Understanding the M&A boom in Japan: What drives Japanese M&A?

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Understanding the M&A boom in Japan: What drives Japanese M&A?

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Abstract

In this paper, we examine the causes of the first merger boom since the late 1990s in Japan. Using industry-level data, we show that mergers and acquisitions (M&As) are driven mainly by economic shocks. While industries with higher growth opportunities are likely to have more M&A activity, industries facing negative fundamental shocks, such as rapid sales declines, also experience larger M&A deals. These results suggest that the recent merger wave in Japan is mainly explained by the neoclassical model. At the firm level, we find that the bidder is the firm with the higher growth opportunity, and the target is the one with the lower growth opportunity. This means that Japanese firms improved their efficiency through merger activity since the 1990s. Lastly, we find that internal funds for the acquiring firm play a very important role in bidding activity, while a high probability of being targeted for M&A is associated with high leverage.

1. Introduction

Mergers and acquisitions (M&A) between Japanese corporations began to increase rapidly during the late 1990s. The pace of merger activity in Japan, which had been hovering at around 500 transactions a year in the 1990s, began to pick up from around the end of that decade to reach an annual volume of 2,725 transactions in 2005. This represented a five-fold increase in M&A transactions over a 10-year period (Figure 1). The value of the transactions totaled $25.3 billion between 1991 and 1997, and $138.1 billion between 1998 and 2005. Hence, the value of M&A transactions also experienced a five-fold increase during this period.[1]

For most of the postwar era, Japanese firms rarely resorted to mergers and acquisitions as a growth strategy or as a means of corporate restructuring. In contrast, M&A activity in the form of deals between domestic corporations and foreign takeovers of Japanese firms surged since the late 1990s. Moreover, the merger activity did not affect all sectors evenly, but tended to cluster in the following sectors: paper and pulp, oil refining and other materials industries, finance, telecommunications and information, and distribution. The main purpose of this paper is to analyze the key factors contributing to the Japanese M&A wave that began in the late 1990s.

Research into the causes of M&A waves has made strides in the U.S., which has experienced five such waves since the late 1890s. The key forces behind these waves can be divided into two categories: 1) real-economy (neo-classical) forces; and 2) financial forces.[2]

Real-economy forces exert both positive and negative shocks on productivity and profitability. Examples of forces that have been identified as triggering M&A

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[1] The figures for total volume of transactions are from RECOF data, and the figures for the total value of the transactions are from Jackson and Miyajima (2007). Current data is from Thomson Financial.

2 A predominant view of the causes of such waves has yet to take root. Brealey, Myers and Allen(2006) cite M&A waves as one of the 10 puzzles of finance theory.

activity through their positive effects on the economy include technical advances that facilitate economies of scale and scope and deregulatory measures that encourage entry into more profitable sectors. Other scholars such as Jensen (1993) put an emphasis on real-economy forces that create negative shocks to the economy. These include surges in the cost of primary goods due to political uncertainty, the rising cost of raw materials due to the reorganization of upstream or downstream industries, the rapid decline in demand due to catch-up development by developing countries, and other shocks that force marginal corporations in certain industries into the red.[3] Mergers and acquisitions are an effective means of reallocating resources, when real-economy shocks give rise to excess productive capacity.

Representative examples of financial forces that promote M&A activity are the volume of funds available for acquiring firms and the stock price of the acquiring firms. Shleifer and Vishny (1992) hypothesize that when increased cash flow leads to rising stock prices, the financial constraint on the acquiring firm is relaxed. As a result, as the offered price to the target firm goes up, so does the supply of target firms to the M&A market. Empirically, it is clear that the increase of M&A activity in the U.S. from the second half of the 1990s was fueled by the increase in capital liquidity as indicated by the decline in the interest rate spread (Harford, 2005).

As for the relationship between stock price and mergers, it has been pointed out that all five waves of merger activity have occurred during booms in the stock market (Golbe and White, 1988). Theoretically, an M&A boom induced by a rise in the stock market leads to both positive and negative welfare effects. If the stock market is efficient and accurately evaluates the high growth potential of a particular industry or firm, rising stock prices make it easier to raise funds for M&A activity. This promotes M&A in that industry and contributes to a more efficient allocation of resources in the economy as a whole. However, when the stock market overvalues the stock of a firm in a particular industry for one reason

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3 They are frequently the non-core enterprises of diversified corporations.

or another (in comparison to its fundamental value), the welfare effect of the stock market boom on the M&A boom will vary.[4] For example, suppose that the stock market has overvalued firms in the information-technology industry, which has been experiencing rapid technical innovation.[5] Managers who know that their own firm's stock is overvalued have a strong incentive to carry out mergers and acquisitions using their own firm's stock to pay for assets from other firms. This perspective was put forth as a way to explain the late-1990s M&A wave in the U.S. that was characterized by friendly takeovers and stock swaps. Of course, the Japanese stock market had been in a slump in the late 1990s, so the problems of bias caused by overvalued stock prices would not have been important. However, even if the market as a whole is not in the midst of a boom, soaring stock prices in a certain sector, as was the case during the IT bubble, could prompt a merger boom.

The first aim of this paper is to analyze whether the M&A boom in the late 1990s, the first such boom in Japan in the postwar era, can be explained by real-economy (neoclassical) forces and financial forces.

The second aim of this paper is to identify the key characteristics of acquiring firms and target firms. Various factors can be considered worthy of consideration, such as the scale of a firm and the level of competition within the industry. A specific focus here will be the question of whether firms with high growth opportunity can improve their efficiency by taking over firms with diminished growth opportunity. Jovanovic and Rousseau (2002) assert that mergers and acquisitions are a form of investment undertaken by firms that can be explained by Tobin's q.[6] In other words, a higher Tobin's q, which is the ratio of firm value to asset reacquisition costs, indicates a greater potential for M&A. If this relationship can be confirmed, by stipulating that a highly profitable firm with a

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4 Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004).
5 The case that is frequently cited is the purchase by America Online (AOL) of Time-Warner. AOL's stock price plunged from $73.75 prior to announcement of the purchase to $27.28.
6 Andrade and Stafford (2004) also stress that mergers and acquisitions are substitutes for investment.

high Tobin's q has a higher level of managerial and operational know-how compared to a low-profitability firm with a low Tobin's q, then M&A probably contributed to an improvement in organizational efficiency.

On the other hand, if a firm in a mature industry attempts a merger despite having exhausted its growth opportunity, the risk that the merger will not contribute to an improvement in the organizational efficiency is relatively higher. Similarly, if firms with low growth potential are more likely to become M&A targets, then we can assume that M&A has become an effective tool for corporate restructuring in Japan. Furthermore, debt would appear to have a disciplining effect on management in the event that firms with higher leverage are more likely to become M&A targets. This paper seeks to identify the characteristics of acquiring and targeted firms during the M&A boom in Japan since the late 1990s.

This paper is organized as follows. The next section describes the institutional factors that greatly influenced mergers and acquisitions since the late 1990s. The third section discusses how M&A between domestic firms were concentrated in a handful of industries. The fourth section analyzes the real-economy and financial factors that contributed to M&A in certain industries. Section 5 estimates a decision model for M&A for a particular firm, and asks who buys whom. Section 6 offers concluding remarks.

2. Legal Reforms Promoting Mergers & Acquisitions[7]
2.1. The Impact of the Lifting of the Ban on Holding Companies and the Stock Transfer System

The laws for corporate integration and other institutional changes created an infrastructure for M&A activity and played an important role in the increase in M&A from 1999. Although it is not possible to explain the rapid increase in M&A from the late 1990s solely in terms of institutional changes, it cannot be denied that legal changes have played a crucial role. Therefore, before conducting a

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7 This section draws on Hattori (2004).

quantitative analysis of the increase in M&A activity, a simple overview of the rapid implementation of a legal framework for M&A will be discussed.

