversifying mergers. Finally, we show that rescue mergers involving distressed targets are not likely to lead to inferior long-term performance contrary to the notion that acquisitions of poorly performing firms are less likely to succeed. This is a contrast to the results of Clark and Ofek (1994) who examine a sample of 38 of acquisitions of distressed targets in the U.S. and report that the bidders are not successful in restructuring the target firms. Our findings support the notion that the benefits of merger will be greater when target firms is liquidity constrained prior to diversifying acquisitions.

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1. Introduction

The topic of choice between diversification and specialization in a firm's business activities has been extensively documented in the recent corporate finance literature. U.S. empirical evidence broadly suggests that diversification destroys value, and the value of sum of stand-alone firms is higher than a diversified firm. This phenomenon is popularly known as "diversification discount." [1] U.S. empirical evidence on the effects of diversifying merger however is mixed, suggesting that the diversification benefits of mergers evolve over time reflecting the market participant's change in attitude. Lang and Stulz (1994), Berger and Ofek (1995), and Comment and Jarrell (1995) argue that firm value is decreased in diversified firms in the 1980s and early 1990s, while Matsusaka (1993) and Hubbard and Palia (1999) find diversification benefits during the 1960s in the U.S. firms. Therefore, the issue of whether diversification hurts or enhances firm value is still debatable, and offering need for further investigation especially across different countries, industries and periods.

In this paper, we examine the long-term operating performance following all mergers between manufacturing firms listed on the Tokyo Stock Exchange (TSE) in the period from 1969 to 1992. Particular attention is given to the post-merger performance of mergers across different industries, different affiliations, and different business groups (or *keiretsu*). Using a unique data set that includes the pre-merger performance of target firms, we find that the long-term operating performance following the mergers is positive but insignificant. However, the long-term performance is significantly greater following diversifying mergers, which are mergers of firms

[1] Among others, see Rajan, Servaes, and Zingales (2000) and Scharfstein and Stein (2000) for the most recent discussions on diversification discount. International evidence by Lins and Servaes (1999) shows that there exists cross-country variation in the valuation effect of diversification where firms in Japan and U.K. are found to have significant diversification discounts, but this is not the case for firms in Germany. They suggest that different corporate governance system is at work.

in different industries, and there is a remarkable degree of consistency between the pre-merger and post-merger performance.

Our results are consistent with the findings by Matsusaka (1993) and Hubbard and Palia (1999) who examine the mergers occurring in the U.S. during the 1960s, and find positive abnormal returns in bidder firms of diversifying mergers. Our findings support the notion that the benefits of merger will be greater when target firms are liquidity constrained prior to conglomerate mergers. Finally, rescue mergers involving distressed targets are not likely to lead to inferior long-term performance contrary to the notion that acquisitions of poorly performing firms are less likely to succeed. This is a contrast to the results of Clark and Ofek (1994) who examine a sample of 38 of acquisitions of distressed targets in the U.S and report that the bidders are unable to successfully restructure the target firms.

Recent surge in merger activity in Japan shows a marked contrast to the historical view as described by Kester (1991).[2] He attributes the smaller scale of Japanese mergers activity to the unique Japanese governance structure involving implicit contracts based on trust, extensive reciprocal shareholdings, and early selective intervention by main banks and other key shareholders. As a consequence of this governance structure, the need to develop long-term relationships overwhelmed any desire for mergers and acquisitions activity. Odagiri (1992) suggests that cultural factors also may explain the relative rarity of large scale mergers and acquisitions because Japanese management traditionally prefer internal growth mechanisms such as reinvesting retained earnings and setting up subsidiaries to mergers and acquisitions.[3] Kester

[2] According to *MARR Magazine* (2002), the number of broadly defined purely domestic mergers and acquisitions has increased from 268 in 1990 to 1190 in 2001 and has permeated to all levels of corporate Japan. *MARR Magazine* maintains a comprehensive database of mergers and acquisitions activity in Japan. However, as most Japanese companies are reluctant to provide financial details of their acquisitions of private firms, they primarily report only the number, not the value of deals each year.

[3] This was especially the case once Japanese business got firmly reestablished after the turmoil caused by World War II. According to Odagiri and Yamawaki (1990), of the 899 traded manufacturing firms at the Tokyo Stock Exchange in 1964, only 67, or 7.5 percent, had been acquired by 1984, while 384 (or 38.4 percent) out of 1,000 largest manufacturing firms had been acquired between 1950 and 1972.

(1991) goes on to suggest that due to the structure of the Japanese governance system, "the net economic benefits of mergers and acquisitions may have been smaller for Japanese companies than for others." In light of historical reluctance of listed Japanese companies to merge, the dramatic increase in the amount of mergers and acquisitions activity in recent years is of considerable interest, since this may suggest an important change of the governance structure in Japan. To help predict the success of the current wave of deals, we examine the performance of previous mergers.

Our paper contributes in the merger literature in the following perspectives. First, to our knowledge, there are no studies of the long-term operating performance following mergers of Japanese manufacturing companies. In this paper, we investigate the operating performance of acquiring and target firms from 5 years prior to 5 years after the completion of mergers of manufacturing firms listed on the TSE over a long period of time. Our paper also contributes in exploring the issues of post-merger performance of diversification mergers by examining mergers between firms in different business groups or different industries. We also examine factors likely to affect the performance of the merging firms. These include whether the merging firms operate in the same industry, whether the merging firms are affiliated, and the financial health of the targets. Because the operating cash flows can be affected by regulatory decisions and accounting rules, we focus on manufacturing firms listed on the TSE. All mergers in financial, wholesale, and retail services industries as well as regulated industries such as utilities and telecommunications are excluded.

