青木脩先生退官記念論文集

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The Performance of Corporate Takeovers in Australia

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Introduction

Corporate takeover is to acquire another firm through a purchase or exchange of the firm's capital stock. Corporate merger in a broad sense includes corporate takeover, as well as corporate merger in a narrow sense which means the combininig of two or more corporations.

In Australia, there were 105, 103 and 129 takeovers in 1983, 1984, 1985, respectively. The numbers of those delisted firms through takeovers from the Sydney Stock Exchange are 30, 36, 27 cases respectively for each corresponding year, counting roughly 2-3% of all listed firms.

There are various types of reports on the objectives of takeovers and mergers in Australia[1]. However, no decisive report has examined whether the objectives and performance of takeovers agree or not.

There are several studies of takeovers in Australia as follows. Dodd [10] selected 136 acquiring firms (offeror) and 58 acquired firms (offeree) among 901 firms through takeover bids at the Sydney Stock Exchange from 1960 to 1970 taken from data compiled by Walker [29]. He analysed those firms by stock price based on a capital assets pricing model. One of his conclusions is that the stockholders of the offeree could gain profit through the takeover bid but the shareholders of the offeror suffered losses. When a takeover is unsuccessful, the share price of the offeror and offeree support the efficient market hypothesis. However, when a takeover is successful, the share price does not support this hypothesis.

On the contrary, Walter [30][2] analysed 572 listed firms which were

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1) Corporate takeover and mergers are examined in its early stage in Australia by Chambers [6], Bushnell [2], Stewart [23], Sheridan [27]. See Webb and Allan [31].
2) Van Horne [28] quotes a study by Walter [30] as a representative research of takeovers in Australia.

taken over by half of their shares from January 1966 to December 1972 taken from data compiled by Walker [29] based on the same capital assets market model. He found that the profit margin of the equity of the offeree is lower than normal, but the offeree can gain greater than average profit. After takeovers, stockholders of the offeree could gain a fairly abnormal return, but stockholders of the offeror could not support semi-efficient market hypothesis. Brown and Horin [1] used the same data as Walter and analysed 34 offerors with the same framework as Ruback [21]. He concluded that 28 of them were competitive on takeovers and the remaining 6 firms controlled the purchasing price by the collusion of the offerors, strategic behavior and the limitations of law.

There are two studies using accounting data to examine the financial characteristics of offerees and offerors.

Chapman and Junor [7] selected 120 listed firm from the data base of the Australian Graduate School of Management, the University of New South Wales and analysed 31 of them which had been taken over from 1978 through 1981. They compared the accounting data of offerors and offerees before takeovers. The offerees showed several trends such as comparatively small size and high profitability, low liquidity, low leverage, low valuation of their assets and management control type firms.

Similarly, Castagna and Matolcsy [4] compared 82 listed non-financial firms which were taken over by existing firms from 1970 through 1980. They found that offerees showed lower average profitability, higher liquidity, higher dividend propensity and a higher tangible fixed assets ratio to stock price. However, there remains a question on the validity of discrimination based on accounting data because of higher errors than expected by discriminant analysis and logit analysis.

Koh [20] analysed the relationship between the premium obtained by takeovers and the wealth of stockholders with 155 listed offerors and 155 listed offerees covering the period of January 1975 and June 1980 from the data base of the Australian Graduate School of Management, the University of New South Wales.

The conclusions are summarised as follows.

(1) No abnormal returns were found in the announcement-month for portfolios of acquiring firms and no relationship was found between the premium and the magnitude of the abnormal losses of the acquiring firms in the post-acquisition period.

(2) A relationship was found to exist between the premium and the pre-acquisition performance of the target firms.

   a) For target firms experiencing abnormal pre-acquisition losses:

      a negative relationship exists when performance is measured by

      cumulative average residuals.

   b) For target firms experiencing abnormal pre-acquisition gains:

      a positive relationship exists when performance is measured by

      financial ratios.

(3) For the acquiring firms, a positive relationship between the premium and their pre-acquisition performance exists.

(4) The presence of a negative excess returns drift for the acquiring firms after the announcement-month exists.

The previous studies mentioned above show the performance of takeovers in Australia based on a capital assets pricing model only.

In this paper, we will investigate the performance of takeovers in Australia by using financial data, including stock price. Furthermore, previous studies using financial data employ a pairs sample technique of

acquiring and non-acquiring firms, which causes substantial errors because of the biases of selecting samples. In order to eliminate these errors, the relative rank of financial ratios issued by the Sydney Stock Exchange as variables to compare will be used for the analysis.

In Section 1, the data and approach used are explained. Section 2 reveals the result of the nonparametric test for 29 listed acquiring firms before and after takeovers. Aggregated yearly analysis by firms for one to six years before and after takeovers and calendar years are conducted in Section 3. In Section 4, those acquiring firms with frequent takeovers are examined to measure the performance of takeovers.

1 Data and Approach

The twenty nine acquiring corporations (offerors) which are registered in the Annual Report of the Sydney Stock Exchange and are included in the information service of the Exchange "The State Investment Service" were selected as shown in Table 1.

We used the available data covering thirteen years from 1973 to 1985. In order to compare at least three years before and after takeovers, only those corporations which took over a listed firm on the stock exchange from 1976 to 1982 were selected[3] with eleven variables such as 1) rank of total market value, 2) rank of ordinary earnings/ordinary shareholders funds, 3) rank of debt/equity, 4) rank of dividend yield, 5) rank of price/earning per share, 6) rank of price/gross cash flow, 7) rank of price/net tangible

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3) Those firms which acquired two and over listed firms in different calendar year are deleted from this section and in section 4 those firms with multiple takeovers are investigated.

assets, 8) rank of growth rate dividend per share, 9) rank of growth rate of profit per share, 10) rank of growth rate of gross cash flow, 11) rank of growth rate of net tangible assets (see Table 4).