The first important legal change was the June 1997 revision to the Anti-Monopoly Law, which lifted the ban on holding companies. As is well known, the 1947 Anti-Monopoly Law prohibited the formation of holding companies and restricted corporate organizational choices. Holding companies are companies for which the purpose is to hold stock, formulate strategies for business groups, coordinate and monitor group companies, and conduct audits without engaging in line business activities. Lifting the ban on holding companies carried the following benefits: it turned line businesses into joint stock companies, made it easier to buy and sell these operations; and allowed an acquirer to reduce the cost of rationalizing the merged back-office.

The ability to transfer the former corporation's stock at low cost to the newly established holding company is essential to a successful corporate integration through this organizational approach. This hurdle was cleared in October 1999 with the introduction of the stock transfer system under an amendment to the Commercial Code. This system creates an integrated approach that allows a firm to create a parent (holding) company holding 100% of its stock. It also allows the parent company to issue shares to the existing shareholders. Stock in the newly established parent company would be exchanged for stock in the original company. This approach promoted consolidations as multiple corporations exchanged stock to jointly come under the umbrella of a newly established parent company (Table 1).

== Table 1 about here==

The holding company system has been used in place of previous merger procedures in the financial and manufacturing sectors since 1999. The first major merger to take place under the new holding company system was the formation of Mizuho Bank from Fuji Bank, Dai-Ichi Bank, and the Industrial Bank of Japan. The merger was announced in the summer of 1999, and finalized in April 2001. The first case that attracted attention in the manufacturing sector was the

formation of Japan Unipac Holding by Nihon Paper Industries and Daishowa Paper Manufacturing. In the steel industry, the merger of NKK and Kawasaki Steel was the first under the new procedures. After these two companies came under the umbrella of the holding company, JFE Holdings, as wholly owned subsidiaries in September 2002, their steel and engineering operations then were combined to form two separate companies.

The introduction of the holding company system is believed to have had several important implications for the promotion of consolidation. First, since only one of the partners in a merger survived as an ongoing concern in the past, mergers were often opposed and blocked by target company employees. Oftentimes these suffered from lack of motivation after being taken over.[8] Under the new holding company system, the targeted corporate entities continue to survive as separate corporate entities. Since friction in personnel and organizational matters is avoided, a smoother integration of the businesses is possible. Second, wage and employment structures between the acquiring firm and the targeted firm are not required to be equalized after integration, thus making it easier to merge corporations with different organizational structures.

2.2. The Surge in Stock Swaps and Takeovers

The introduction of the stock swap system also facilitated takeovers. Stock swapping is the mandatory exchange of parent-company and subsidiary-company shares. This system makes it possible to exclude minority shareholders with a special resolution by the shareholders' meeting of the target company. Whereas stock swaps could previously only occur under mergers, they could now be employed in takeovers. This had two major implications. It was now possible to: buy all the stock from a large number of shareholders, and 2) to pay for the shares of a subsidiary company using the shares of the parent company and not cash. As

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8 The *tasukigake* approach to personnel management requires that the top two posts of the new firm (chairman and chief executive officer) be occupied by an official from each of the merger parties.

seen in Table 1, introducing the stock swap system led to an increase in the use of stock swaps, which was particularly striking in 2004 and 2005.

There are two main features to the stock swap system. First, it can be used to turn the listed target firm into a wholly owned subsidiary of the takeover company. By excluding the minority shareholders of a subsidiary, the holding company can eliminate the duplication of operations among members of its group and consolidate the group's resources, as well as integrate research and development, manufacturing, sales, and other functions. Second, it promotes the use of M&A as a growth strategy. Since takeover firms can use their own stock to pay for takeovers, financially constrained but highly valued firms used stock swaps to acquire firms in emerging markets. For example, livedoor led by Horie Takafumi (which includes the former Livin' on the Edge and other companies) conducted 30 takeovers valued at a total of 50.7 billion yen. Stock swaps were used in 12 cases.

On the other hand, the introduction of the company divestiture system under the revised Commercial Code that took effect in April 2001 lowered hurdles for companies trying to sell their division. The corporate divestiture system made it easier to dispose of and spin off business operations as separate companies. If the shareholders' meeting passed a special authorizing resolution, a company could transfer an internal division to another company and be compensated with the stock of the acquiring company. Under this new type of business transfer, acquiring companies could be freed from needing to raise funds for the purchase.

Furthermore, the previous stipulations requiring an audit performed by a court-appointed auditor in cases of investment in-kind deals, and the need to acquire the consent of creditors were relaxed under the new system. Both of these changes made it easier to sell off businesses. The new system made it possible: 1) for a division of a company to ally or merge with divisions of other companies engaged in the same line of business; 2) to pursue strategic management by casting off main lines of business or turning them into subsidiaries to be managed by a holding company; and 3) to pursue a strategic business restructuring by spinning off certain operations so that they can be sold to other companies within

the same group. (Source: RECOF data). In the five years since this system was introduced, there have been 208 cases in which corporate realignment was used to promote alliances and integration of operations engaged in the same line of business but under different companies. (Table 1)

2.3. Building an M&A Infrastructure

The Industry Revitalization Law of 1999 (*Kigyo katsudo kassei-ka ho*) is an additional piece of legislation that further promoted M&A activity. This law provided tax and legal support measures for revitalization projects certified by the minister with authority over the project such as: a reduction or exemption from the registration and licensing taxes on investment, as well as investments and loans from the Japan Policy Investment Bank. The law allowed firms 1) an exemption from inspection by an auditor for investment in-kind and post hoc incorporation, and 2) the ability to restructure without convening a shareholders' meeting (streamlined restructuring).[9] Furthermore, the certified company was 3) given more flexibility in paying for the merger[10] and 4) would receive accelerated screening under the Anti-Monopoly Law. It is believed that these measures provided room to maneuver and smoothed the way for mergers and acquisitions.

In contrast, Rossi and Volpin (2004) stress the protection of minority shareholder rights and accounting practices as key institutional factors that determine the frequency of M&A activity across countries. While there were no major changes to the legal framework protecting minority shareholders' rights in the late 1990s, there were substantial changes in accounting standards. The level

9 Under the new law, restructuring was possible without sanctioning a shareholders' meeting and simply by a vote of the board of directors if the target company was only one-fifth the size of the bidder, or if the certified company held two-thirds or more of the voting rights of the subsidiary.

10 During reorganization, a company would be permitted to refrain from issuing stock in its own company, instead offering "cash" or stock in another company. With this approach, the target company in the reorganization could be turned into a wholly owned subsidiary.

of disclosure required under Japan's accounting standards had been considerably lower than that required under the U.S. Generally Accepted Accounting Principles and the European International Accounting Standards. Therefore, if a domestic or foreign firm was considering a merger or acquisition, there was the risk that the target firm's financial statements would not accurately reflect the firm's actual financial condition. Beginning in 1999, firms were required to disclose quasi-guarantee acts (which occur when the parent extends a guarantee to the creditor holding the debt of its subsidiary), and beginning in 2000, consolidated firms were required to adhere to an "actual control" standard. The disclosure of financial information was revised from a non-consolidated to a consolidated basis. Firms were required to use tax-effective accounting and disclose their consolidated cash flow. Market-value accounting was introduced for pension liabilities in 2001 and for holding companies in 2002. These reforms made it easier to grasp the financial condition of a target firm from publicly disclosed information prior to a merger or acquisition. (Hattori 2004, Chapter 2).

