

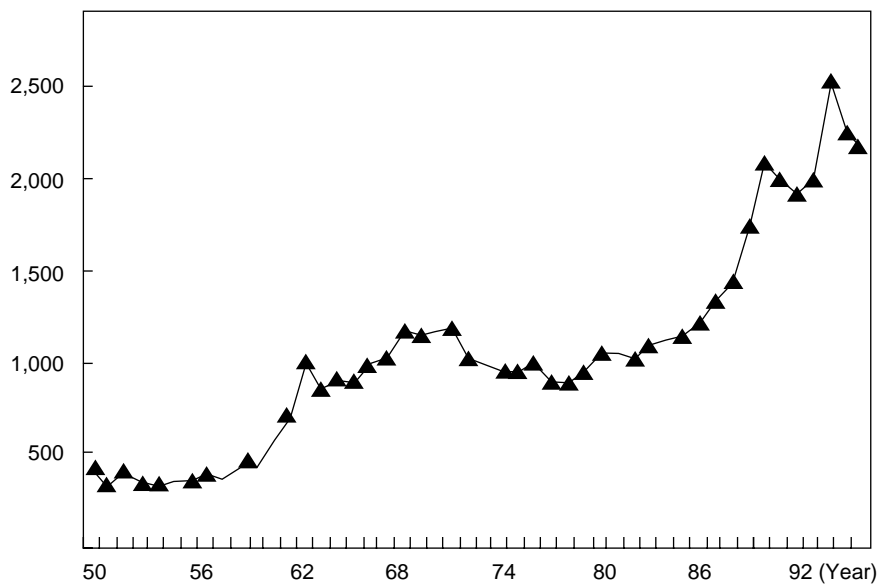
The Effect of Mergers on Corporate Performance and Stock Prices

By Keisho Komoto
Economic & Industrial Research Group

1. Mergers Are on the Rise

In the 1950s, the number of mergers reported to the Fair Trade Commission averaged 350 per year. This number increased to 1,000 but still remained relatively stable from the 1960s to mid 1980s. However, it then increased sharply, and has exceeded 2,000 cases in recent years (Figure 1). For 1999, according to Recof Corporation, the number of reported mergers during the first nine months alone exceeded the total in 1998, and shows no sign of slowing.

Figure 1 Number of Mergers



Source: Fair Trade Commission

Mergers can be classified into horizontal mergers among competitors in the same market, vertical mergers among suppliers and purchasers, and other mergers which fit neither of the first two categories.

Figure 2 shows a breakdown of mergers by merger type and year. While the proportion of vertical mergers has not changed significantly since the late 1970s, horizontal mergers have

grown from 22% in the early 1980s to 32% in the early 1990s. Meanwhile, other mergers decreased from 60% in the early 1980s to less than 50% in the late 1990s. In particular, there has been a significant decline in the proportion of mergers within an industry for area expansion and among companies in unrelated businesses (conglomerate mergers).

Figure 2 Mergers by Type and Year (%)

Merger type	75-79	80-84	85-89	90-94	95-97
Horizontal	23	22.1	27.3	32.1	32.9
Vertical	15.6	12.7	15.7	14.3	14.3
Downstream	8	6.5	6.7	7.6	6.5
Upstream	7.6	6.2	9	6.7	7.8
Other	53.3	61.9	53.8	50	48.6
Area expansion	13.3	20.4	16.2	13.2	11.5
Product expansion	12.2	9.3	11.3	9.9	11.2
Conglomerate	27.8	32.2	26.3		26
None of above	8.2	3.3	3.2	3.6	4.3
Total	100	100	100	100	100

Source: Fair Trade Commission

Turning to the prominent mergers of the 1990s that received media coverage and had significant economic consequences, we see a disproportionate number in the banking, cement, paper & pulp, chemical, and marine transport industries (Figure 3). Moreover, the mergers tend to be horizontal and occur between related companies.

2. Economic Changes and Deregulation Encourage Mergers

The recent increase in mergers – particularly large, horizontal mergers in specific industries – can be attributed to three factors.

(1) Increased competition

Deregulation in the 1990s has promoted competition in many industries. Typical examples are the liberalization of interest rates and fees, elimination of barriers to entry for subsidiaries in the financial services industry, and abolition of the provisional measures for imports of specific petroleum products in the petroleum industry. In addition, the yen's appreciation in the 1980s intensified competition in the 1990s in basic materials industries such as cement and chemicals.