These variables are ranked by decimal number from one to one hundred which shows the relatively stable position of each financial variable among all firms in the data base although the number of firms in the data base as well as the number of listed corporations varies from 322 firms in 1973 to 882 firms in 1985.

By using these stable financial variables, a comparative analysis of the offeror before and after takeovers is carried out to detect the performance of takeovers. For this we employed the Wilcoxon matched-pairs signed-rank test as one of the nonparametric tests which can be applied to any type of distribution.

2 Corporate Analysis of Takeovers by Nonparametric Test

Table 1 shows the result of Wilcoxon matched-pairs signed-rank test for each corporation from one to six years before and after takeovers. Two tail probability with ◯ or ☐ indicates that there is a statistically significant difference.

When the number of those financial variables which improved their ranks after takeovers is greater than that of variables which deteriorated, ◯ is given to show overall improvement. Conversely, ☐ shows overall deterioration. For example, (1) Wormald International has no statistically significant differences of one year, two years and three years before and after takeovers, showing no effects of takeovers. (3) Thomas National Transport has a significant difference two years before and after takeovers

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with six cases raising and 16 cases lowering their rank (9.50 vs. 12.25 for their means), as well as three and four years before and after takeovers which indicates negative performance of takeovers with overall degration.

Similarly, those firms with positive performance from mergers are (8) Fielders (5 years), (10) F.H.Fauldings & Co. (from two to six years before and after takeovers), (12) Australian Paper Manufacturers (5, 6 years), (14) Davis Consolidated Industries (one year), (16) J.Gadsden (5 years), (17) Email (from one to five years), (19) Amalgamated Wireless (Australia) (from one to five years), (20) Sleigh (H.C.) (3, 4 years), (21) Australian Gas Light (3, 4 years), (22) Wattyl (3, 4 years), (23) Blue Circle Southern Cement (from one to four years), (24) Cheetham Salt Consolidated (from one to three years), and (26) Mayne Nickless (from one to three years), totalling thirteen firms.

By contrast, there are seven firms which degraded their ranks after takeovers as follows. (3) Thomas National Transport, (4) G.E.Crane & Sons (2, 3, 4 years), (6) Tooth & Co. (from one to four years), (7) Philips Industries Holdings (from one to four years), (9) Siddons Industries (2, 3, 4 years), (11) Carpenter (W.R.) Holdings (2, 3 years), and (18) Costain Australia (4, 5 years).

The remaining nine firms do not have any significant differences from the effects of takeovers.

We apply the Wilcoxon matched-pairs signed-ranks test from one year to six years before and after takeovers to the aggregated financial variables of 29 firms. Table 2 shows that there are statistically significant differences three times out of six, that is, three years, five years and six years before and after takeovers with improved rank after takeovers, indicating positive performance of takeovers.

Table 3 shows the result of yearly Wilcoxon matched-pairs signed-ranks tests before and after calender years, using 11 variables. Before and after 1977, there is a statistically significant difference with lowering rank after takeovers. Conversely, four years in succession, 1979, 1980, 1981 and 1982, have significant differences with raising rank after takeovers, meaning positive effects of takeovers.

3 Yearly Comparison by Parametric Test

In this section, the statistical techniques which were employed in the previous studies is applied to those 11 financial variables based upon the assumption of normal distribution of variables.

In Table 4, (1) rank of total market value improved its position five years before and after takeovers with means 41.4 vs. 28.8 before and after respectively. Takeovers do not guarantee to upgrade the rank of this variable from one to four years before and after takeovers, which show no significant differences. (6) rank of price/gross cash flow has significant differences four and five years before and after takeovers with improving effect of its rank. Similarly, (8) rank of growth rate of dividend per share improved after takeovers for all the years' comparisons with significant difference at six years.

These facts indicate positive performance of takeovers in the above mentioned financial variables.

The result of discriminant analysis from one to six years before and after takeovers is given in Table 5. The discrimination accuracy is 60.34% (lowest) at one year and 76.67% (highest) at five years.

4 Analysis of Frequent Takeover Companies

In this section, we extend our analysis to examine the performance of those companies which frequently took over other companies as shown in Table 6. As a nonparametric test, the Friedman test is employed to compare the performance of takeovers.

There is no statistically significant difference for the period of 1974-85, meaning no effects of takeovers in (1) Australian Consolidated Industries with one takeover in 1979 and 1980 each.

Nine of the same type of firms are counted without any effects of takeovers as follows. (4) Australian National Industries (six takeovers), (7) Burn, Philip & Company (six), (9) CSR (six), (10) Davis, Charles (three), (12) Hardie, James (Four), (13) Hungerford Hill (two), (16) National Consolidated (three), (17) McPherson (one), (19) Kemtron (two).

(11) Dunlop Olympic took over firms with increasing mean rank such as 4.73 in 1982, 2.77 in 1983, 2.41 in 1984, 2.27 in 1985, indicating positive performance of takeovers. This firm has statistically significant differences in the Friedman test for three years starting in 1983.

Similarly, (14) Industrial Equity took over in 1974, 1978, 1979 and 1980 with statistically significant differences in 1984 and 1985 accompanying a gradual increase of mean rank. (21) Pioneer Concrete Services improved its mean rank after the takeover of 1982, showing positive effects of takeover.