Finally, the increase in mergers and acquisitions encouraged domestic and foreign investment banks to enter the M&A market. The creation of an infrastructure for M&A intermediation, due diligence, valuation, and other services played an important role. From the late 1990s, foreign financial institutions entered the M&A intermediation business. Japanese banks and securities houses followed suit by expanding their M&A departments. In a parallel development, big law firms began to treat M&A advising as one of their important services. The M&A infrastructure became irreversible, and accordingly the costs associated with M&A activity, including the search for potential acquisition targets, were reduced.

These institutional changes were not completely exogenous to the increase in M&A. Firms that sought to reorganize and achieve growth through mergers and acquisitions pursued legal reforms, which in turn promoted M&A. But if that were indeed the case, why did firms seek legal changes that promoted M&A during this time? Because all Japanese firms benefited from institutional changes, the

changes alone do not sufficiently explain why M&A activity surged during this particular period and in certain industries. The next section notes that the M&A wave in the late 1990s was clustered in particular industries. Apart from institutional factors, the analysis that follows in the rest of this paper is also necessary to explain what happened.

3. M&A Clustering in Specific Industries: A Feature of the M&A Boom in the 1990s

Along with the M&A deals executed by foreign firms, M&A deals conducted between domestic firms rapidly surged from the late 1990s to the early 2000s. In the first half of the 2000s, there was an average of 1,497 deals annually, up about 6.4-fold from an average of 232 deals annually in the late 1980s. In the late 1980s, deals between domestic firms accounted for 44.6% of all deals. This number grew to 76.3% of all deals in the new millennium. One could say that since 1999, Japanese firms have been actively participating in an M&A boom targeting other domestic firms.

Moreover, M&A in the late 1990s was concentrated in a limited number of industries. Table 2 provides a breakdown of the number of mergers between domestic listed firms, as well as the number of acquisitions valued at 200 million yen or higher involving at least one listed firm. Between 1991 and 2004, there were a total of 1,605 deals (The subtotals are provided for 29 industry categories, which were compiled from RECOF Data's 33 categories.) Mergers between listed firms were most common in the wholesale, retail, financial, construction, information and telecommunications, chemicals, machinery, and electric machinery sectors. Acquisitions were mainly concentrated in the information and telecommunications, wholesale, retail, and services sectors.

The above figures do not adjust for the distribution of listed corporations across industries. Therefore, we standardized the number of mergers and acquisitions by sector according to the number of listed corporations in each sector at the start of the period. We call this the M&A ratio. Traditional sectors

such as paper and pulp; glass, stone and clay; coal and oil; steel; etc. with high numbers of deals had a higher M&A ratio. In contrast, the electric and construction sectors had a relatively lower M&A ratio. The information and telecommunications, wholesale, retail, and services sectors had a higher occurrence rate, even when seen through the relative M&A ratio. In contrast, the electricity and gas, transportation and warehousing, real estate, etc. had a lower M&A occurrence ratio.

== Table 2 about here==

In order to determine when particular sectors experienced an M&A boom, we followed Harford (2005) and present our results for each sector in Table 2. Our calculations were based on the 120 months from 1995 to 2004 for each industry. Randomly, with a probability of 1/120 per month, we calculated a value for 24 months with 1,000 simulations. Next, we then compared actual totals for 24 months with the predicted value, and if the actual total exceeded the 95th percentile of the simulated figure, we coded it as an M&A boom. For example, of the 158 M&A deals in the retail sector, 65 deals occurred since February 2001. On the other hand, the maximum aggregate value for M&As exceeding the 95th percentile was 57. Therefore, we can conclude that the M&A boom in the retail sector began in February 2001.[11]

According to Table 3, M&A boom occurred in 13 sectors in the late 1990s. More specifically, the M&A boom between domestic firms began in 1998 in the coal and oil sector, and continued in 1999 in the nonferrous metals, financial, and insurance sectors. A surge in M&A began in the retail and electric machinery industries in 2001. Rapid technological innovation produced a similar spike in 2003 in the information and telecommunications sector. Given this activity, the question remains: what accounts for the clustering of M&A in these particular industries?

== Table 3 about here==

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4. Why M&A has clustered

4.1 Hypotheses

Why did the surge in mergers and acquisitions concentrate in particular industries? The following factors have been cited by previous scholars as causes of rapid increases in M&A activity clustered in particular industries (followed by rapid declines).

The first argument emphasizes real shock. Mitchell and Mulherin (1996) and Andrade and Stafford (2004) emphasize the role of industry-level economic shocks on the allocation of economic resources. Documenting the M&A clustering, Harford (2005) suggests that merger waves happen because of industry-wide economic shocks, which trigger the reallocation of the economic resources thorough M&A activity. In this case, economic shocks can be both positive and negative.

Positive shocks include technological innovations that enable firms to reap economies of scale and scope, and deregulatory measures that make it easier for firms to enter sectors with high profitability. For example, technological innovations that primarily magnify economies of scale encourage horizontal M&As, while technological innovations that yield economies of scope bring about non-horizontal M&A including the fusion of telecommunications and finance.

On the other hand, some studies emphasize the role of adverse shocks. Jensen (1993: 839) stresses that after the oil crisis American corporations faced a serious excess capacity problem due to the plunge in demand, rapid expansion of scale, and technological innovations that made much of the existing capital obsolete. "Takeover activities were addressing an important set of problems in corporate America, and doing it before the companies faced serious trouble in the product market."

Second, Harford (2005) explains that for M&A to occur in an economy as a whole, the financial constraints on parties to M&A need to be minimal. In other words, an increase in liquidity at the macro level eases financial constraints on

M&A activity and consequently leads to an overall increase in the number of M&A.

Third, a stylized fact of M&A activity in the U.S. is an increase in the number of M&A transactions occurs during stock market booms. For example, Golbe and White (1988) report that there is a positive correlation between stock prices and M&A activity. When a stock market boom promotes an M&A boom, there are dual welfare effects. On one hand, assuming that the stock market is efficient and accurately assesses the high growth opportunity of a particular industry, the stock market boom reflects improvements in fundamentals, and resource allocation should be efficient.

On the other hand, if the stock market for some reason overprices an industry above its fundamental value, there will be a major difference between the stock market boom's welfare effect on the M&A boom. This perspective is called the market-driven hypothesis, and assumes that the stock market is characterized by inefficiency. While the 1980s M&A boom in the U.S. was characterized by leveraged buyouts and other deals that used cash as a means of payment, the M&A boom of the 1900s was characterized by an increase in the number of deals that were financed with stock. Focusing on this feature, Shleifer and Vishny (2003) advanced a theory that when managers possess information that the market's valuation is higher than a firm's fundamental value, they have an incentive to reap profits through M&A deals that involve the swap of their own company stock. Myopic managers of target firms will ignore the expected long-term profits and have an incentive to sell their own firm in response to a favorable offer from the acquiring firm.[12] In that case, the acquisition will generate losses for the

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12 Furthermore, Rhodes-Kropf and Viswanathan (2004) theoretically demonstrate that firms in which stock prices are overvalued by the market have an incentive to carry out M&A through stock swaps. Their model assumes that the managers of the buying firm have complete information regarding the value of their own firm, while the managers of the target firm cannot accurately calculate the future synergies to be reaped from M&A. When the stock market is booming, managers of a target firm who do not have complete information based on excessive expectations of future synergies, will accept offers for a buyout paid for with the overpriced stock of the buying firm.

stockholders of the target firm. Next, we investigate these different explanations about M&A activity at the industry level using industry-level data.

4.2. Data

Following the hypotheses discussed above, we begin to analyze the determinants of Japanese M&A in the 1990s using industry-level data.