Although there is no work documenting the long-term performance of Japanese mergers, while several studies examine the ex-ante market reactions to merger announcements. Kang, Shivdasani and Yamada (2000) and Kang and Yamada (1996) report that acquiring firms experience significantly positive two-day abnormal returns of 1.2% and 1.41%, respectively. Kang, Shivdasani and Yamada (2000) show that the abnormal returns are related to the strength

of the acquirers' banking relationship and that the benefits are especially important when acquirers have relatively poor investment opportunities. Kang and Yamada (1996) report that the bidder returns are higher when the targets come from the same industry or are relatively large. Also, the bidders' returns are related to their leverage and their ties with financial institutions.

Pettway and Yamada (1986) also study the wealth effects of mergers at the time of the board meeting date. They report that similar to returns documented in the U.S., acquiring Japanese firms experienced positive but insignificant abnormal returns.[4] Pettway and Yamada, however, argue that shareholders lose wealth when the target firms' assets are large, while they accrue wealth when the target firms' assets are substantially smaller than those of the acquiring firm. This is the reverse of the pattern observed for takeovers in the United States as reported by Asquith, Bruner and Mullins (1983). Pettway and Yamada attribute the losses following takeovers of relatively larger firms to "the many cultural and environmental differences between Japan and America in management styles and objectives."

There is extensive and mixed evidence concerning the long-term operating performance of mergers in the United States. For example, using data of 1960s and 1970s, Ravenscraft and Scherer (1987) examine the post-acquisition earnings performance of the large U.S. firms and conclude that contrary to the theory predicting improvements in efficiency, the sample firms exhibited poor performance up to nine years after the takeover. On the other hand, Healy, Palepu, and Ruback (1992) report that the 50 largest U.S. mergers occurring between 1979 and 1984 were followed by significant improvements in 5-year industry-adjusted operating performance. Their results are supported by Cornett and Tehranian (1992) for the U.S. banking industry and more recently by Parrino and Harris (1999) who examine a larger sample of U.S. manufacturing

[4] The list of studies providing evidence concerning stock returns to acquiring firms in the U.S. includes, but is not limited to Asquith (1983), Asquith, Bruner and Mullins (1983), Bradley, Desai and Kim (1983), Dodd (1980), Jensen and Ruback (1983), and Kaplan and Weisbach (1992).

firms. Finally, using a sample of 38 acquisitions of distressed targets, Clark and Ofek (1994) report that the bidders are not successful in restructuring the target firms.

The remainder of the paper is organized as follows. In Section 2, we describe the data, our performance measures, and the selection of the control firms. Section 3 contains a discussion of the main empirical results and explores determinants of the post-merger performance. Section 4 concludes.

2. Sample selection and methodology

This section begins with a description of the sample selection process. Next, we discuss data sources and the selection of the control firms. We conclude with a description of our measures of operating performance.

2.1 Sample selection

The sample is constructed by examining the *Nihon Keizai Shimbun's* Nikkei NEEDS manual for incidences of mergers between firms listed on the Tokyo Stock Exchange (TSE) during 1969 to 1992. We eliminate mergers between companies operating in non-manufacturing industries such as construction, trading houses (*sogo-shosha*), wholesale and retail banking, and transportation. They are excluded because the operating cash flow structure is very different in those industries compared to manufacturing firms. We restrict our sample to Tokyo Stock Exchange listed firms because rigid listing requirements ensure that firms have been widely traded and large numbers of shares were listed over the sample period. Our final sample consists of 46 mergers involving a total of 47 targets.[5]

2.2 Data

All financial statement data are obtained from the Nikkei NEEDS financial database maintained and the Nikkei Amsus On-Line Database at Fuji Corporate Advisory Co. The accounting data is reported semiannually through 1974 and annually thereafter. A major

difficulty in the data collection process is that in contrast to Compustat and CRSP, once a firm is delisted by the Tokyo Stock Exchange, it is eliminated entirely from the databases. As a result, data for the target firms had to be manually collected from the archive library of the Tokyo Stock Exchange, where they maintain microfiche copies of annual reports (*yuuka-shoken hokokusho*) submitted by the companies listed on the Exchange.

Annual stock price data for acquirer, target, and their control firms are obtained either from the Nikkei NEEDS database (when available) or manually from the Monthly Report of Tokyo Stock Exchange (*Tosho Tokei Geppou*).

2.3 Control firms

Our study involves comparing the performance of newly merged companies to a pre-merger aggregate of the acquiring and target firms. In order to control for changes in performance attributable to industry or economy-wide factors, we construct a sample of control firms.

The method of selecting control firms is suggested by Barber and Lyon (1996). Accordingly, we select control firms for every acquiring and target firm utilizing three criteria. First, the control firms have the same first two-digit Nikkei NEEDS industry codes. Second, we search for the control firms, which are similar in size with the sample firms, by searching the book value of assets of the control firm as of the end of the year just prior to the merger within 70% to 130% of that of the acquirer or target. Finally, the control firms must not be delisted during the comparison period. Adjusted performance is calculated by subtracting the weighted-average of the performance of the control firms from that of the sample firms. As discussed later, the weights are the relative market value of assets of the acquirers and targets as of the year ending just prior to the merger.

2.4 Performance measures

[5] In one case, Mitsui Sugar merged with two companies simultaneously.

We utilize two operating cash flow measures to examine the long-term performance of the merging firms. These are the pretax operating cash flow returns on market value of assets (operating return), adapted from Healy, Palepu, and Ruback (1992) and the pretax operating cash flow divided by sales (operating margin), adapted from Clark and Ofek (1994). In each case, the pretax operating cash flow is defined as sales, minus cost of goods sold and selling, general, administrative expenses, plus depreciation. Unlike Healy, Palepu, and Ruback (1992), we do not add goodwill as it is not used in defining pretax operating cash flows in Japan.