Conversely, (18) OPSM Industries deteriorated in mean rank from 5.05 to 7.36 with a statistically significant difference after takeover in 1981. (20) Peko-Wallsand had a takeover in 1979 and degraded its rank to 4.59, as well as a takeover in 1981 with lowering rank from 2.73 to 5.82, both of which have statistically significant differences. Moreover, (22) Repco

degraded its rank from 9.05 in 1979 to 10.64 in 1980 after takeover, as well from takeovers in 1982 and 1983.

As for the last group, there are some corporations which are considered to have had both positive and negative effects from takeovers in different years. (2) The Adelaide Steamship Company took over twice in 1977 and improved its rank for two years with significant differences, showing positive effects of takeovers. However, it lowered its rank after takeovers in 1982 and 1984. Thus, the performance of takeovers is a mixture of positive and negative effects in this firm. (3) Amatil lowered its rank after a takeover of 1978 but improved two years in succession after a takeover in 1981, both of which have significant differences by the Friedman test. Those firms which have similar effects of takeovers are (5) Amalgamated Wireless (Australia), (6) Boral, (8) Clyde Industries and (15) LNC Industries, totaling six firms.

As a summary, ten companies had neutral performances, three negative, three positive and the remaining six out of twenty-two had both positive and negative effects from multiple takeovers in Australia.

Conclusions

This paper clarified several facts as follows.

(1) Corporate analysis of takeovers by the Wilcoxon matched-pairs signed-ranks test shows the result that 10 out of 29 firms raised their ranks indicating positive performance of takeovers, 6 lowered their ranks and the remaining 13 do not show any change.

(2) Aggregated data covering each firm show positive performance of takeovers, three, five and six years before and after takeovers.

(3) Analysis by accounting year has also shown a positive effect in 1977 and negative effects in 1979, 1981 and 1982.

(4) The t test reveals that (1) total market value rank, (6) price/gross cash flow rank and (8) growth rate of dividend per share rank improved their position after takeovers.

(5) Corporate analysis with multiple takeovers provides that 10 out of 22 firms show neutrality, 3 positive, 3 negative and 6 have both positive and negative performance from takeovers.

These fact findings indicate that takeovers had positive effects on stock price but not distinguishable performance on profitability, liquidity and growth rate. Moreover, positive effects of takeovers are clear in the analysis of 13 firms out of 51, about 30%, and the majority show neutral performance of takeovers.

There are two problems in dealing with the data base "STATEX" compiled by the Sydney Stock Exchange.

First, this data base covers financial data of only 322 firms in 1973, in which 1,501 listed firms existed in the Sydney Stock Exchange, namely the coverage ratio is 21.5%. By contrast, in 1985, it included 882 firms out of 1,057 with 83.4% as its coverage ratio.

Second, these cases are deleted when listed firms took over non-listed firms and non-listed firms acquired listed or non-listed firms, because of the limitation of the data base.

References

[1] Brown, Philip and Andrew Horin, Assessing Competition in the Market for Corporate Control: Australian Evidence, Australian Journal of Management, Vol.11, No.1, pp.23-50, 1986.

[2] Bushnell, J.A., Australian Company Mergers 1946-1959, Melbourne University Press, 1961.

[3] Business Review Weekly, "Merger" November 22, pp.40-59, 1985.

[4] Castagna, A.D. and Z.P. Matolcsy, Financial Ratios as Predictors of Company Acquisitions, The Journal of the Securities Institute of Australia, No.4, December 1976.

[5] _____, Accounting Ratios and Models of Takeover Target Screens: Some Empirical Evidence, Working Paper 34 Faculty of Business The New South Wales Institute of Technology April 1984, Australian Journal of Management, forthcoming.

[6] Chambers, R.J., Financial Information and the Securities Market, Abacus Vol.1, No.1, pp.2-30, 1965.

[7] Chapman, D.R. and C.W. Junor, The Determinant of Takeovers: Australia 1978-81, Working Paper 8314-A MacQuarie University Center for Studies in Money, Banking and Finance, Nov. 1983.

[8] _____, Inflation, Firm Control-Type and Vulnerability to Takeover, mimeo, 1985.

[9] Doctoroff, Mark "Company Mergers & Takeovers: How the Games is Played in Australia" Gower Press 1972.

[10] Dodd, Peter, Company Takeovers and the Australian Equity Market, Australian Journal of Management, Vol.1, No.2, pp.15-36, 1976.

[11] Hoshino, Yasuo, Kigyō Gappei no Keiryō Bunseki (Quantitative Analyses of Corporate Mergers in Japan), Tokyo, Hakuto Shobo, 1981.

[12] _____, "The Performance of Corporate Mergers in Japan," Journal of Business Finance and Accounting, Vol.9, No.2 (Summer), pp.153-165, 1982.

[13] _____, "Corporate Mergers in Japan," Research Paper No.1, Tōyō University Business Research Institute, December 1983.

[14] _____, "An Analysis of Corporate Bankruptcies in Japan", Management International Review, Vol.24, No.2 (Summer), pp.70-77, 1984.

[15] _____, "General Comparison of Financial Characteristics between Merging and Nonmerging Firms in Japan" in Kazuo Sato and Yasuo Hoshino eds, The Anatomy of Japanese Business, Sharp/Croom Helm, 1984.

[16] _____, "An Analysis of Mergers among the Credit Associations in Japan", Rivista Internazionale di Scienze Economiche e Commerciali

(International Review of Economics and Business), Vol.35 No.2, pp.135-156, 1988.