The database originates from RECOF's M&A database of Japanese companies. We exclude the financial sector from our sample because this sector faces different regulations. Our measure of the frequency of M&A activity in each sector is the M&A ratio. The ratio is calculated based on the M&A deals by firms listed on the Tokyo Stock Exchange (TSE) 1st or 2nd section with a transaction value of at least 200 million yen from 1991 to 2004.[13] Consequently, we exclude deals by the firms listed on Mothers, JASDAQ, Hercules, and those by non-listed firms. Furthermore, we exclude the deals within the same group firm and the deals that result in the shareholdings by acquire less than 50%. We assign bidders and target firms to one of the industry sectors based on the Industry code made by TSE.[14]

The independent variables are constructed based on the following process using financial data from AMSUS, NEEDS, and the Toyo Keizai financial database.

First, to examine the effect of fundamental factors on M&A, we control for the industry's growth opportunities and profitability. As a proxy for growth opportunities, we use Tobin's q. Under the neoclassical hypothesis, the number of M&A deals will increase in a particular industry when the productivity of that industry as a whole increases (or decreases) because of technological innovation, demand expansion (reduction), or a dramatic change in competitiveness due to deregulations.

Second, as a proxy for profitability, we use the return on assets (*ROA*) and the

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13 20 million yen is the first quartile of the amount of money for deals.
14 We corrected some codes based on the TSE industry code.

first principal component (*PROF*) where five variables (the ratio of cash flow to sales, the ratio of sales to total asset, employee growth, sales growth) are applied. We predict that the probability of M&A is higher when these variables are larger (or lower).

Following Mitchell and Mulherin (1996) and Andrade and Stafford (2004), we also include the lagged sales growth and the deviation of sales growth from its five-year mean (*Econshock*) to capture industry shocks. The industry shock is one of the determinants of the merger wave if the M&A ratio is negatively related with this shock. Since the *Econshock* only captures shocks on the demand side, we also add the standard deviation of the median three-year stock return($\sigma(ER)$) to capture the much broader shocks to the industry. We assume that more highly volatile stock returns reflect negative shocks that the industry faced over the previous three years.

To control the effect of capital liquidity, we add the one-year change of the base money in money supply.[15] We expect a positive relationship between the percentage change of base money and the probability of M&A in the case where higher capital liquidity in the macro economy makes financial constraints less severe.

Finally, to examine the validity of the effect of overvaluation in the stock market on M&A, we follow Harford (2005) and add the average three-year stock return (*ER*). We expect a positive relationship between *ER* and the probability of M&A if the overvaluation encourages M&A activity. The values of all the independent variables that we use in the following analysis represent industry medians.[16]

4.3. Descriptive Statistics

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15 Harford (2005) uses the spread, which is the difference between the loan rate and a risk free asset, as the proxy for the macro economic liquidity. Considering that BOJ took the zero-interest rate policy from the end of 1990s, we use the base money instead of using the spread.

16 Healy, Palepu, and Ruback (1992) use the median of each profitability index.

Table 4 lists the descriptive statistics for the average M&A ratio, growth opportunity, profitability, ratio of physical investment to total asset, percentage changes of total factor productivity (TFP), level and percentage changes of regulation index, and correlation between the M&A ratio and other variables. Here, the regulation index shows the extent to which each industry faced regulation. A high number implies greater regulation. This variable serves as a proxy for industry shocks like TFP.[17]

Table 4, does not suggest a clear relationship between the M&A ratio and the growth opportunity or profitability. While q is larger in the sectors with higher M&A ratios, like IT, service, and retail, it is also above average for the sectors with lower M&A ratios like medical, machinery, electronics. We find a similar tendency for ROA. In fact, the correlation between the M&A ratio, Tobin's q, and ROA are relatively low.

Second, we find a negative relationship between the M&A ratio and the investment ratio. This suggests that these variables are substitutes, a result that is consistent with Jovanovic and Rousseau (2002).

Finally, the correlation coefficient on the bottom indicates a negative relationship between the percentage change in regulation and the M&A ratio. In contrast, the percentage change in TFP is positively related to M&A. These observations are consistent with the neoclassical view that fundamental economic shocks drive merger waves.

＝＝Table 4 about here ＝＝

Table 5 lists the descriptive statistics and correlation matrix for each variable we use in a later regression. Note that each variable lagged one year to the M&A ratio. The correlation between Tobin's q and ER is smaller than expected at 0.20, while the correlation between Tobin's q and ROA is 0.48. The correlation between base money as a proxy for capital liquidity and Tobin's q is -0.177. This result

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17 TFP and the regulation index are based on the Japan Industry Productivity Database (JIP Database 2006). The original JIP database has 108 industries. We reorganized them into 29 industries weighted by sales volume. Because of data aggregation, these numbers will not be as precise as other variables.

suggests that M&A activity does not increase with a higher Tobin's q during periods with larger capital liquidity.

$==$ Table 5   about here $==$

4.4 Industry Level Analysis

In this section, we examine the determinants of M&A ratio and focus on positive and negative fundamental shocks, as well as stock price returns.[18] Since the dependent variable is censored, we mode the M&A ratio using a tobit specification.

$==$ Table 6   about here $==$

As in shown in Table 6 model (1), the coefficient on Tobin's q as a proxy for growth opportunity is significantly positive at the 1% level. This evidence suggests that M&A occur in industries with relatively higher growth opportunities.

This result is consistent with the hypothesis that M&A activity is driven by the overvaluation of the bidding firm's stock price. In model   (1),   we   include the three-year stock price return (ER) in the regression to test directly the market driven hypothesis following Harford (2005). Since the coefficient of ER is negative and less significant, we have no reason to think that the overvaluation of stock prices is the driver of M&A activity in that sector. Using pooled data instead of panel data (model 3) or adding a one-year lag of the M&A ratio (not shown) produces similar results.[19] These results imply that sectors with higher growth opportunities on average are likely to see more M&A, while we cannot find any clear evidence of an effect of stock price overvaluation. The proportion of stock swap deals to total M&A in Japan was very low (only 4% in 2006), and it was heavily used by firms listed on emerging markets like Mothers. Consequently, the market-driven hypothesis does not seem appropriate for explaining M&A

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18 We could not find any significant result for TFP and the index of regulations.
19 The coefficient on the one-year lag of the M&A ratio is positive, while the
 coefficient on the one-year stock return is positive but insignificant.

activity among larger, established firms.

Next, we address the effect of profitability on industry-level M&A. As a proxy for profitability, we use *PROF* and *ROA*. The estimation results show that the coefficient on *PROF* is positive but insignificant (model 1, 3). When we use *ROA* instead of *PROF*, the coefficient is again negative and insignificant (model 2). Unlike the studies examining M&A in the U.S. in the 1990s, we cannot find a positive relationship between the M&A ratio and profitability in Japan. These results suggest that M&A activity in Japan occurs more heavily in sectors that had a positive industry shock in terms of growth opportunity.

The coefficient of *Econshock,* which is the deviation of current sales growth from the previous five-year average, is significantly negative at the 5% level (model 1). We find similar results when we use *ROA* instead of *PROF* (model 2), or change the estimation method from panel to pooled (model 3). The rapid increase of M&A in Japan from the late 1990s is motivated by the remarkable decline of sales.

Further, the coefficient on σ (*ER*), the proxy for exogenous shocks to each industry, is significantly negative. For example, based on model (1), a one standard deviation increases in σ (ER), or 2.125, raises the M&A ratio about 3.2%, which is almost the same magnitude as the 3.2% of M&A ratio.

Considering that the Japanese economy gradually recovered from 2003, we estimate the regression using years up to 2002 (model 4). In this limited estimation period, we find the coefficient of *Econshock* and *σ (ER)* highly significant. If stock price volatility reflects negative industry shocks, we can conclude that the merger boom in Japan was due to both positive and negative industry shocks.