In our first measure, operating return, the operating cash flows are deflated by the market value of assets at the beginning of the year. Prior to the merger, the market value of assets is defined as market value of equity plus book value of long-term debt minus cash and marketable securities. The market value of assets is used rather than book value of assets in order to control for the opportunity costs of the assets. Note that preferred stock is not considered in calculating the market value of assets.[6] Exclusion of marketable securities in obtaining asset returns is justified by Healy, Palepu, and Ruback (1992) as a way to ensure that the method of merger financing does not affect the cash flow returns measures. Following the merger, the market value of assets is adjusted each year by the combined acquirer and target change in wealth from the 5 days prior to the merger announcement through the completion date. This is necessary because any changes in the market's expectations regarding the performance of the combined firms will be reflected in the post-merger asset values.[7] For example, if the market expects merger will result in a permanent net increase in cash flows, the share price will increase accordingly. If we

[6] Preferred stock issues were virtually non-existent in Japan prior to 1990. There were only two companies that issued preferred stocks for the period from 1965 to 1990: Hitachi Zosen and Nippon Yakin Kogyo Corp. In April 1991, the commercial law was reformed and the issue procedure of preferred stock has become much simpler. Until that time, a company could not issue preferred stocks unless it changes its articles in the annual general meetings. Despite the deregulation in issuing process preferred stocks have been recently issued only by a few banks that are in need to raise their BIS capital ratios requirements. We would like to thank Takashi Kaneko for pointing out this issue.

[7] Kang, Shivdasani, and Yamada (2000) report that the mean cumulative abnormal return from the day prior to the announcement to the day after the effective date is 5.4%.

deflate following the merger using this increased market value, the expected change in operating performance will be zero.[8]

In our second measure, operating margin, the operating cash flow is deflated by sales. As discussed by Clark and Ofek (1994) this has the advantage of abstracting away from the changes in market value brought about by the merger announcement. On a lesser note, it also avoids the dramatic changes in market values associated with the stock market bubble of the late 1980's.

Lastly, as the pooling of interests method has been the norm for merger accounting in Japan, there are no goodwill expenses following completion of the merger. As a result, our sample firms avoid the combination of lower reported income and increased book value of assets commonly associated with the purchase method. Thirty-eight of the 50 large mergers studied by Healy, Palepu, and Ruback (1992) use the purchase method as compared to only 13 of 30 large banking mergers studied by Cornett and Tehranian (1992).

3. Empirical Results

3.1 Sample Description

A time distribution of the sample is provided in Table 1. Merger activity was relatively brisk during 1969 to 1976, a period characterized by the oil shock and shrinking worldwide demand for Japanese goods. Twenty-five (54%) of the mergers occurred during this period. This concentration in takeover activity is consistent with the evidence of Mitchell and Mulherin (1996), who provide evidence that many acquisitions in the U.S. are preceded by industry shocks. It is also consistent with the finding by Kang and Shivdasani (1997) who report that a decline in performance is often followed by an expansion in operations and more acquisitions among Japanese corporations. On the other hand, only 15 (33%) of the mergers were completed when the Japanese economy was steadily expanding during the much longer period of 1977 to 1989.

[8] See Healy, Palepu, and Ruback (1992), pp. 142 - 143 for a thorough discussion of this issue.

As Kester (1991) points out, Japanese firms emerged as international bidders during this period when they were aided by a strong yen and driven by pressures for strategic restructuring. Lastly, 6 (13%) of the mergers occurred from 1990 to 1992 immediately following the all-time market high of December 31, 1989.

Table 1 also provides information on the frequency of three types of mergers. Inter-industry mergers, defined as those in which the acquirer and target have different two-digit Nikkei NEEDS industry codes, make up 14 (30%) of the mergers. Affiliated mergers, defined as those in which the acquirer and the target have a common major shareholder reported in their annual reports for the year just prior to the merger (year –1), make up 34 (74%) of the mergers. Lastly, mergers among members of the same keiretsu or bank centered industrial group are relatively rare, making up only 8 (17%) of the sample. Not surprisingly, these mergers are all affiliated mergers as well. The frequency of keiretsu mergers is considerably lower than the 66% reported by Kang, Shivdasani and Yamada (2000). However, 70% of their sample is composed of unlisted targets. Inter-industry and keiretsu mergers become relatively more frequent across the three sample subperiods.

Table 2 provides raw and control firm adjusted summary statistics for the acquiring and target firms as of the end of year –1. The median acquirer market value of assets, defined as market value of equity plus the book value of debt less the book value of cash and marketable securities, as of the end of year –1 is 72 billion yen, while the median market value of assets of the target firms is 25 billion yen. Not surprisingly, the sample firms are similar in size to their control firms. The size figures also are similar to those reported by Kang, Shivdasani and Yamada (2000). The median leverage of the acquirers and targets, defined as book value of debt divided by market value of assets, as of the end of year –1 is 0.86 and 0.90, respectively. Again, the leverage ratios of sample firms are similar to those of the control firms. The acquirer

leverage is considerably higher than the 0.52 reported by Kang, Shivdasani, and Yamada (2000). However, they do not deduct cash and marketable securities when calculating market value of assets.

Table 2 also provides evidence that the acquiring firms are exhibiting average performance while the target firms are exhibiting slightly superior performance. The acquiring firms' adjusted interest coverages (operating cash flow divided by interest expense), operating returns (operating cash flow divided by market value of assets), operating margins (operating cash flow divided by sales) and asset turnovers (sales divided by market value of assets) are insignificantly different from zero for years –5 to –1 with two exceptions. Contrarily, the target firms significantly outperform their control firms in terms of interest coverage during years –4, –2 and –1, of operating return during years –5, –4 and –1, and in terms of their operating margin during all 5 pre-merger years. We should note, however, that target firms' adjusted operating return and operating margin decline from years –4 and –2 by 3.4% and 2.7%, respectively. Although the decline is not statistically significant, it may suggest that the targets are faced with declining profitability before the merger. In fact, the target firms' market value of assets grows significantly less (–0.11%) than that of their control firms in the 5 pre-merger years, and (although not reported in the table) 7 (15%) of the target firms have a negative operating cash flow in year –1.