[17] French, D. & H.Saward, Dictionary of Management, International Publication Service 1975.

[18] Holl, C.H. and N.H. Nie, SPSS Update 7-9: New Procedures and Facilities for Release 7-9, McGraw Hill 1981.

[19] Hull, C.H. and N.H. Nie, SPSS Update 7-9, McGraw-Hill, 1981.

[20] Koh, Francis Cher Chiew, The Relationship between the Acquisition premium and Shareholder Wealth — An Empirical Study of Australian Listest Public Companies during the Period 1975 to 1980. Ph.D.Dissertation University of New South Wales, 31 July 1984, unpublished.

[21] Ruback, R.S., Assessing Competition in the Market for Corporate Acquisitions, Journal of Financial Economics Vol.11 Nos.1-4, pp.141-153, 1983.

[22] Siegel, Sydney, Nonparametric Statistics for the Behavioral Sciences, McGraw-Hill, 1956.

[23] Stewart, I.C., Australian Company Mergers 1960-1970, The Economic Record, Vol.53, pp.1-29, 1977.

[24] Stock Exchange Research Pty. Ltd., The Stock Exchange Industrial Handbook 1984-85.

[25] Sydney Stock Exchange, Annual Report and Notice of Meeting each year from 1963 through 1985.

[26] _____, Comparative Analysis, June each year from 1973 through 1985.

[27] Sheridan, Kyoko, The Firm in Australia, Nelson, 1975.

[28] Van Horne, James, R. Nicol and K. Wright, Financial Management and Policy in Australia, Second ed., Prentice-Hall, 1985.

[29] Walker, R.G., Takeover Bids and Financial Disclosure, Accountancy Research Foundation, 1973.

[30] Walter, T.S., Australian Takeovers: Capital Market Efficiency and Shareholder Risk and Return, Australian Journal of Management, Vol.9, No.1, pp.63-118, 1984.

[31] Webb, L.R. and R.H. Allan, Industrial Economics: Australian Studies, George Allen & Unwin, 1982.

Table 1 Wilcoxon Matched-Pairs Signed-Ranks Test of Corporations Before and After Corporate Takeovers

Acquiring firm	Acquired firm	delisted year month	1 year before and after takeovers					2 years before and after takeovers					3 years before and after takeovers					4 years before and after takeovers					5 years before and after takeovers					6 years before and after takeovers				
			rank	means	rank	means	prob.	rank	means	rank	means	prob.	rank	means	rank	means	prob.	rank	means	rank	means	prob.	rank	means	rank	means	prob.	rank	means	rank	means	prob.
(1) Hormald International	Jorm(M.B.)	1976 2	5	7.70	6	4.58	0.625	11	13.05	11	9.95	0.581	16	18.94	17	15.18	0.688															
(2) United Packages	Smith(W.E.)	1976 3	7	6.29	4	5.50	0.328	13	12.31	8	8.88	0.122	19	17.89	13	14.46	0.155															
(3) Thomas National Transport	Peninsular Group Holdings	1976 8	3	4.83	8	6.44	0.100	6	9.50	16	12.25	0.024	12	12.54	20	18.88	0.034	17	15.44	25	25.62	0.018									
(4) G.E.Crane & Sons	C.O.N.Holdings	1977 3	4	3.63	7	7.36	0.100	6	6.17	16	13.50	0.004	9	9.11	24	19.96	0.000	14	15.75	30	25.65	0.001									
(5) Comeng Holdings	Gregory(H.P.) & Co.	1977 3	6	6.08	5	5.90	0.756	11	11.18	11	11.82	0.910	20	16.95	13	17.08	0.074	28	23.14	16	21.38	0.074									
(6) Tooth & Co.	Penfolds Wines Australia	1977 3	2	2.50	9	6.78	0.013	4	9.25	18	12.00	0.004	6	15.83	27	17.26	0.001	9	21.22	35	22.83	0.000									
(7) Philips Industries Holdings	Pye Industries	1977 8	2	5.50	9	6.11	0.050	6	9.67	16	12.19	0.026	9	14.39	23	17.33	0.012	15	20.70	28	22.70	0.050	21	25.67	32	27.88	0.118					
(8) Fielders	Gillespie Brothers Holdings	1978 3	6	5.67	4	5.25	0.508	13	11.77	8	9.75	0.192	19	16.55	13	16.42	0.345	22	22.98	17	20.50	0.133	36	28.07	18	26.36	0.021					
(9) Siddons Industries	Insul Fibre Holdings	1978 8	5	3.60	6	8.00	0.182	7	4.86	15	14.60	0.003	9	8.39	24	20.23	0.000	17	16.76	27	26.11	0.014	24	23.81	31	31.24	0.056					
(10) F.H.Fauldings & Co.	Rocke Tompsitt & Co.	1978 10	5	7.30	5	3.70	0.359	13	13.73	8	6.56	0.029	23	19.15	9	9.72	0.001	32	25.30	11	12.41	0.000	41	32.17	13	12.77	0.000	49	38.64	16	15.72	0.000
(11) Carpenter(W.R.) Holdings	Dalton Brothers Holdings	1979 1	3	4.67	8	6.50	0.091	7	8.71	15	12.80	0.033	11	14.36	22	18.32	0.029	17	23.12	27	22.11	0.234										
(12) Australian Paper Manufacturers	Brown & Dureau	1979 1	4	6.25	6	5.00	0.799	7	11.14	13	10.15	0.313	13	16.73	17	14.56	0.758	20	23.52	20	18.35	0.411	30	29.35	21	21.21	0.041	37	34.04	25	27.74	0.047
(13) Mascot Industries	Australian Conversion Service	1979 4	6	4.67	5	7.60	0.657	9	10.61	13	12.12	0.314	12	15.54	21	17.83	0.093	17	20.03	27	24.06	0.071										
(14) Davis Consolidated Industries	Lawrence (Alfred) Holdings	1979 5	10	6.05	1	5.50	0.014	15	10.27	7	14.14	0.372	20	13.75	13	22.00	0.922	26	19.31	18	27.11	0.935										
(15) The Herald and Weekly Times	Australian Newsprint Mills Holdings	1979 6	5	8.00	6	4.33	0.534	10	14.00	12	9.42	0.661	18	20.22	15	13.13	0.136															
(16) J.Gadsden	Consolidated Food	1979 12	4	6.75	7	5.57	0.594	11	9.36	9	11.89	0.940	20	13.70	11	20.18	0.610	29	19.12	13	26.81	0.198	38	24.88	15	32.37	0.042					
(17) Email	Kelvinator Australia	1979 12	9	6.56	2	3.50	0.025	16	12.22	6	9.58	0.025	24	17.50	9	15.67	0.013	32	22.92	12	21.38	0.005	40	27.95	15	28.13	0.004					
(18) Costain Australia	Pearson Bridge Holdings	1980 2	7	6.14	4	5.75	0.374	10	9.80	12	12.92	0.355	14	13.21	9	19.79	0.088	18	17.14	26	26.21	0.030	22	22.25	33	31.83	0.019					
(19) Amalgamated Wireless(Australia)	Queensland Television	1980 3	10	5.50	0	0.00	0.005	19	11.74	2	4.00	0.000	28	16.63	3	10.17	0.000	37	23.07	5	9.90	0.000	47	29.01	6	11.25	0.000					
(20) Sleigh(H.C.)	Tasmanian Board Mill	1980 6	4	7.75	6	4.00	0.721	12	12.58	9	8.89	0.217	20	19.42	12	11.63	0.020	26	26.60	17	14.97	0.008										