These environmental changes, combined with the prolonged post-bubble recession, caused

earnings to deteriorate and threatened the survival of companies unless they improved management efficiency. One solution was the merger. By acquiring ailing companies or merging with equals, companies sought to improve earnings by achieving merits of scale and consolidating production facilities.

(2) Economies of Scale

In the 1990s, as the information technology revolution brought advances in computers and the Internet, IT related investment grew in importance. Due to the large cost associated with systems development, IT related investment is characterized by significant economies of scale. In addition, product differentiation requires extensive spending on R&D and advertising, which are also subject to economies of scale. Many of the mergers in the banking, securities, and pharmaceutical industries have been implemented to pursue such economies of scale.

(3) Deregulation of Mergers

Antimonopoly regulations restricting mergers were eased in the 1990s. In the past, the Fair Trade Commission's approval process relied heavily on detailed calculations of market shares for each product and category affected. Recently, however, in light of the changing industrial structure and globalization of corporate activities, the FTC has eased its stance on mergers by moving toward comprehensive assessments based on ease of market entry and imports, and competition from nearby markets. For example, despite post-merger market shares exceeding 25%, the FTC almost unconditionally approved the mergers for Mitsui Chemicals (Mitsui Petrochemical and Mitsui Toatsu Chemicals), Taiheiyo Cement (Chichibu Onoda Cement and Nihon Cement), and Mitsui OSK Lines (Mitsui OSK Lines and Navix Line). Thus merger deregulation appears to be encouraging mergers that would have been questioned in the past.

3. Merger's Effect on Business Performance is Minimal

Mergers have many objectives, including expansion of market share, reduction of cost burdens for IT related investment or R&D spending, and business supplementation. Ultimately, however, all of these objectives boil down to the improvement of earnings and financial condition.

To examine whether business results are improved by mergers, we analyzed several mergers among listed companies in the early 1990s whose post-merger business results are available for five years. Specifically, we chose seven companies in the paper and pulp, chemical and cement industries. We focused on two indicators of management efficiency: return on assets, which looks at earnings, and equity ratio, which gauges financial condition.

Figure 3 Major Mergers Since 1990

Year	Industry	New entity	Acquiring co.	Acquired co.
1990	Banking	Sakura Bank	Mitsui Bank	Taiyo Kobe Bank
1990	Non-fer. metal	Mitsubishi Materials Corp.	Mitsubishi Metal Corp.	Mitsubishing Mining & Cement
1991	Banking	Asahi Bank	Kyowa Bank	Saitama Bank
1993	Paper & pulp	Nippon Paper Industries	Jujo Paper	Sanyo-Kokusaku Pulp
1993	Marine trans.	Mitsui OSK Lines	Mitsui OSK Lines	Nihonkai Steamship
1993	Paper & pulp	New Oji Paper	Oji Paper	Kanzaki Paper Mfg.
1994	Retail	Daiei	Daiei	Chujitsuya, Uneed Daiei
1994	Chemical	Mitsubishi Chemical Corp.	Mitsubishi Kasei Corp.	Mitsubishi Petrochemical
1994	Cement	Chichibu Onoda Cement	Onoda Cement	Chichibu Cement
1994	Cement	Sumitomo Osaka Cement	Sumitomo Cement	Osaka Cement
1995	Chemical	Taiyo Toyo Sanso	Taiyo Sanso	Toyo Sanso
1995	Electric mach.	Hitachi	Hitachi	Hitachi Sales Corp.
1995	Marine trans.	Mitsui OSK Lines	Mitsui OSK Lines	Shin Yei Steamship
1996	Banking	Bank of Tokyo-Mitsubishi	Mitsubishi Bank	Bank of Tokyo
1996	Paper & pulp	Oji Paper	New Oji Paper	Honshu Paper
1997	Glass & cer.	Ube Materials	Ube Chemical Indus.	Calseed
1997	Chemical	Mitsui Chemicals	Mitsui Petrochemical Ind.	Mitsui Toatsu Chemicals, Inc
1998	Pharmaceut.	Yoshitomo Pharmaceutical Ind.	Yoshitomo Pharmaceutical Ind.	Green Cross Corp.
1998	Marine trans.	Nippon Yusen K.K.	Nippon Yusen K.K.	Showa Line
1998	Cement	Taiheiyo Cement Corp.	Chichibu Onoda Cement	Nihon Cement
1999	Marine trans.	Mitsui OSK Lines	Mitsui OSK Lines	Navix Line
1999	Paper & pulp	Rengo	Rengo	Settsu Corp.
1999	Securities	Meiko National Securities	Meiko Securities	National Securities
1999	Petroleum	Nisseki Mitsubishi	Nippon Oil	Mitsubishi Oil
1999	Chemical	Mitsubishi Chemical Corp.	Mitsubishi Chemical Corp.	Tokyo Tanabe
2000	Machinery	Amada Sonoike	Amada Sonoike	Amada Wasino
2000	Machinery	Amada	Amada	Amada Metrecs
2000	Banking	Chuo Mitsui Trust & Banking	Chuo Trust & Banking	Mitsui Trust & Banking
2000	Securities	Shinko Securities	New Japan Securities	Wako Securities
2000	Securities	Universal Securities	Universal Securities	Taiheiyo Sec., Dai-Ichi Sec.