We report size and leverage figures for sample firms separated by whether they are one of the three types of mergers in table 3. In general, inter-industry, affiliated, and keiretsu mergers tend to involve larger acquiring firms than mergers not falling into these categories. Likewise, targets in keiretsu mergers tend to be larger than targets in non-keiretsu mergers. On the other hand, the leverage of acquirers and targets in inter-industry mergers is significantly lower than that of the acquirers and targets in intra-industry mergers. The median leverage of

acquirers in keiretsu mergers is significantly lower than that of acquirers in non-keiretsu mergers as well.

3.2 Long-term performance of the merging firms

This section presents our main results. In section 3.2.1, we examine the operating margins for the years –5 to –1 and years 1 to 5. We discuss factors that may affect the adjusted post-merger performance of the sample firms in the following section.

3.2.1 Changes in operating returns following the mergers

We report both raw and control firm-adjusted median operating returns in table 4. The periods reported include years –5 to –1 and years 1 to 5 individually, as year 0 accounting figures for the target firms tend to be less reliable. We also compute the median year –5 to –1 and year 1 to 5 operating returns for each firm and report the sample medians of those medians. Prior to the merger, the median unadjusted operating returns range from 6.69% to 8.70%, with a median annual value of 8.39%. Following the mergers, the operating returns decrease to a range of 4.75% to 6.13% and a median annual value of 5.56%.

As discussed earlier, the changes in post-merger operating returns are less likely to be due to the merger if there is a simultaneous trend in industry-wide operating returns. The control firm-adjusted operating return, which is defined as the difference between the operating return of the merging firms and the weighted average of the operating returns of the control firms correct for this possibility. To calculate these figures, pre-merger acquiring and target firm values are aggregated using the previous year's market value of assets as the weights. Post-merger values use data for the acquiring firms. Acquirer and target control firms are also weighted using the previous year's acquiring and target firms' market value of assets as the weights during the pre-merger period. Post-merger control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of year –1.

Columns 3 and 4 of Table 4 report the control firm-adjusted operating returns of the merged firms and the portion of sample firms with positive adjusted returns, respectively. Prior

to the merger, the aggregate merging firms operating returns are slightly greater than their control firms. The adjusted operating return is positive for years –4 to –1 and the proportion of firms with positive adjusted return is always greater than 50%. Overall, the median annual performance for years –5 to –1 is 0.90%, which is significantly different from zero at the 10% level. Moreover, 70% of the sample firms outperform their controls. This is significantly different from 50% at the 1% level.

Following the mergers, the adjusted returns continue to be positive, albeit to a lesser degree with all figures. The median adjusted operating return for years 1 to 5 is only an insignificant 0.26%. Moreover, the number of sample firms with positive adjusted returns is never significantly greater than 50%.

Overall, the pattern of adjusted operating returns is different from the industry-adjusted operating cash flow returns reported by Healy, Palepu, and Ruback (1992) for their sample of large mergers occurring in the U.S. Instead Healy, Palepu, and Ruback report positive, but insignificant adjusted returns in the pre-merger period and significantly positive adjusted returns in the post-merger period.

However, the results are more encouraging than those of Clark and Ofek (1994) who examine the operating margins exhibited by a sample of 38 acquisitions of distressed targets. They report that the adjusted cash flow to sales of the combined firms decreases from a significantly positive 3% in year –3 to an insignificant 0.9% in year –1. Furthermore, their adjusted cash flows are consistently negative following the mergers.

3.2.2 Post-merger operating performance

This section examines several potential determinants of the adjusted post-merger operating performance of the sample firms. The primary independent variable is the adjusted pre-merger performance of the sample firms. We also include explanatory variables such as the relative size of the acquirer and target and dummy variables indicating that the mergers involved

firms operating in different industries, affiliated firms, or financially distressed target firms. In each regression, the dependent variable is the median year 1 to 5 control firm adjusted operating return. The results of the regressions are presented in table 5.

Model 1 in table 5 contains only one explanatory variable; the median pre-merger control firm adjusted operating return for years –5 to –1. In this case, the coefficient on the pre-merger adjusted return captures the persistence of the sample firms' pre-merger performance following the merger. The intercept is therefore a measure of the post-merger abnormal returns.

As shown in column 1, the coefficient on the pre-merger adjusted operating margin is 0.647 suggesting the sample firms' performance tends to remain remarkably consistent over time. Also, the R-squared is high at 41%. However, the intercept is only an insignificant 0.001. Together with the results presented in table 4, this suggests that merging Japanese manufacturers as a whole are unable to improve their post-merger performance. This contrasts with the estimated 2.8% per year improvement in performance reported by Healy, Palepu, and Ruback (1992) for large U.S. mergers.

We investigate several other factors that may explain the adjusted post-merger performance. In other models we include dummy variables that equal one if the acquiring firm and the target come from different two-digit Nikkei NEEDS industry codes, if the acquiring firm and the target have a common major shareholder (affiliated company), and if the target firm has an interest coverage ratio less than one in either year –2 or –1 (financially distressed target).[9] We also include the ratio of the target's market value of assets to that of the acquirer as of the end of year –1. In models not reported, we also control for the size of the merging firms. In no case did the size variable explain the post-merger operating performance. Moreover, the value of the other coefficients is not affected in a material manner.

[9] Sixteen (35%) of the targets are classed as financially distressed using the criteria.