Finally, the coefficient on base money, the proxy for capital liquidity, is always insignificant.[20] On average, capital liquidity as a whole is not a good

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20 We also include the spread, the average bank loan interest minus JGB yield, following Harford (2005). The spread is also insignificant.

proxy for explaining the M&A boom in the 1990s at the industry level.[21]

In summary, the above results suggest that the rapid increase of M&A activity is due to a change in growth opportunities and decreasing sales. These conclusions are consistent with Mitchell and Mulherin (1996), Andrade and Stafford (2004), and Harford (2005). After his case study of M&A in U.S., Kaplan (2000) suggests that most of the M&A resulted from technological shocks, deregulation, a change in growth opportunities, and a change in profitability. The results of this section show that positive and negative changes to growth opportunities and the decreasing sales due to industrial shocks triggered the merger boom in Japan. Contrary to the U.S. case, however, stock price overvaluation for bidding firms and macro-level capital liquidity do not affect the M&A boom in Japan substantially. We cannot find any evidence that supports the market-driven hypothesis among large listed firms.

5. A Firm-Level Investigation of M&A

5.1. Hypothesis

In this section, we investigate the relative characteristics of acquiring and target firms at the firm level. We focus on whether M&A activity of acquiring and target firms is explained by their growth opportunity, even though other factors such as size or competition level are likely to matter. Jovanovic and Rousseau (2002) shows that M&A decisions can be explained by q theory, as in the case of internal investments.[22] That is, firms with a higher Tobin's q are likely to be the acquiring firms. Since M&A is regarded as an effective tool for corporate restructuring, firms with a lower q are likely to be targets of M&A. M&A between high q acquiring firms and low q target firms is likely to create value.

For the financial aspects, Shleifer and Vishny (1992) suggest the following theory concerning the relationship between a firm's financial constraint and M&A.

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21 We investigate the effect of financial constraints on M&A activity on the firm level in a later discussion.

22 Andrade and Stafford (2004) emphasize the degree of substitutability between M&A and physical investments.

Suppose a firm's cash flow increases mainly because of an improvement in the fundamentals factor. This increase relaxes financing constraints for the bidding firm, which tends to offer the target firm a price that more closely resembles its fundamental value. Testing this reasoning, we examine whether the firms with less severe financial constraint are likely to engage in M&A activity or not.

For target firms, we test whether more highly leveraged firms tend to be targets of M&A as the result of the manager's fear of defaulting, as Jensen (1993) emphasized. We also investigate the effect of cross-shareholdings on M&A. Opposite to the predicted direction of the effect of leverage, managers of firms with higher cross-shareholdings might face less pressure for the restructuring, and therefore be more likely to avoid accepting an offer for acquisition.

5.2. Data

We begin by examining differences in characteristics between acquiring firms, target firms, and non-M&A firms. All the M&A deals are related to firms listed on the TSE 1st or 2nd section. That is, M&A are composed of 1) mergers between listed firms, and 2) acquisitions where either the bidder or the target is a listed firm. We include acquiring firms in deals valued at 200 million yen or higher in the analysis. On the other hand, we include all targeted firms that are listed. Note that listed firms are more likely to be acquiring firms than targeted firms. The sample period is 1995 to 2004 for the analysis of bidding firms and 2000 to 2004 for the analysis of target firms. Firms are classified as engaging in M&A in the year in which they did the M&A activity. In other years, the firm is classified as a non-M&A firm unless it took additional M&A activity.[23] When mergers occur, we identify the bidder and the target according to the definition in RECOF. The financial characteristics of the sample firms are shown in Table **7**.

== Table 7　about here ==

Table 7 shows that the size of acquiring firms is larger than that of non-M&A

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23 The M&A indicator takes the value of 1 for firms that undertake multiple M&A in one year.

firms. The size of target firms is significantly small. Tobin's q is higher for acquiring firms than target firms. This is consistent with the result in the former section that higher growth opportunity triggers M&A activity. Similarly, the ROA of acquiring firms is significantly higher than that of targeted and non-M&A firms. Leverage for acquiring firms is significantly lower than that of target firms. Risk, as measured by the 36-month volatility of stock returns, is significantly higher for target firms. This is consistent with the view that higher risk firms are more likely to be the target in M&A. Finally, we do not find any significant differences for net debt, which is the ratio of liquidity assets minus debt to total assets.

5.3. Firm Level Analysis I: Acquisitions

In this section, we model the choice to acquire firm by using a logit specification. The dependent variable takes the value of 1 if a firm engages in M&A activity as an acquiring firm, and zero otherwise. Under this definition, 4% of all cases are M&A.[24]

The independent variables are similar to Section 4, except that they vary at the firm level rather than the industry level. We use Tobin's q as a proxy for growth opportunity again. We expect a positive relationship between M&A activity and growth opportunity.[25] To investigate the relationship between growth opportunity and M&A more clearly, we also include two dummy variables as additional proxies for growth opportunity. The first is *Hq*, which equals one if a firm's Tobin's q is among top quintile. The second is *Lq*, which equals one if the firm's Tobin's q is among the bottom quintile of the total distribution. We also include real sales growth for the same purpose.

To examine the effect of financial constraints, we include the net debt (*Ndebt*), which is defined as the ratio of total cash equivalents minus debt to total assets.

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24 The number of sample firms in which the dummy variable equals 1 is 491.
25 Since we could not find any evidences in support of the market driven hypothesis in
 the previous section, q serves as a proxy for growth opportunity only.

Because business portfolio diversification is a motivation for buying other firms, we include the 3-year standard deviation of stock returns (*Risk*) as a proxy for risk.[26] Further, to control for the degree of substitutability between firm or asset purchases and internal investment, we use investment (*Investment*). Finally, we add industrial level and year fixed effects.

Table 8 reveals that size is clearly an important determinant of acquisitions. The coefficient of q is insignificant and the sign is unstable.

$$= = \text{Table 8 \quad about here} = =$$

Specifications (2), (3), and (4) include the *Hq* dummy and the *Lq* dummy. The coefficient on *Hq* is significantly positive while the coefficient on *Lq* is negative and significant in some specifications. This shows that firms with a higher q are more likely to attempt takeover bids. We can conclude that the probability of making a takeover bid for a firm is higher for firms with larger growth opportunities.

Ndebt is positive and significant at the 1% level. The magnitude of the coefficient is almost similar to that of *Hq* and size. This suggests that the firms with larger internal funds are more likely to engage in the M&A activity as a bidder.[27]

5.3. Firm Level Analysis II: Targeting

We now turn to an examination of the behavior of target firms. The dependent variable is an indicator that equals one if a firm is the target of an M&A deal and zero otherwise.[28] The independent variables are similar to Section 5.2.

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26 M&As that are driven by the desire to diversify business portfolios tend to decrease shareholder value.

27 This result does not contradict the conclusion that matured firms are more likely to engage in M&A. Blanchard et al. (1994) showed that the performance of M&A by firms with excess internal funds tends to be lower.

[28] Most of the deals we use in the sample are between listed bidding firms and non-listed target firms. The analysis of target firms is relatively limited as a result. In fact, the dependent variable takes the value one only 1% (88 cases) of the time.

To proxy for restructuring incentives, we use the ratio of debt to total assets (*DA*). We also add the ratio of cross-shareholding to total issued shares as a proxy for weak corporate governance because cross-shareholdings may reduce shareholder pressure to restructure (*Cross*). As in the case of acquiring firms, we add the log of assets to control for firm size (*Size*), and the three-year standard deviation of the stock return to control for risk (*Risk*). Year and industry-level fixed effects are also included.