In measuring the effect of mergers, we first combined the financial statements of the acquiring and acquired companies, and calculated the pre-merger values of the indicators. Next, we compared the pre-merger values with the post-merger values to measure the effect of the merger on the indicators.

However, since business results are affected by economic cycles and industry conditions, comparisons must eliminate these factors to be meaningful. To do this, we calculated management efficiency indicators for the relevant industries, and looked at the divergence of company indicators from the industry indicators. The industry indicators were calculated by combining the financial statements of all listed companies in a particular industry based on the Tokyo Stock Exchange's 33-industry classification (excluding the merged companies in question).

The specific measurement method is as follows. Suppose that the pre-merger ROAs are 2%

for company A and 5% for the industry. After the merger, company A's ROA increases 1% to 3%, but the industry's ROA drops 1% to 4%. The net result is a 2% improvement for the company relative to the industry: $(3 - 2) - (4 - 5) = 2$.

Figure 4 compares values one year prior to the merger with those for each of five years after the merger. Except for company D, which improved significantly in the fourth and fifth post-merger years, no major positive or negative changes are observed in the results for the other companies.

Turning to the equity ratio, while fluctuations are larger than for ROA, positive changes are interspersed with negative changes, and no clear tendencies emerge.

From our results, no clear merger-induced effects can be observed in either earnings or financial condition. Due to the small sample size and scope of the analysis, we cannot draw broad conclusions regarding the effects of mergers in general. However, the modest size of improvements observed in the mergers is corroborated by other research findings in Japan and abroad.

Figure 4 Change in Business Results Due to Mergers

Company	1 year	2 years	3 years	4 years	5 years
Return on assets					
Co. A (paper & pulp)	0.4	0.1	0.9	0.1	0.5
Co. B (paper & pulp)	0.6	0.2	0.2	-0.8	-0.1
Co. C (chemical)	0.6	1.4	0.9	0.6	0.0
Co. D (chemical)	0.4	0.5	0.4	3.3	5.1
Co. E (chemical)	0.2	0.9	-0.2	0.5	-0.4
Co. F (cement)	-0.7	-1.4	-0.6	0.5	1.4
Co. G (cement)	-0.9	-0.7	-0.1	0.4	0.7
Equity ratio					
Co. A (paper & pulp)	1.2	1.8	1.2	1.0	2.1
Co. B (paper & pulp)	0.5	1.8	1.2	-1.4	-0.9
Co. C (chemical)	2.0	2.2	-0.6	-1.4	-4.3
Co. D (chemical)	1.3	2.2	3.9	4.1	3.4
Co. E (chemical)	-0.2	-0.8	-0.4	-4.5	-2.5
Co. F (cement)	2.7	4.7	1.9	1.3	2.2
Co. G (cement)	0.2	-0.1	0.5	-1.2	-1.0

4. Merger's Effect on Stock Prices Varies by Industry

Merger announcements have a significant impact on the affected industries and investors, and are often met with large fluctuations in the stock price. Under the assumption of efficient mar-

kets, if a merger raises (or lowers) expectations of business results, stock prices should rise (or fall) to reflect the change in expectations.