The results of including these variables are presented in models 2 to 6 in table 5. Of the new variables, the only one exhibiting consistently significant relations with the post-merger performance is the dummy variable equaling one if the acquirer and targets come from different industries. This is something of a puzzle as one can reasonably expect a greater likelihood of gains from higher managerial expertise, economies of scale and pricing power if the acquirer and target are related and as Jensen (1986) suggests, conglomerate mergers are less likely to succeed since managers of acquiring firms often are not familiar with the industry of the target company. In fact, Kang and Yamada (1996) report that the two-day abnormal return is greater when the target and acquirer come from the same industry. Also, Healy, Palepu, and Ruback (1992) report that the post-merger operating performance is greater among U.S. mergers that are classed as having a high degree of overlap. Megginson, Morgan, and Nail (2001) report that focus decreasing mergers as measured by a Herfindahl index are associated with significantly lower stock price and operating returns than focus preserving and increasing mergers during a three year period after the merger. On the other hand, Agrawal, Jaffe, and Mandelker (1992) report that conglomerate mergers are followed by long-term equity returns that are less negative than non-conglomerate mergers where the merging companies share four-digit SIC codes. However, according as shown by Franks, Harris, and Titman (1991) and Fama and French (1993), Agrawal, Jaffe, and Mandelker's methodology is subject to measurement errors.

Unlike Clark and Ofek (1994) we do not find evidence that acquiring financially distressed firms leads to superior performance following the merger. Models 4 and 5 contain a dummy variable equaling one if the target is in financial distress. In both cases, the coefficient is insignificant.

In summary, the results of this section suggest that while Japanese mergers in general do not result in improvements in performance, mergers between firms operating in different industries do lead to significant performance improvements. Furthermore, in contrast to the

acquisition of distressed companies in the U.S., the acquisition of financially distressed Japanese companies is not associated with an improvement in long-term performance.

3.2.3 Post-merger performance of diversifying mergers

We investigate the role of the post-merger leverage in predicting the adjusted performance of the merging firms. This is accomplished by constructing interaction terms calculated as the product of the inter-industry (diversifying) and affiliated merger dummies and the adjusted leverage as of year 1. In this case, the coefficient on the diversifying and affiliated merger dummies is the effect of these types of merger on performance while holding leverage constant. The coefficient on leverage is the relation between leverage and performance for intra-industry and non-affiliated company mergers. The interaction term is the incremental effect of diversifying and affiliated mergers on the relation between leverage and performance.

Models 1 and 2 of table 6 show the results with and without the interaction term, respectively, of the regressions using the diversifying (inter-industry) merger dummy. As before the coefficient on the pre-merger operating margins is significantly positive in both regressions, but the coefficient on the interaction term becomes also significant (and negative) in model 2. This suggests that the post-merger performance is greatest for diversifying mergers with lower leverage.

Models 3 and 4 in table 6 report the regression results in a similar manner using the affiliated merger dummy. In this case, model 4 shows that there is a significantly negative relation between leverage and post-merger performance only among non-affiliated mergers. Moreover, the fact that the coefficient on the interaction term is significantly positive suggests that among non-affiliated mergers higher leverage is detrimental to performance while leverage is unrelated to performance in affiliated mergers.

It may also be the case that the superior post-merger operating returns in diversifying mergers are the result of “operational rescue mergers” where pre-merger target firms are liquidity

constrained. In results not reported in a table, we find that the target firms in diversifying mergers exhibit significantly lower operating returns in the two years prior to the merger than the target firms involved in intra-industry mergers. For example, the median year –1 operating returns of diversifying and intra-industry mergers are 4.8% and 10.8%, respectively. Our findings are consistent with the view by Hubbard and Palia (1999) who show significantly positive abnormal returns for bidders with rich liquidity acquiring liquidity-constrained targets.

3.3 Determinants of cash flow returns

As shown in section 3.2.2, the operating returns are greater only in the case when the merging firms are from the different industries. Thus, we are interested in decomposing cash flow returns to further investigate the post-merger performance of the sample firms. We examine the components of the cash flow return on assets and several other indicators of firm performance. Our measures are suggested by those used in *Analysts' Guide* published by the Daiwa Institute of Research, Ltd (1994) and Healy, Palepu, and Ruback (1992). The measures used fall into the following broad categories:

Operating return components	Decomposes the operating return into operating margin and asset turnover
Growth Indicators	Measure the firm's change in assets and sales.
Profitability Indicators	Measure overall performance.
Efficiency Indicators	Measure the firm's capability to maximize revenue, minimize costs, and measure employee productivity.
Safety Indicators	Measure the safety of the firm in terms of the debt/equity ratio and the ability to pay back loans and interest expenses.
Investment Policy Indicators	Measure the firm's long-term viability.

The first 4 columns of table 7 report the median year –5 to –1 and year 1 to 5 unadjusted and control firm adjusted ratios for the measures used. The final column reports differences in the adjusted ratios between the pre- and post-merger periods.

In brief, the results of table 7 indicate that the effect of the mergers is minimal. In nearly every instance, the difference between the pre- and post-merger adjusted figures is insignificantly different from zero. This supports the results of section 3.2.2 suggesting that mergers among Japanese companies are not associated with dramatic changes in performance.

4. Conclusion

The extended recession of the 1990's and recent financial deregulation has resulted in a dramatic increase in the number of mergers and acquisitions occurring in Japan. An interesting question is whether these mergers can reasonably be expected to lead to improvements in the performance of the companies involved. In this paper, we examine the long-term operating performance of 46 manufacturing firms listed on the Tokyo Stock Exchange (TSE) that completed mergers in the period 1969 to 1992. Using a unique data set, we investigate the operating performance of acquiring and target firms from 5 years prior to 5 years after the completion of the merger.

In this paper, we examine the long-term operating performance following all manufacturing firms merged on the TSE for the period from 1969 to 1992. Particular attention is given to the post-merger performance of mergers across different industries, different affiliations, and different business groups (or *keiretsu*). Using a unique data set that includes the pre-merger performance of target firms, we find that the long-term operating performance following the mergers is positive but insignificant. However, the long-term performance is significantly greater following diversifying mergers that involve firms in different industries, and there is a remarkable degree of consistency between the pre-merger and post-merger performance.