== Table 9 about here ==

Table 9 illustrates that the coefficient on *Lq* is significantly positive, suggesting that the firms with a lower Tobin's q are more likely to be targeted for M&A. The growth rate of sales is negative and significant in (1). This indicates that firms facing stagnating sales are also likely to be targeted for M&A. The fact that both mature firms and ones with slower sales growth are more likely to be targeted suggests that M&A is used as a means of corporate restructuring.

Although *Risk* is not significant, the coefficient on the ratio of debt to total assets, *DA*, is significantly positive. The more highly leveraged firm stands a greater risk of being targeted for M&A. This result is consistent with the standard understanding that higher leverage is a driver of M&A targeting because of the higher default risk. [29] Finally, we cannot find any evidence that cross-shareholdings have a substantial effect on the M&A decision.

6. Conclusion

In this paper, we examine the causes of the merger boom that has occurred in Japan since the late 1990s. We find that mergers and acquisitions are mainly driven by economic shocks. While industries with higher growth opportunity are likely to engage in more M&A activity, the same is also true for industries facing negative fundamental shocks like sales declines. These results imply that the

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[29] The Japanese banking sector accelerated the bad-loan cleanup in this period, and this might influence this result.

neoclassical model can explain the recent merger wave in Japan.

While these results are consistent with findings based on U.S. data by Mitchell and Mulherin (1996), Andrade and Stafford (2004), and Harford (2005), it is remarkable that the merger boom is driven by both positive and negative shocks in Japan. In the U.S., the merger wave in the 1980s was mainly driven by negative economic shocks. In contrast, the wave in the 1990s was mainly driven by positive economic shocks like technological innovation. Capital liquidity at the macro level, as well as the stock market boom, have not had positive effects on merger activity in Japan, as they have in the U.S. and other countries (Jackson and Miyajima, 2007). Overall, the view supported here is that the merger activity that resulted from economic shocks was itself driven by the need to reallocate assets among industries.

At the firm level, we find that bidders are generally growing firms and targeted firms tend to be more mature. This suggests that Japanese firms improved their efficiency through merger activity in the 1990s. Furthermore, we find that internal funds for acquiring firms play a very important role in bidding activity. This suggests that it is much easier for a firm with less severe financial constraints to succeed in M&A. This is consistent with the fact that M&A activity increased rapidly during the beginning of the 21st century, a time when large Japanese firms started large-scale reductions in their leverage. Finally, we conclude that firms with more leverage are more likely to be targeted for M&A because the increased default risk applies pressure on the manager to entertain M&A offers.

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Figure 1 The Trend in M&A
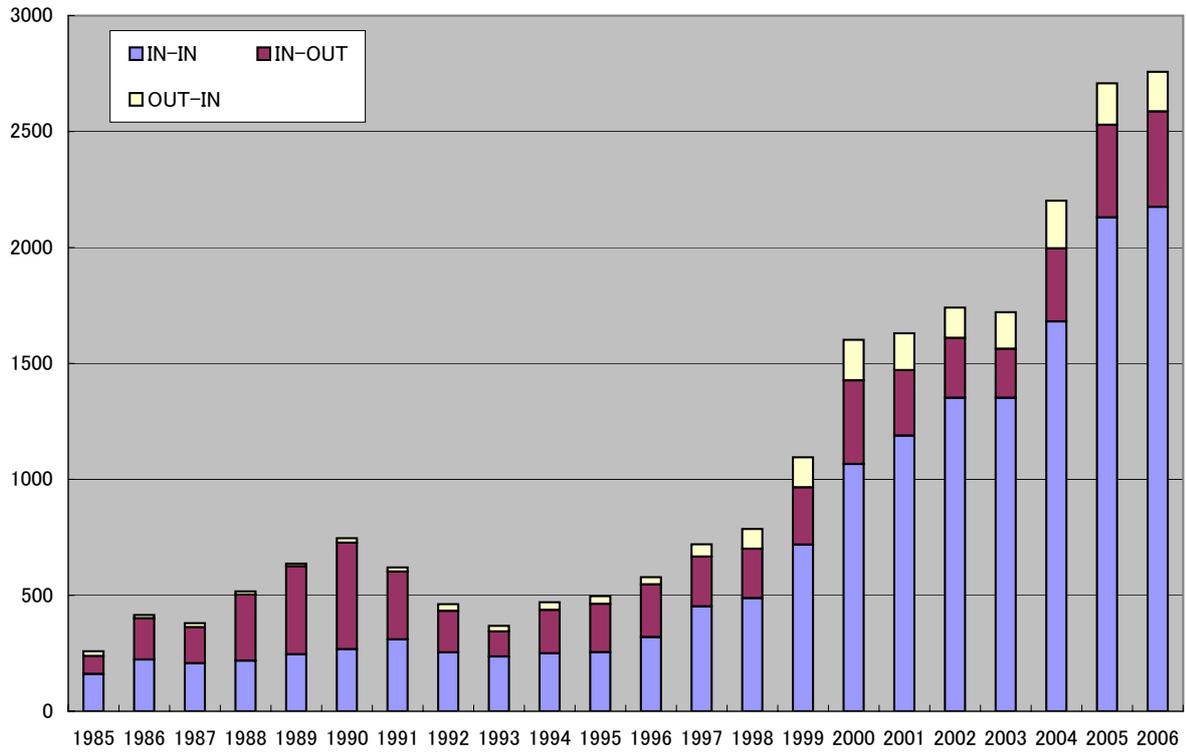
Source: RECOF, *M&A Data Book in Japan*, 1988-2004. RECOF, MARR *M&A data*, CD-ROM edition.
Note: IN-IN: M＆A between domestic firms, IN-OUT: M&A of Japanese firms to foreign firms,
OUT-IN: M&A of Foreign firms to Japanese firms

Table 1: The number of deals using a stock transfer system, stock swap, and company divestiture system

Each number in the table indicates the number of the deals using each newly introduced measure. The number of spin-off deals is excluded.

Year	Stock transfer and swap system				Company divestiture system			
	Merger (stock transfer system)	Merger (stock swap system)	Acquisition (stock swap system)	Total	M&A	Intra-group	Holding company	Foreign company
1999	4	0	10	14	–	–	–	–
2000	10	0	21	31	–	–	–	–
2001	8	1	18	27	29	68	9	0
2002	7	1	29	37	37	93	15	0
2003	7	2	13	22	31	86	14	1
2004	8	2	69	79	57	85	25	1
2005	9	3	68	80	54	97	41	3
Total	53	9	228	290	208	429	104	5

Source: *MARR,* RECOF

Table 2: M&A ratio by industriy (1991-2004)

The number of M&A deals is based on publicly disclosed information excluding unrealized deals. The numbers represent the number of mergers between domestic listed firms, and acquisitions valued at 200 million yen or higher that involved at least one listed firm.