Acquiring firm	Acquired firm	delisted year month	1 year before and after takeovers					2 years before and after takeovers					3 years before and after takeovers					4 years before and after takeovers					5 years before and after takeovers					6 years before and after takeovers				
			rank	means	rank	means	two-tail prob.	rank	means	rank	means	two-tail prob.	rank	means	rank	means	two-tail prob.	rank	means	rank	means	two-tail prob.	rank	means	rank	means	two-tail prob.	rank	means	rank	means	two-tail prob.
(21) Australian Gas Light	The North Shore Gas Company	1980 8	4	7.75	6	4.00	0.721	12	12.58	9	8.89	0.217	20	19.42	12	11.63	0.020	26	26.60	17	14.97	0.008										
(22) Wattyl	T.C.White Holdings	1980 8	4	4.88	7	6.64	0.230	13	10.35	9	13.17	0.795	23	16.72	10	17.65	0.063	30	21.88	13	22.27	0.027										
(23) Blue Circle Southern Cement	Swan Portland Cement	1980 12	8	7.25	3	2.67	0.026	17	13.21	5	5.70	0.001	26	19.79	7	6.64	0.000	35	26.31	9	7.67	0.000										
(24) Cheetham Salt Consolidated	Central Queensland Salt Industries	1981 7	11	6.00	0	0.00	0.003	21	11.90	1	3.00	0.000	29	18.59	4	5.50	0.000															
(25) Speed Holdings	Formfit of Australia	1981 7	5	7.50	6	4.75	0.689	11	14.09	11	8.91	0.355	18	21.03	15	12.17	0.080															
(26) Hayne Nickless	Computer Accounting	1981 8	8	7.13	3	3.00	0.033	16	13.19	6	7.00	0.006	22	18.93	11	13.14	0.015															
(27) Pioneer Sugar Mills	Aquila Steel Company	1981 12	8	5.75	3	6.67	0.248	14	10.71	8	12.88	0.445	18	15.67	15	18.60	0.979															
(28) Martin Bright Steel	Scruttons Holdings	1982 2	4	5.25	7	6.43	0.286	10	10.55	12	12.29	0.495	15	16.47	18	17.44	0.549															
(29) Softwood Holdings	S.A.Plywood Holdings	1982 2	5	6.10	6	5.92	0.824	14	10.61	7	11.79	0.251	22	15.16	10	19.45	0.194															

1) The number of cases one year before and after takeovers is 11, and two years before and after takeovers 22, an increase of 11 cases for each year up to six years (66 cases).

2) + rank indicates uptrend of rank after takeovers.

3) ○ and □ mean a statistically significant difference of the 5% level or less, ○ for higher rank and □ for lower rank after takeovers.

4) The company name has "Limited" at their end.

Table 2   Wilcoxon Matched-Pairs Signed-Ranks Test Before and After Takeovers

Before and after	Number of cases	same rank	+rank means	-rank means	two-tail prob.
one year	319	5	171 160.36	143 154.08	0.094
two years	638	10	339 317.29	289 311.23	0.053
three years	957	14	518 475.55	425 467.67	(0.004)
four years	836	13	440 409.08	383 415.36	0.125
five years	495	11	292 243.63	192 240.76	(0.000)
six years	352	5	191 181.23	156 165.14	(0.018)

The number of sample firms decreases after "four years before and after mergers".