Our results are consistent with the findings by Matsusaka (1993) and Hubbard and Palia (1999) who examine the mergers occurring in the U.S. during the 1960s, and find the positive abnormal returns in bidder firms of diversifying mergers. Our findings support the notion that the benefits of merger will be greater when target firms is liquidity constrained prior to diversifying acquisitions. Finally, rescue mergers involving distressed targets are not likely to lead to inferior long-term performance contrary to the notion that acquisitions of poorly performing firms are less likely to succeed.

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Table 1

Sample description
Descriptive statistics for 46 mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992.

Period	All firms (% of total)	Inter-industry Mergers[a] (% of period)	Affiliated Mergers[b] (% of period)	Intra-keiretsu Mergers[c] (% of period)
1969 to 1976	25 (54%)	6 (24%)	18 (72%)	2 (8%)
1977 to 1989	15 (33%)	5 (33%)	11 (73%)	4 (27%)
1990 to 1992	6 (13%)	3 (50%)	5 (83%)	2 (33%)
Total	46	14	34	8

[a] Mergers are defined as inter-industry if the acquiring and target firms come from different industries using Nikkei NEEDS two-digit industrial codes.
[b] Mergers are defined as affiliated if the acquiring and target firms have a common major shareholder reported in their annual reports for the year just prior to the merger.
[c] Mergers are defined as intra-keiretsu if the acquiring and target firms come from the same industrial group.

Table 2
Median summary Statistics for acquirers and targets
Summary statistics for 46 mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992. All figures are as of the end of year –1, the year prior to the merger. **Note:** all unadjusted figures are significantly different from zero at the 0.0001 level.

Variable	Year -5	Year -4	Year -3	Year –2	Year –1
Market value of assets[a]					
Acquirer	48	58	62	65	72
Adjusted acquirer	1.4	1.4	0.8	0.2	-0.6
Target	19	21	21	24	25
Adjusted target	0.4	0.5	0.3	0.2	-0.6
Leverage ratio[b]					
Acquirer	0.72	0.76	0.78	0.82	0.86
Adjusted acquirer	-0.06	-0.05	-0.04	-0.06[i]	-0.01
Target	0.85	0.89	0.84	0.89	0.90
Adjusted target	0.03	0.05	0.04	0.02	0.03
Interest coverage[c]					
Acquirer	1.71x	1.85x	2.11x	1.99x	1.68x
Adjusted acquirer	0.20x	0.24x	0.32x[h]	0.38x	-0.08x
Target	2.26x	2.34x	2.53x	2.21x	2.03x
Adjusted target	0.18x	0.90x[h]	0.26x	0.47x[i]	0.62x[h]
Operating return[d]					
Acquirer	7.57%	7.59%	8.52%	7.26%	6.24%
Adjusted acquirer	-0.02%	0.59%	0.98%	0.57%	-0.62%
Target	9.21%	10.32%	9.60%	7.47%	8.18%
Adjusted target	3.80%[h]	5.00%[g]	2.05%	1.61%	2.10%[i]
Operating margin[e]					
Acquirer	6.34%	7.44%	7.70%	6.92%	6.54%
Adjusted acquirer	-0.05%	0.85%	0.82%[h]	0.41%	0.05%
Target	8.17%	8.89%	8.13%	6.91%	6.43%
Adjusted target	3.18%[g]	3.77%[g]	2.50%[g]	1.10%[g]	2.71%[g]
Asset turnover[f]					
Acquirer	0.95	0.95	0.97	1.10	0.97
Adjusted acquirer	-0.04	-0.02	-0.02	-0.03	-0.05
Target	1.07	1.02	1.03	1.12	1.04
Adjusted target	-0.11	-0.13	-0.18	-0.08	-0.08

Growth in market value of assets from end of year –5 to end of year -1	
Acquirer	0.53
Adjusted acquirer	-0.08
Target	0.23
Adjusted target	-0.11[h]
Growth in sales from end of year –5 to end of year -1	
Acquirer	0.54
Adjusted acquirer	-0.08
Target	0.39
Adjusted target	-0.06

Table 2 (continued)

[a] Market value of assets is the market value of equity plus the book value of debt less the book value of cash and marketable securities, in billions of Yen.

[b] Leverage Ratio is the book value of debt divided by the market value of assets.

[c] Interest coverage is operating cash flow defined as sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation divided by interest expense.

[d] Operating return is operating cash flow defined as sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation divided by market value of assets at the beginning of the year.

[e] Operating margin is operating cash flow divided by sales.

[f] Asset turnover is sales divided by market value of assets at the beginning of the year.

[g] Significantly different from zero at the 1% level.

[h] Significantly different from zero at the 5% level.

[i] Significantly different from zero at the 10% level.

Table 3

Market value of assets and leverage for inter-industry, affiliated and keiretsu mergers
Market value of assets and leverage for sample firms divided by whether the mergers are inter- or intra-industry, affiliated, or keiretsu mergers. The sample consists of 46 mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992. All figures are as of the end of year –1, the year prior to the merger. *, ** and *** indicates significance at the 0.10, 0.05 and 0.01 levels, respectively.