To examine how mergers affect stock prices, we analyzed the movement of stock prices in 20 mergers during the 1990s for 40 business days before (t-40) and after (t+40) the crucial merger announcement. However, since individual stock prices are affected by overall market fluctuations, we attempted to eliminate the effect of the stock market by taking into account the stock price and overall stock market (TSE index) for an additional 200-day period (t-240 to t-41) prior to the merger. Specifically, we estimated the statistical correlation between the stock price and TSE index for the 200-day period using a market model, calculated the divergence between the stock price's expected and actual fluctuation rates (this component is unexplained by the estimation model), and attributed this component to the merger's effect.

Thus for example, if the TSE index rises 3%, and the market model predicts the stock price to rise 4% but it actually rises 5%, the extra 1% is attributed to a positive merger effect: $5 - 4 = 1\%$.

Figure 5 shows the cumulative stock price divergence rates for the acquiring (surviving) companies for the period 40 business days prior to and after the merger announcement. For example, if the divergence rate is 1% at t-40 and 2% at t-39, the cumulative divergence rate thus far is $1 + 2 = 3\%$. The same data is shown for acquired companies in Figure 6.

Figure 5 Cumulative Stock Price Divergence Rate (for Acquiring Company)

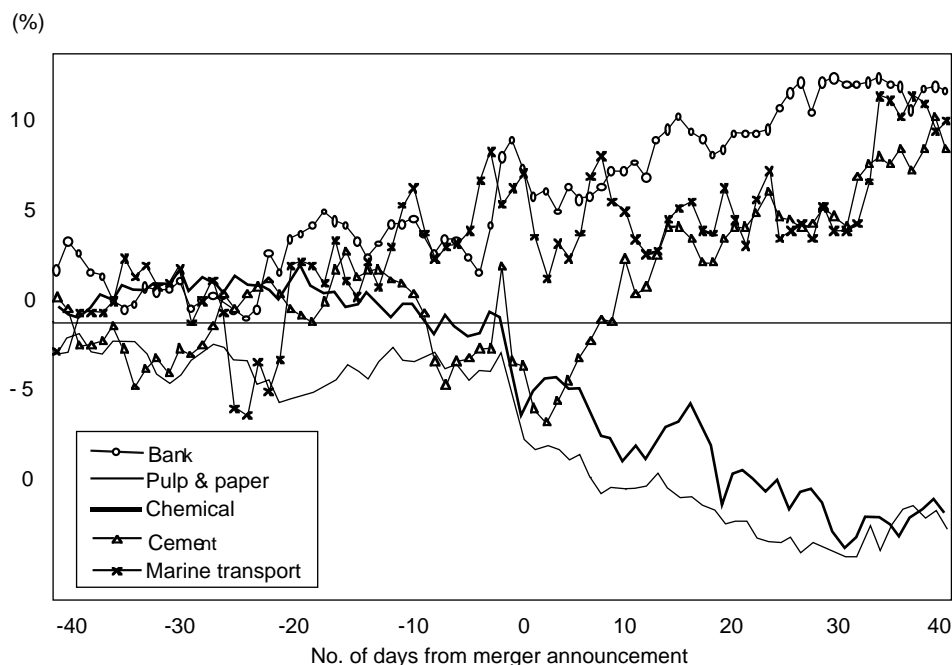
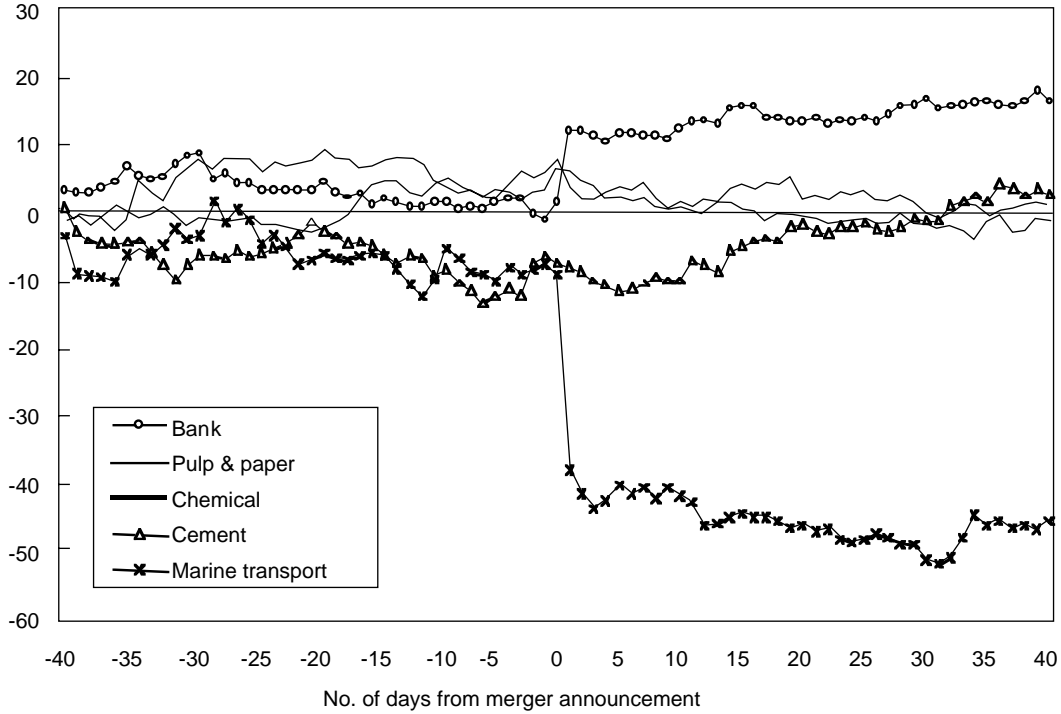