Table 3   Wilcoxon Matched-Pairs Signed-Ranks Test
Before and After Calender Years

Before and after calender year	Number of cases	same rank	+rank means	-rank means	Z value	two-tail prob.
1976	66	1	35 36.59	30 28.82	-1.359	0.174
1977	176	2	68 75.25	106 95.36	-3.750	(0.000)
1978	110	3	57 52.87	50 55.29	-0.387	0.699
1979	352	5	191 181.23	156 165.14	-2.367	(0.018)
1980	253	5	165 119.71	83 134.02	-3.815	(0.000)
1981	132	2	91 74.66	39 44.59	-5.852	(0.000)
1982	198	1	124 102.05	73 93.82	-3.623	(0.000)

We used the original data covering the period of 1973 to 1985.   For example, 1976 means a comparison of the three years periods 1973-1975 and 1977-1979.

Table 4   Test of Means Before and After Takeovers by Financial Ratio

Before and After Takeovers / stat. Financial ratio		One year Before	After	Two years Before	After	Three years Before	After	Four years Before	After	Five years Before	After	Six years Before	After
(1) Total Market Value Rank	means	38.3	33.1	38.8	31.8	39.7	30.9	38.7	32.2	41.4*	28.8	47.6	39.7
	standard deviation	27.4	25.7	27.0	24.3	26.4	24.6	26.7	25.8	27.0	21.7	36.6	31.2
(2) Ord. Earnings/ Ord. Sharehoders Funds Rank	means	46.4	49.6	47.9	49.3	50.2	48.0	53.7	52.2	62.5	50.8	53.4	53.7
	standard deviation	28.5	28.8	26.6	28.2	27.3	27.8	26.7	28.3	26.1	25.9	22.1	26.4
(3) Debt/Equity Rank	means	46.0	39.1	44.9	35.3	45.0	38.7	37.6	35.9	31.1	29.0	41.1	41.2
	standard deviation	27.1	24.6	27.1	24.5	27.3	24.8	24.8	24.5	15.0	14.7	18.8	22.7
(4) Dividend Yield Rank	means	47.0	55.7	50.3	52.2	50.5	48.8	47.3	48.1	42.5	38.8	42.2	33.3
	standard deviation	24.4	24.7	23.4	25.1	24.1	26.0	25.1	27.3	26.0	30.0	18.2*	26.8
(5) Price/Earning Per Share Rank	means	54.9	40.8	52.6	44.3	50.6	45.3	50.0	42.8	49.0	45.2	49.8	41.1
	standard deviation	23.3	24.0	24.8	24.9	24.5	24.6	22.2	24.0	23.7	22.8	22.4	22.5
(6) Price/Gross Cash Flow Rank	means	59.5	51.1	57.7	50.6	56.8	50.0	60.7*	51.8	66.8*	58.0	58.6	47.9
	standard deviation	24.2	23.4	24.4	22.9	24.3	22.4	23.6	22.3	19.9	21.9	25.1	23.9
(7) Price/Net Tangible Assets Rank	means	50.0	45.2	48.5	47.7	49.5	47.9	53.4	52.5	63.8	54.7	54.0	53.4
	standard deviation	26.3	24.8	27.2	24.0	26.9	23.8	27.3	23.8	25.8	21.0	25.9	22.9
(8) Growth Rate Dividend Per Share Rank	means	53.4	48.0	51.9	47.0	50.7	45.7	51.5	51.0	56.5	52.7	64.2*	52.4
	standard deviation	25.3	25.5	24.6	27.0	23.9	27.5	26.3	26.6	27.9	26.2	17.4	23.3
(9) Growth Rate Profit Per Share Rank	means	49.0	52.5	48.0	52.4	47.5	51.7	49.5	53.2	56.0	57.1	57.6	56.9
	standard deviation	23.9	25.4	23.8	27.2	24.6	28.2	24.4	28.6	27.2	27.4	14.2****	27.7
(10) Growth Rate Gross Cash Flow Rank	means	50.0	53.4	49.3	53.7	48.4	52.1	50.0	53.0	54.1	57.2	60.1	58.4
	standard deviation	21.7	22.6	22.4	25.6	23.3	26.9	23.4	26.4	27.8	23.7	17.2	24.2
(11) Growth Rate Net Tangible Assets Rank	means	53.1	57.6	52.7	58.1	52.2	57.4	55.0	62.5	60.3	67.8	64.8	70.3
	standard deviation	28.1	26.6	27.6	28.0	27.2	28.2	28.6	27.8	29.6	26.0	16.0	17.7
Number of cases		58		116		174		152		90		64	

* means statistically significant at the 5%
**** means statistically significant at the 0.1%
Ord. = Ordinary
Stat. = Statistics

Table 5 Discriminant Analysis of Overall Corporate Takeovers

One year before and after takeovers				Two years before and after takeovers				Three years before and after takeovers			
Accuracy = 60.34%				Accuracy = 62.93%				Accuracy = 72.41%			
Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total
Before	16	13	29	Before	36	22	58	Before	66	21	87
After	10	19	29	After	21	37	58	After	27	60	87
Total	26	32	58	Total	57	59	116	Total	93	81	174

Four years before and after takeovers				Five years before and after takeovers				Six years before and after takeovers			
Accuracy = 65.13%				Accuracy = 76.67%				Accuracy = 68.75%			
Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total
Before	48	28	76	Before	34	11	45	Before	22	10	32
After	25	51	76	After	10	35	45	After	10	22	32
Total	73	79	152	Total	44	46	90	Total	32	32	64