Panel A: Inter-/Intra-Industry Mergers[a]						
	Inter-industry (n = 14)		Intra-Industry (n = 32)		Test statistic	
	Mean	Median	Mean	Median	t-stat.	Z-stat.
Market Value of Assets[a]						
Acquirers	849	311	206	70	-1.65	2.21**
Targets	145	30	71	20	-1.01	0.75
Combined	994	325	277	92	-1.66	2.21**
Leverage ratios[b]						
Acquirers	0.55	0.49	0.77	0.88	2.38**	-2.09**
Targets	0.69	0.64	0.90	0.94	2.04**	-1.65*
Panel B: Affiliated Mergers[b]						
	Affiliated (n = 34)		Non-affiliated (n = 12)		Test statistic	
	Mean	Median	Mean	Median	t-stat.	Z-stat.
Market Value of Assets[a]						
Acquirers	492	77	147	50	-1.86*	-1.69*
Targets	85	25	118	29	0.46	0.38
Combined	577	119	265	98	-1.38	-1.14
Leverage ratios[b]						
Acquirers	0.68	0.69	0.77	0.91	0.84	1.29
Targets	0.80	0.88	0.91	0.95	1.27	1.12
Panel C: Keiretsu Mergers[c]						
	Keiretsu (n = 8)		Non-keiretsu (n = 38)		Test statistic	
	Mean	Median	Mean	Median	t-stat.	Z-stat.
Market Value of Assets[a]						
Acquirers	1,451	766	181	68	-2.04*	2.83***
Targets	279	231	55	16	-2.13*	3.00***
Combined	1,730	1,156	236	97	-2.23*	2.94***
Leverage ratios[b]						
Acquirers	0.57	0.53	0.73	0.88	1.67	-1.70*
Targets	0.77	0.83	0.85	0.92	0.68	-0.64

[a] Mergers are defined as inter-industry if the acquiring and target firms come from different industries using Nikkei NEEDS two-digit industrial codes.

[b] Mergers are defined as affiliated if the acquiring and target firms have a common major shareholder reported in their annual reports for the year just prior to the merger.

[c] Mergers are defined as intra-keiretsu if the acquiring and target firms come from the same industrial group.

[d] Market value of assets is the market value of equity plus the book value of debt less the book value of cash and marketable securities, in billions of Yen.

[e] Leverage Ratio is the book value of debt divided by the market value of assets.

Table 4

Pre- and post-merger operating returns
Median pre- and post-merger unadjusted and control firm adjusted operating returns for 46 combined acquiring and target firms in years surrounding mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992.[a]

	Merging firms	Control firm adjusted	
Year relative to merger	median	Median	% positive
–5	7.03%	-0.06%	50%
–4	8.07	1.35	65[f]
–3	8.70	1.42	63[g]
–2	8.03	0.86	67[f]
–1	6.69	0.38	57
Median annual performance for years –5 to –1	8.39%	0.90%[d]	70%[e]
1	6.13%	0.47%	57%
2	4.75	0.29	57
3	5.83	0.30	52
4	5.80	0.42	54
5	5.30	0.45	54
Median annual performance for years 1 to 5	5.56%	0.26%	56%

[a] Operating returns are the operating cash flows are sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation divided by the market value of assets for the previous year. Pre-merger acquiring and target firm values are weighted averages using the previous year's market value of assets as the weights. Acquirer and target control firms are also weighted using the previous year's acquiring and target firms' market value of assets as the weights. Post-merger values use data for the acquiring firms. However, the market value of assets is reduced by the change in equity values of the target and acquiring firms at the merger announcement. Control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of year –1.
[b] Significantly different from zero at the 1% level using a signed rank test.
[c] Significantly different from zero at the 5% level using a signed rank test.
[d] Significantly different from zero at the 10% level using a signed rank test.
[e] Significantly different from 50% at the 1% level using a signed rank test.
[f] Significantly different from 50% at the 5% level using a signed rank test.
[g] Significantly different from 50% at the 10% level using a signed rank test.

Table 5

OLS regressions of post merger control firm adjusted operating returns[a]

OLS regressions of post merger control firm adjusted operating returns for 46 combined acquiring and target firms in years surrounding mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992. T-statistics in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.001	-0.006	-0.009	-0.000	-0.006	0.002
	(0.15)	(-1.21)	(-1.05)	(-0.05)	(-1.02)	(0.29)
Pre-merger control firm adjusted operating margins[b]	0.647[g]	0.643[g]	0.626[g]	0.656[g]	0.642[g]	0.627[g]
	(5.51)	(5.57)	(5.32)	(5.29)	(5.44)	(5.75)
Inter-industry merger dummy[c]		0.022[h]			0.022[h]	0.018[h]
		(2.44)			(2.39)	(2.05)
Affiliated company merger dummy[d]			0.013			
			(1.31)			
Financially distressed target dummy[e]				0.003	-0.000	
				(0.26)	(-0.02)	
Proportion of target market value to acquirer market value[f]						-0.015[i]
						(-1.84)
R^2	0.41	0.48	0.43	0.41	0.48	0.52
F-statistic	30.31	19.82	16.26	14.87	12.90	15.07

[a] Post-merger control firm adjusted operating returns are the median year –5 to –1 operating cash flow divided by the market value of assets for the previous year for the combined acquiring and target firms. Operating cash flows are sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation. Adjustments are made by subtracting the operating return of the combined control firms. Post-merger values use data for the acquiring firms. However, the market value of assets is reduced by the change in equity values of the target and acquiring firms at the merger announcement. Control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of year –1.

[b] Pre-merger control firm adjusted operating returns are the median year 1 to 5 operating cash flow divided by the market value of assets for the previous year for the combined acquiring and target firms. Operating cash flows are sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation. Adjustments are made by subtracting the operating return of the combined control firms. Pre-merger acquiring and target firm values are weighted by the relative market value of assets. Control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of each previous year.

[c] The inter-industry merger dummy equals one if the acquiring and target firms come from different industries using 2 digit Nikkei NEEDS industrial codes.

[d] The affiliated company merger dummy equals one if the acquiring and target firms have a common major shareholder reported in their annual reports for the year just prior to the merger.

[e] The financially distressed target dummy equals one if either the target's year –2 or year -1 operating cash flow divided by interest expense is less than one.

[f] The proportion of target market value to acquirer market value is equal to the target's year –1 market value of assets divided by the acquirer's year –1 market value of assets.

[g] Significantly different from zero at the 1% level using a two-tailed test.

[h] Significantly different from zero at the 5% level using a two-tailed test.

[i] Significantly different from zero at the 10% level using a two-tailed test.