Industry	Number of M&A deals	Ratio	Number of Merger	Ratio	M&A ratio
Mining	10	0.5%	0	0	9.05%
Grocery	67	3.6%	5	2.9%	4.49%
Fabric	34	1.8%	3	1.7%	4.02%
Pulp and paper	19	1.0%	6	3.4%	8.93%
Rubber products	5	0.3%	2	1.1%	2.58%
Ceramic industry	25	1.3%	7	4.0%	4.49%
Chemistry	76	4.1%	10	5.7%	3.41%
Medical drag	20	1.1%	3	1.7%	3.08%
Coal and oil	10	0.5%	3	1.7%	6.90%
Iron and steel	12	0.6%	4	2.3%	2.94%
Nonferrous metal	53	2.8%	6	3.4%	3.78%
Machinery	77	4.1%	11	6.3%	3.04%
Transport equipment	50	2.7%	7	4.0%	4.44%
Electric equipment	82	4.4%	10	5.7%	2.40%
Precision mechanical equipment	18	1.0%	2	1.1%	2.13%
Other manufacture	65	3.5%	2	1.1%	6.99%
Electric power and gas	10	0.5%	0	0.0%	2.74%
Real estate	30	1.6%	0	0.0%	2.95%
Construction	76	4.1%	14	8.0%	3.68%
Transportation and storage	36	1.9%	8	4.6%	2.96%
Information and communication	276	14.8%	13	7.4%	5.46%
Wholesale	220	11.8%	19	10.9%	6.98%
Retail	158	8.5%	7	4.0%	5.16%
Banking	48	2.6%	15	8.6%	-
Insurance carriers	19	1.0%	5	2.9%	-
Security brokers and dealers	25	1.3%	6	3.4%	-
Other financial services	84	4.5%	1	0.6%	-
Service	260	13.9%	6	3.4%	10.87%
Manufacturing sector	623	33.4%	81	46.3%	-
Nonmanufacturing sector	1242	66.6%	94	53.7%	-
Total	1865	100.0%	175	100.0%	4.74%

Source: RECOF

Table 3: Identification of M&A boom

The numbers represent the number of mergers between domestic listed firms, and acquisitions valued at 200 million yen or higher that involved at least one listed firm.

▮ represents the M&A boom. We identified the M&A boom when the actual number of M&A deals in a 24 month period exceeds over 95% of the number estimated by simulation for the estimation period (1995-2004).

▮ represents the period with the largest number of M&A deals in 24 months in the industry.

	Total number of M&A deals	Maximum number of M&A deals in 24 months	Estimated thershold with 95% confidence level	Start point of M&A boom	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture	1	1	2	200112										
Mining	10	8	10	200110										
Grocery	67	24	30	200101										
Fabric	34	17	18	200204										
Pulp and paper	19	8	14	199805										
Rubber products	5	3	5	200103										
Ceramic industry	25	10	15	200203										
Chemistry	76	31	31	200204										
Medical drag	20	9	11	200204										
Coal and oil	10	9	9	199803										
Iron and steel	12	7	9	200009										
Nonferrous metal	53	25	25	199907										
Machinery	77	29	30	200301										
Transport equipment	50	26	25	200208										
Electric equipment	82	32	32	200111										
Precision mechanical equipment	18	8	11	200201										
Other manufacture	65	27	26	200104										
Electric power and gas	10	8	9	200108										
Real estate	30	17	19	200205										
Construction	76	28	32	200112										
Transportation and storage	36	13	19	200301										
Information and communication	276	143	110	200301										
Wholesale	220	84	76	200207										
Retail	158	65	57	200102										
Banking	48	27	25	199908										
Insurance carriers	19	17	14	199909										
Security brokers and dealers	25	14	14	200208										
Other financial services	84	40	34	200301										
Service	260	110	89	200212										

Source: RECOF

Table 4: M&A ratio and performance variables

The sample consists of companies listed on the 1st and 2nd sections of the TSE from 1991 to 2004. We use the RIETI JIP2006 index for constructing TFP and the regulation index. Since the JIP2006 index is available up to 2002, we assume the index is the same from 2002 to 2004. Changes in regulation and TFP represent the mean yearly change during the sample period.

Industry	M&A ratio	Tobin's q	ROA	Sales growth	Capital expenditure / total asset	Regulation index	Percentage changes of regulation index	Percentage changes of TFP
Agriculture, Forestry and Fisheries	1.19%	1.397	1.34%	-0.28%	2.3%	0.635	-0.069	-0.158
Mining	9.05%	1.122	1.32%	1.60%	2.9%	0.558	-0.055	-0.005
Grocery	4.49%	1.181	1.84%	0.84%	3.7%	0.733	-0.041	0.002
Fabric	4.02%	1.082	0.97%	-2.67%	2.1%	0.001	-0.004	-0.015
Pulp and paper	8.93%	1.076	0.97%	-0.98%	3.9%	0.000	0.000	-0.006
Rubber products	2.58%	1.162	1.97%	-0.48%	4.4%	0.623	0.034	-0.003
Ceramic industry	4.49%	1.111	0.98%	-0.77%	3.0%	0.065	0.020	0.001
Chemistry	3.41%	1.121	1.50%	-0.31%	3.6%	0.154	0.009	-0.004
Medical drag	3.08%	1.410	2.84%	1.70%	2.5%	1.000	0.000	0.025
Coal and oil	6.90%	1.167	1.07%	0.45%	2.7%	0.438	-0.094	0.002
Iron and steel	2.94%	1.052	0.62%	-1.32%	3.5%	0.000	0.000	0.007
Nonferrous metal	3.78%	1.093	1.20%	-1.14%	2.8%	0.054	-0.001	-0.010
Machinery	3.04%	1.184	1.34%	0.02%	2.1%	0.093	-0.028	-0.019
Transport equipment	4.44%	1.080	1.35%	0.18%	4.9%	0.282	0.015	0.006
Electric equipment	2.40%	1.240	1.31%	0.23%	2.6%	0.299	-0.038	0.025
Precision mechanical equipment	2.13%	1.216	1.45%	0.21%	2.5%	0.577	0.077	-0.015
Other manufacture	6.99%	1.136	1.94%	0.42%	2.6%	0.156	-0.014	0.005
Electric power and gas	2.74%	1.107	1.31%	1.35%	10.2%	1.000	0.000	-0.002
Real estate	2.95%	1.093	1.65%	2.55%	2.2%	0.286	0.057	-0.006
Construction	3.68%	1.045	1.05%	-0.61%	1.1%	0.537	0.088	-0.012
Transportation and storage	2.96%	1.202	1.10%	0.92%	4.9%	0.942	0.013	-0.007
Information and communication	5.46%	1.598	2.27%	1.06%	2.3%	0.047	-0.026	0.023
Wholesale	6.98%	1.053	1.30%	0.35%	0.8%	0.000	0.000	0.023
Retail	5.16%	1.208	2.27%	3.90%	5.3%	0.000	0.000	0.006
Service	10.87%	1.327	2.45%	2.95%	3.1%	0.526	0.009	-0.009
All industries	4.74%	1.166	1.45%	0.50%	3.2%	0.360	-0.002	-0.006
Correlation with M&A ratio	-	0.065	0.152	0.260	-0.162	-0.234	-0.236	0.276

Source: MARR, RECOF

Table 5: Descriptive statistics and correlation

The number of M&A deals is based on publicly disclosed information excluding unrealized deals. The numbers represent the number of mergers between domestic listed firms, and acquisitions valued at 200 million yen or higher that involved at least one listed firm. ER represents the 36-month average stock return. σ(ER) represents the standard deviation of ER. ROA represents the operating income on assets. PROF represents the first principle component estimated by principle component analysis on ROA, the cashflow/sales ratio, the growth rate of the number of employees, and sales growth. Econshock is the deviation of sales growth from its previous five-years average. Basemoney is the yeary change in base money at money supply.