Pred. = Prediction,   Act. = Actual Value

Table 6   Friedman Test of Corporations with Frequent Takeovers

Corporations	Statistics	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
(1) Australian Consolidated Industries	level		0.366	0.744	0.609	0.624	0.540	0.625	0.442	0.454	0.565	0.343	0.190	0.161
	rank	7.64	7.32	7.68	9.18	6.64	8.50	8.05[1]	5.86[1]	7.95	7.00	5.36	4.59	5.32
(2) The Adelaide Steamship Company	level		0.763	0.695	0.298[1]	0.064	(0.007)[1]	(0.001)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	rank	10.36	10.09	10.82	9.14[1]	7.55[2]	7.27[2]	6.73[1]	6.36	4.09	5.05[1]	5.55	3.73[1]	4.27
(3) Amatil	level		0.132	0.178	0.243[1]	0.284	0.082	(0.034)[1]	(0.017)[1]	(0.031)[1]	(0.018)[1]	(0.002)[1]	(0.000)[1]	(0.001)[1]
	rank	4.82	7.14	6.77	7.05	7.68	9.14[1]	9.55	9.50	8.09[1]	5.91	3.50	3.91	7.95
(4) Australian National Industries	level		0.366	0.529	0.865	0.981	0.754	0.502	0.733	0.178	0.198	0.307	0.408	0.419
	rank	6.68[2]	5.86	5.77	6.27[1]	5.59	7.41[1]	8.14	6.73	10.00	7.32[1]	6.95[1]	7.82	6.45
(5) Amalgamated Wireless (Australia)	level		0.546	0.546	0.999	0.978	0.249	0.384	(0.044)[1]	(0.001)[1]	(0.000)	(0.000)	(0.000)	(0.000)
	rank				0.032	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(6) Boral	level		0.763	0.761	0.489	0.404	0.429	0.533	0.000	0.000	0.000	0.000	0.000	0.000
	rank	11.09	11.36	8.00	7.00[2]	7.73	7.36	7.95[1]	7.45	6.14	6.50[2]	3.41	3.18	3.82
(7) Burn, Philip & Company	level		0.366						0.737	0.800	0.886	0.880	0.957	0.973
	rank	6.50	6.73	6.05[1]	5.64	7.32[1]	7.41[1]	7.82[1]	6.95	7.68	6.41[1]	8.09	7.05[1]	7.36
(8) Clyde Industries	level		0.744	0.744	0.450	0.192	(0.034)[1]	(0.023)[1]	(0.003)[1]	(0.001)[1]	(0.000)[1]	(0.000)[1]	(0.000)[1]	(0.000)[1]
	rank	9.86	8.95	9.82	8.91	8.45	7.14	7.09[1]	4.73[2]	5.23	4.86[1]	4.55	5.05	6.36
(9) CSR	level							0.714	0.763	0.853	0.786	0.732	0.825	0.836
	rank							4.23	3.36[3]	3.82	4.50[1]	3.64[1]	3.91[1]	4.55
(10) Davis, Charles	level					0.546	0.744		0.537	0.572	0.351			
	rank				3.86[1]	3.50	3.73	3.05[1]	4.86	4.09	4.91[1]			
(11) Dunlop Olympic	level								0.366	(0.029)	0.082	(0.001)	(0.000)	(0.000)
	rank							5.82	5.45	4.55	4.73[1]	2.77[1]	2.41	2.27
(12) Hardie, James	level		0.546	0.053	0.068	(0.028)	0.137	0.239	0.379	0.438	0.543	0.426	0.380	0.344
	rank	6.05	7.05	8.59	6.68	5.36	6.95	8.95[1]	8.23[1]	7.05[1]	7.91[1]	5.50	5.14	7.55
(13) Hungerford Hill	level		0.366	0.250	0.295	0.160	0.223	0.129	0.088	0.131				
	rank	3.95	3.09	5.14[1]	5.50	5.77[1]	5.59	5.91	5.95	4.09				
(14) Industrial Equity	level		0.763	0.494	0.233	0.194	0.237	0.202	0.362	0.175	0.194	0.082	(0.039)	(0.012)
	rank	7.05	7.32[1]	7.55	8.86	9.36	9.23[1]	7.23[1]	8.23[1]	5.77	6.64	5.05	4.55	4.18
(15) LNC Industries	level		0.132	0.060	0.032	0.082	0.282	0.371	0.450	0.345				
	rank	5.77[1]	4.50[1]	6.32[2]	4.09[1]	4.00	4.23	4.95	5.09	6.05				