Table 6

Effect of leverage on post-merger adjusted operating returns[a]

OLS regressions of post merger control firm adjusted operating returns for 46 combined acquiring and target firms in years surrounding mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992. T-statistics in parentheses.

	(1)	(2)	(3)	(4)
Intercept	-0.005	-0.007	-0.008	-0.004
	(-0.98)	(-1.29)	(-0.96)	(-0.47)
Pre-merger control firm adjusted operating margins[b]	0.609[f]	0.615[f]	0.561[f]	0.560[f]
	(4.90)	(5.09)	(4.36)	(4.59)
Inter-industry merger dummy[c]	0.020[g]	0.019[g]		
	(2.44)	(2.03)		
Affiliated company merger dummy[d]			0.013	0.009
			(1.32)	(0.89)
Adjusted leverage	-0.014	0.013	-0.028	-0.133[f]
	(-0.63)	(0.48)	(-1.23)	(-2.68)
Inter-industry dummy * Adjusted leverage		-0.079[h]		
		(-1.87)		
Affiliated company dummy * Adjusted leverage				0.125[g]
				(2.35)
R^2	0.48	0.52	0.45	0.41
F-statistic	13.16	11.33	11.47	14.87

[a] Post-merger control firm adjusted operating returns are the median year –5 to –1 operating cash flow divided by the market value of assets for the previous year for the combined acquiring and target firms. Operating cash flows are sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation. Adjustments are made by subtracting the operating return of the combined control firms. Post-merger values use data for the acquiring firms. However, the market value of assets is reduced by the change in equity values of the target and acquiring firms at the merger announcement. Control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of year –1.

[b] Pre-merger control firm adjusted operating returns are the median year 1 to 5 operating cash flow divided by the market value of assets for the previous year for the combined acquiring and target firms. Operating cash flows are sales less cost of goods sold, less selling, general, and administrative expenses, plus depreciation. Adjustments are made by subtracting the operating return of the combined control firms. Pre-merger acquiring and target firm values are weighted by the relative market value of assets. Control firm figures are weighted by the relative asset values of the acquirer and target firms as of the end of each previous year.

[c] The inter-industry merger dummy equals one if the acquiring and target firms come from different industries using 2 digit Nikkei NEEDS industrial codes.

[d] The affiliated company merger dummy equals one if the acquiring and target firms have a common major shareholder reported in their annual reports for the year just prior to the merger.

[e] Adjusted leverage is the post-merger acquiring firm total debt/market value of assets minus the combined acquirer and target control firm leverage as of the end of year 1.

[f] significantly different from zero at the 1% level using a two-tailed test.

[g] Significantly different from zero at the 5% level using a two-tailed test.

[h] Significantly different from zero at the 10% level using a two-tailed test.

Table 7

Mean and median pre- and post-merger unadjusted and control firm adjusted descriptive ratios for 46 combined acquiring and target firms in years surrounding mergers of Tokyo Stock Exchange listed firms completed during the period 1969 to 1992. The mean is above the median in each block of entries.

	Unadjusted		Control firm adjusted		
Variables	Pre-merger	Post-merger	Pre-merger	Post-merger	Difference
Panel A: Operating return Components					
Operating margin[a]	7.93%	5.90%	1.14%[m]	0.60%	-0.54%
	7.34%	6.47%	0.89%[k]	0.17%	-1.04%
Asset Turnover[b]	1.20x	1.04x	-0.06x	-0.06x	0.00x
	1.11x	0.93x	-0.06x	-0.05x	0.00x
Panel B: Growth Indicators					
Growth in Total Assets[c]	11.5%	6.8%	-1.0%	-1.9%[l]	-1.4%
	10.3%	5.6%	-0.9%	-1.0%[m]	-2.0%
Growth in Sales[d]	12.4%	7.8%	-0.2%	-0.8%	-1.0%
	10.4%	6.7%	-0.7%	-0.4%	1.3%
Panel C: Profitability Indicators					
Return on Assets[e]	2.5%	1.6%	-0.0%	-0.3%	-0.2%
	2.1%	1.4%	0.0%	-0.2%	-0.3%
Return on Equity[f]	10.0%	10.4%	0.7%	2.8%	2.1%
	8.4%	7.1%	0.1%	0.0%	-0.4%
Panel D: Efficiency Indicator					
Cash flow to employee[g]	2406	2864	645[m]	818	173
(thousands of yen)	1396	1935	377[k]	96	-110
Panel E: Safety Indicators					
Debt to Equity Ratio[h]	5.21	5.18	1.14	0.80	-0.34
	3.94	4.60	-0.45	-0.29	0.09
Coverage Ratio[i]	6.49x	5.86x	-11.03x	0.90x	11.83x
	2.09x	1.44x	0.35x	0.19x	-0.23x
Implied interest[j]	5.04%	4.73%	-0.04%	0.29%	0.33%[l]
	5.38%	5.20%	-0.08%	-0.05%	0.08%

Table 7 (continued)

[a] Operating margin is operating cash flow divided by sales.

[b] Asset turnover is sales divided by market value of assets at the beginning of the year

[c] Growth in total assets is the change in book value of total assets as a percentage of the book value of total assets in the previous year

[d] Growth in sales is the change in net sales as a percentage of net sales in the previous year.

[e] Return on assets is net income divided by the book value of assets at the beginning of the year.

[f] Return on equity is net income divided by the book value of equity at the beginning of the year.

[g] Cash flow to employee is net income per employee. Employees include transferred employees from other companies but exclude part-time employees and employees transferred to other companies (in thousands of yen).

[h] Debt to equity ratio is total debt divided by book value of equity capital

[i] Coverage ratio is operating cash flow divided by interest expense.

[j] Implied interest is interest expense divided by total debt at the beginning of the year.

[k] Significantly different from zero at the 1%.

[l] Significantly different from zero at the 5%.

[m] Significantly different from zero at the 10%.