Panel A: Mean

	N	Mean	Std dev
M&A ratio	351	0.032	0.100
Tobin's q	351	1.188	0.266
ER	351	0.064	0.951
σ (ER)	351	10.586	2.125
ROA	351	0.015	0.008
PROF	351	-0.162	0.962
Econshock	351	-0.025	0.049
Base money	352	0.081	0.076

Panel B: Correlation Matrix

	M&A ratio	Tobin's q	ER	σ (ER)	ROA	PROF	Econshock	Base Money
M&A ratio	1							
Tobin's q	0.275	1						
ER	-0.093	0.198	1					
σ (ER)	0.129	0.077	-0.072	1				
ROA	0.042	0.480	0.366	-0.033	1			
PROF	0.138	0.362	-0.112	-0.038	0.420	1		
Econshock	-0.103	0.119	0.410	-0.155	0.310	-0.076	1	
Base Money	-0.177	-0.288	0.072	0.017	-0.209	-0.238	-0.219	1

Table 6: Estimating the frequency of M&A deals by industry

The sample consists of companies listed on the 1st and 2nd sections of the TSE, from 1991 to 2004. The sample is from 1991 to 2002 in Model 4. *ER* represents the 36-month average stock return. *σ(ER)* represents the standard deviation of *ER*. *ROA* represents the operating income on assets. *PROF* represents the first principle component estimated by principle component analysis on *ROA*, the cashflow/sales ratio, the growth rate of the number of employees, and sales growth. *Econshock* is the deviation of sales growth from its previous five-years average. *Basemoney* is the yeary change in base money at money supply. Coefficients and standard deviations are listed. ***, **, * denote significant differences from zero at the 1%, 5%, and 10% levels, respectively.

Model	1		2		3		4	
	Tobit(PANEL)		Tobit(PANEL)		Tobit		Tobit(PANEL)	
q	0.190	***	0.203	***	0.176	***	0.263	***
	4.740		5.000		3.870		5.810	
ER	-0.023		-0.024	*	-0.022		-0.052	**
	-1.630		-1.690		-1.470		-2.880	
σ(ER)	0.015	***	0.015	**	0.011	*	0.020	***
	2.750		2.810		1.760		3.250	
ROA			-0.063					
			-0.040					
PROF	0.011				0.022		0.013	
	0.910				1.470		1.020	
Econshock	-0.501	**	-0.475	**	-0.495	**	-0.429	*
	-2.200		-2.050		-1.950		-1.740	
Base money	-0.032		-0.025		-0.067		0.063	
	-0.220		-0.170		-0.440		0.380	
C	-0.461	***	-0.479	***	-0.407	***	-0.628	***
	-5.710		-6.080		-3.510		-6.520	
Ind Dummy	No		No		Yes		No	
Year Dummy	No		No		Yes		No	
Log Likelihood	-25.082		-25.498		-4.769		-31.074	
N	349		347		349		303	

Table 7: Comparison of M&A and Non-M&A companies

Net debt is defined as [total cash equivalent - debt] / total asset. *Risk* represents the standard deviation of a 36-month average stock return. We employ the Wilcoxon test for comparing M&A and Non-M&A firms. ***, **, * denote significant differences from zero at the 1%, 5%, and 10% levels, respectively.

	Non-M&A company	Acquiring company		Target company	
Total asset	11.104	11.956	***	10.799	*
Tobin's q	1.219	1.395	***	1.303	
INV (Capital spending / total asse	11.715	0.045		-0.072	***
DA (Debt / total asset)	0.552	0.509	***	0.598	
sales growth	0.036	0.051	***	-0.038	**
Net debt	-0.373	-0.367		-0.353	
ROA	0.007	0.020	***	-0.001	
Risk	11.730	11.532		13.779	***

Table 8: Estimation results for acquiring firms

The sample consists of companies listed on the 1st and 2nd sections of the TSE.. The sample period covers 1995 to 2004. *Lq* is a dummy variable that equals one if Tobin's *q* of the sample firm is among the bottom quintile of the total distribution. *Hq* is a dummy variable that equals one if Tobin's q of the sample firm is among top quintile. *Ndebt* is defined as [total cash equivalent - debt] / total asset. *Size* is the log of total asset. *Risk* is the 3-year standard deviation of stock return. *Investment* is the ratio of physical investment to fixed assets. Marginal effects and standard deviations are listed. ***, **, * denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. We use a Logit model for the estimation specification.

Model	1		2		3		4	
q	0.000		-0.001		-0.001		-0.001	
	0.001		0.001		0.001		0.001	
Lq					-0.005	**	-0.004	
					0.002		0.002	
Hq			0.007	**			0.006	*
			0.003				0.003	
sales growth	0.001		-0.001		0.000		-0.001	
	0.006		0.006		0.006		0.006	
Ndebt	0.008	**	0.007	*	0.009	***	0.008	**
	0.004		0.004		0.004		0.001	
Size	0.008	***	0.008	***	0.008	***	0.008	***
	0.001		0.001		0.001		0.004	
Risk	0.000		0.000		0.000		0.000	
	0.000		0.000		0.000		0.000	
Investment	-0.001		-0.001		-0.001		-0.001	
	0.003		0.003		0.003		0.003	
y96	-0.003		-0.004		-0.001		-0.003	
	0.005		0.005		0.006		0.005	
y97	0.013		0.010		0.014		0.011	
	0.008		0.008		0.009		0.008	
y98	0.010		0.007		0.011		0.008	
	0.008		0.007		0.008		0.007	
y99	0.024	**	0.019	**	0.026	**	0.021	**
	0.011		0.010		0.011		0.010	
y00	0.015	*	0.012		0.017	*	0.014	
	0.009		0.008		0.009		0.009	
y01	0.033	**	0.028	**	0.036	**	0.030	**
	0.013		0.012		0.014		0.013	
y02	0.039	**	0.032	**	0.042	***	0.034	**
	0.015		0.014		0.016		0.015	
y03	0.044	***	0.036	**	0.046	***	0.039	
	0.017		0.015		0.018		0.016	
y04	0.086	***	0.077	***	0.091	***	0.082	***
	0.026		0.024		0.027		0.026	
Ind Dummy	Yes		Yes		Yes		Yes	
R^2	0.131		0.133		0.132		0.134	
Log Likelihood	-1232.129		-1228.817		-1230.1		-1227.745	
Positive Observation	491		491		491		491	
N	11,589		11,589		11,589		11,589	

Table 9: Estimation results for target firms

The sample consists of companies listed on the 1st and 2nd sections of the TSE.. The estimation period covers 2000 to 2004. *Lq* is a dummy variable that equals one if Tobin's *q* of the sample firm is among the bottom quintile of total distribution. *Hq* is a dummy variable that equals one if Tobin's q of the sample firm is among top quintile. *Sales growth* is the percentage change in sales from previous year. *DA* is the debt-asset ratio. *Size* is the log of total assets. *Risk* is the 3-year standard deviation of stock returns. *Cross* is the percentage share of cross-shareholdings. Marginal effects and standard deviations are listed. ***, **, * denote significant differences from zero at the 1%, 5%, and 10% levels , respectively. We use a Logit model for the estimation specification.

Model	1	2	3	4
q	0.001	0.001	0.001	0.001
	0.001	0.001	0.001	0.001
Lq		0.004 *	0.004 *	0.004 *
		0.002	0.002	0.002
Hq	-0.001		0.000	0.000
	0.002		0.002	0.002
sales growth	-0.008 *	-0.007	-0.007	-0.007
	0.005	0.005	0.005	0.005
DA	0.009 ***	0.010 ***	0.010 ***	0.010 ***
	0.003	0.003	0.003	0.003
Size	0.000	0.000	0.000	0.000
	0.001	0.001	0.001	0.001
Risk	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000
Cross				0.000
				0.000
y01	-0.001	-0.001	-0.001	-0.001
	0.003	0.003	0.003	0.003
y02	0.004	0.005	0.005	0.005
	0.004	0.004	0.004	0.004
y03	0.012 *	0.013 **	0.013 **	0.013 **
	0.006	0.006	0.006	0.006
y04	0.010 *	0.011 *	0.011 *	0.011 *
	0.006	0.006	0.006	0.006
Ind Dummy	Yes	Yes	Yes	Yes
R^2	0.0769	0.083	0.083	0.0822
Log Likelihood	-355.46881	-353.322	-353.320	-353.18445
Positive Observation	88	88	88	88
N	7760	7760	7760	7726