Figure 6 Cumulative Stock Price Divergence Rate (for Acquired Company)



(1) Stock Prices of Acquiring Companies

Among acquiring companies, the most pronounced characteristic of the merger's effect on stock prices is a dual pattern grouped by industry. In the banking, cement and marine transport industries, there is a positive divergence of approximately 10% at 40 days after the announcement. Another significant characteristic is that the two industries whose stock prices increase — banking and marine transport — show a positive divergence starting at 20 days prior to the announcement.

(2) Stock Prices of Acquired Companies

Among acquired companies, a stock price divergence does not occur in banking until the merger is announced, but then a significant positive divergence occurs in reaction to the announcement, which gradually continues to increase. On the other hand, in marine transport, the stock price plunges in reaction to the merger announcement, and then stabilizes. The other industries show positive and negative divergences of approximately 10% by the day of merger announcement, but the divergences subsequently disappear by day 40.

(3) Overall Effect of Mergers on Stock Prices

When we combine the effect of mergers on both the acquiring and acquired companies, the

following observations can be made.

Banking and cement industries — Among banks, a positive divergence of over 10% was seen in the stock prices of both acquiring and acquired companies. This means that as a result of the merger announcement, the market values the new combined company more highly than it does the separate companies. Investors are predicting that the new merged company will produce better earnings.

In cement, stock prices do not diverge significantly for the acquiring company, but show a positive divergence of 10% for the acquiring company. The net effect is that the total market valuation of the combined company increases as a result of the merger. Thus investors expect earnings to improve in cement industry mergers as well.

Chemicals and paper and pulp — In these industries, while stock prices do not diverge significantly for acquired companies, a major negative divergence occurs among acquiring companies. Contrary to the cement industry, mergers in the chemical and paper and pulp industries cause a slight decline in total market valuation for the merging companies. Investors predict that earnings will decline as a result of merger.

Marine transport — Stock prices of acquiring companies start rising prior to the merger announcement, showing a positive divergence of approximately 10% 40 days after the announcement. On the other hand, among acquired companies stock prices decline approximately 10% leading up to the merger announcement, and plunge another 40% when the announcement is made. Considering the large size of the acquiring companies, the effect of the merger is not very significant.

As we have seen, the effect of mergers on stock prices varies considerably depending on the industry. This means that investors evaluate mergers differently depending on the industry as well as specific details of the merger. Thus the positive overall merger effects seen in banking and cement come from favorable expectations regarding economies of scale and consolidation effects from the merger, while in chemicals and paper and pulp, mergers are often perceived as rescue efforts whose effect on competitiveness is questionable.

5. Conclusion and Future Issues

Our analysis found that while mergers produced no significant effects on business performance, they can affect stock prices in either positive or negative ways depending on the industry. However, due to the small sample size and scope, our results cannot be statistically veri-

fied. Further research is warranted to pursue the issues raised here using statistically significant samples.

Nonetheless, our analysis suggests the following implications. If we assume an efficient market and perfect information, the effects of mergers on business results are inconsistent with their effects on stock prices: that is, if future business results do not change significantly, stock prices should not fluctuate. However, our results show that in reality stock prices can rise or fall significantly depending on the industry. Our finding thus sheds doubt on the assumptions of efficient markets and ability of investors to accurately predict corporate performance.