Table 6   Friedman Test of Corporations with Frequent Takeovers

Corporations	Statistics	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
(1) Australian Consolidated Industries	level		0.366	0.744	0.609	0.624	0.540	0.625	0.442	0.454	0.565	0.343	0.190	0.161
	rank	7.64	7.32	7.68	9.18	6.64	8.50	8.05	5.86	7.95	7.00	5.36	4.59	5.32
(2) The Adelaide Steamship Company	level		0.763	0.695	0.298	0.064	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	rank	10.36	10.09	10.82	9.14[1]	7.55[2]	7.27[2]	6.73[1]	6.36	4.09	5.05[1]	5.55	3.73[1]	4.27
(3) Amatil	level		0.132	0.178	0.243	0.284	0.082	(0.034)	(0.017)	(0.031)	(0.018)	(0.002)	(0.000)	(0.001)
	rank	4.82	7.14	6.77	7.05	7.68	9.14[1]	9.55	9.50	8.09[1]	5.91	3.50	3.91	7.95
(4) Australian National Industries	level		0.366	0.529	0.865	0.981	0.754	0.502	0.733	0.178	0.198	0.307	0.408	0.419
	rank	6.68[2]	5.86	5.77	6.27[1]	5.59	7.41[1]	8.14	6.73	10.00	7.32[1]	6.95[1]	7.82	6.45
(5) Amalgamated Wireless (Australia)	level				0.999	0.978	0.249	0.384	(0.044)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
	rank			5.77	5.64	7.32[1]	7.41[1]	7.82[1]	6.95	7.68	7.32[1]	8.09	7.05[1]	7.36
(6) Boral	level		0.763	0.761	0.489	0.404	0.429	0.533	0.737	0.800	0.886	0.880	0.957	0.973
	rank	11.09	11.36	8.00	7.00[2]	7.73	7.36	7.95[1]	7.45	6.14	6.50[2]	3.41	3.18	3.82
(7) Burn, Philip & Company	level													
	rank	6.50	6.73	6.05[1]	5.64	7.32[1]	7.41[1]	7.82[1]	6.95	7.68	6.41[1]	8.09	7.05[1]	7.36
(8) Clyde Industries	level		0.546	0.744	0.450	0.192	(0.034)	(0.023)	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
	rank	9.86	8.95	9.82	8.91	8.45	7.14	7.09[1]	4.73[2]	5.23	4.86[1]	4.55	5.05	6.36
(9) CSR	level							0.714	0.763	0.853	0.786	0.732	0.825	0.836
	rank							4.23						
(10) Davis, Charles	level					0.546	0.744	0.537	0.572	0.351				
	rank				3.86[1]	3.50	3.73	3.05[1]	3.36[3]	3.82	4.50[1]	3.64[1]	3.91[1]	4.55
(11) Dunlop Olympic	level								0.366	(0.029)	0.082	(0.001)	(0.000)	(0.000)
	rank								4.86	4.09	4.91[1]	4.55[1]	5.05	
(12) Hardie, James	level			0.053	0.068	(0.028)	0.137	0.239	0.379	0.438	0.543	0.426	0.380	0.344
	rank			8.59	8.86	9.36	9.23[1]	8.95[1]	8.23[1]	7.05[1]	7.91[1]	5.50	5.14	7.55
(13) Hungerford Hill	level			0.250	0.295	0.194	0.223	0.129	0.088	0.131				
	rank				6.68	5.36	6.95	5.82	5.95	4.09				
(14) Industrial Equity	level		0.763	0.494	0.233	0.160	0.237	0.202	0.362	0.175	0.194	0.082	(0.039)	0.012
	rank	3.95	3.09	5.14[1]	5.50	5.77[1]	5.59	5.91	5.95	4.55	4.73[1]	2.77[1]	2.41	2.27
(15) LNC Industries	level		0.132	0.060	(0.032)	0.082	0.282	0.371	0.450	0.345				
	rank	5.77[1]	4.50[1]	6.32[2]	4.09[1]	4.00	4.23	4.95	5.09	6.05				

Corporations	Statistics	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
National (16)Consolidated	level				0.228	0.431	0.315	0.466	0.597	0.787	0.665	0.817	0.849	0.906
	rank			6.64	5.91	6.50	5.27	6.36	6.77[1]	6.59	5.27[1]	6.50	5.27[1]	4.91
(17)McPherson	level		0.999	0.978	0.877	0.971	0.976	0.953						
	rank	4.50	4.14	4.23	4.00[1]	3.95	3.50							
OPSM (18)Industries	level			0.366	0.078	0.096	0.080	0.120	0.170	0.192	(0.029)			
	rank		5.95	5.86	4.05	4.77	4.05[1]	3.55	4.36	5.05[1]	7.36			
(19)Kemtron	level				0.763	0.239	0.168	0.152	0.098	0.176				
	rank			2.73	3.14[1]	4.05	4.55[1]	4.68	4.82	4.05				
Peko- (20)Wallsand	level							(0.016)	0.080	0.108	(0.015)	(0.028)	(0.033)	
	rank						3.32	4.59[1]	3.82	2.73[1]	5.82	3.77	3.95[1]	
Pioneer (21)Concrete Services	level		0.366	0.234	0.315	0.225	0.212	0.233	0.071	0.158	0.272	(0.043)	(0.012)	(0.007)
	rank	6.00	7.55	8.36[1]	7.95	8.95	8.68	9.05[1]	5.41	8.18	7.32[1]	4.55	4.14	4.86
(22)Repco	level		0.070	0.080	0.336	0.137	0.147	(0.008)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)
	rank	5.32	4.27	6.23	5.82	6.86	6.86	9.05[1]	10.64	10.05	6.18[1]	6.27[1]	5.64	7.82
Aggregated Data	level		0.585	0.147	0.139	0.262	0.547	0.776	0.606	0.555	0.027	(0.000)	(0.000)	(0.000)
	rank	7.40[3]	7.60[2]	7.79[5]	7.50[7]	7.41[5]	7.81[8]	8.14[11]	7.28[10]	7.29[4]	6.46[13]	5.34[4]	4.98[6]	5.99

1) The accounting year in Australia ends 30th of June.

2) The level is the probability of χ^2 value, e.g., the level of 1974 is obtained from the test between 1973 and 1974, the level of 1975 from 1973, 74 and 75.

3) ⊂⊃ means the statistically significant difference at the 5% level.

4) The aggregated data is compiled from 11 corporations which had ranks from 1973 to 1985.

5) The upper figures of ranks indicate the number of takeovers.