

The Performance of Corporate Takeovers in Australia

Yasuo Hoshino

Aichi University and the University of Tsukuba

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Abstract

Australian Takeovers 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" are selected as examples for comparative analysis to measure performance. Takeovers in Australia have 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.

1. Introduction

Corporate takeover is to acquire another firm through a purchase or exchange of the firm's capital stock. Corporate merger in broad sense includes corporate takeover, as well as corporate merger in a narrow sense which means the combination of two or more corporations. In Australia there were 105, 103 and 129 takeovers in 1983, 1984 and 1985, respectively. The number of these delisted firms through takeovers from the Sydney Stock Exchange are 30, 36 and 27 cases respectively for each corresponding year, counting roughly two to three percent of all listed firms.

There are various types of reports on the objectives of takeovers and mergers in Australia¹. However, no decisive report has examined whether the objective 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 analyzed these firms by stock price based on a capital asset pricing model. One of his conclusion is that stockholders of offeree could gain profit through the takeover bid but stockholders of offeror suffered a 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 analyzed 573 listed firms which were taken over by half of their shares from January 1966 to December 1972 taken from data compiled by Walter (29) based on same capital assets market model. He found that the profit margin of the equity of offeree is lower than normal, but offeree can gain greater than average profit. After takeovers, stockholders of the offeree could gain a fairly abnormal return, but stockholders of offeror could not support the semi-efficient market hypothesis. Brown and Horin (1) used the same data as Walter and analyzed 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 conclusion 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 Junior (7) selected 120 listed firms from the data base of the Australian Graduate School of Management, the University of New South Wales and analyzed 31 of them has been taken over from 1978 through 1981. They compared the accounting data of the offerors and offerees before takeovers. The offerees showed several trends such as comparatively small size and high profitability, low liquidity, low valuation of their assets and management control type firms.

Similarly Castabna and Matolcsy (4) compared 82 listed non-financial firms which were taken over by existing

¹ Corporate takeovers and mergers are examined in its early stage in Australia by Chamber (6), Bushnell (2), Stewart (26), Sheridan (30). See Webb and Allan (34).

² Van Horne (31) quotes a study by Walter (33) as a representative research of takeovers in Australia.

firms from 1970 through 1980. They found that offerees show lower average profitability, higher liquidity, higher dividend propensity and a higher tangible fixed assets ratio to stock price. However, there remains question on the validity of discrimination based on accounting data because of higher errors than expected by discriminant analysis and logit analysis.

Koh (23) analyzed the relationship between the premium obtained by takovers 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 summarized 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 residual.
 - 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 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.

2. 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 1a & Table 1b.

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 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.

3. Corporate Analysis of Takeovers by Nonparametric Test



Table 1a & Table 1b 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

Table 1a. Wilcoxon Matched-Pairs Signed-Ranks Test of corporations before and after corporate takeovers (1,2,3,4)

Acquiring Firm	Delisted	Acquired firm	Year	Month	1 year Before and after Takeovers		2 years Before and after Takeovers		3 years Before and after Takeovers			
					*rank means	Two tail Prob.	*rank means	Two tail Prob.	*rank means	Two tail Prob.		
1 Wormald International		Jonn (M.B.)	1976	5	6	0.625	11	11	0.581	16	17	0.688
			2	7.70	4.58		13.05	9.95		18.94	15.18	
2 United Packages		Smith (W.E.)	1976	7	4	0.328	13	8	0.122	19	13	0.155
			3	6.29	5.50		12.31	8.88		17.89	14.46	
3 Thomas National Transport		Reminsular group holdings	1976	3	8	0.100	6	16	0.024	12	20	0.034
			8	4.83	6.44		9.50	12.25		12.54	18.88	
4 G. E Crane & Sons		C.O.N. Holdings	1977	4	7	0.100	6	16	0.004	9	24	0.000
			3	3.63	7.36		6.17	13.50		9.11	19.96	
5 Comeng Holdings		Gregory (H.P.) & Co	1977	6	5	0.756	11	11	0.910	20	13	0.074
			3	6.08	5.90		11.18	11.82		16.95	17.08	
6 Tooth & Co,		PenfoldsWines Australia	1977	2	9	0.013	4	18	0.004	6	27	0.001
			3	2.50	6.78		9.25	12.00		15.83	17.26	
7 Philips Industries Holdings		Pye Industries	1977	2	9	0.050	6	16	0.026	9	23	0.012
			8	5.50	6.11		9.67	12.19		14.39	17.33	
8 Fielders		Gillespie Brother holdings	1978	6	4	0.508	13	8	0.192	19	13	0.345
			3	5.67	5.25		11.77	9.75		16.55	16.42	
9 Siddons Industries		Insul Fiber Holdings	1978	5	6	0.182	7	15	0.003	9	24	0.000
			8	3.60	8.00		4.86	14.60		8.39	20.23	
10 F. H. Fauldings & Co.		Rocxe Tompsitt & Co.	1978	5	5	0.359	13	8	0.029	23	9	0.001
			10	7.30	3.70		13.73	6.56		19.15	9.72	
11 Carpenter (W. R) Holdings		Dolton Brothers Holdings	1979	3	8	0.091	7	15	0.033	11	22	0.029

12	Australian Paper Manufacturers	Brown & Dureau	1979	4	4.67	6.50	0.799	7	8.71	12.80	0.313	13	14.36	17	18.32	0.758
13	Mascott Industries	Australian Conversion Service	1979	6	6.25	5.00	0.657	9	11.14	10.15	0.314	12	16.73	21	14.56	0.093
14	Davis Consolidated Industries	Lawrence (Alfred) Holdings	1979	10	4.67	7.60	0.014	15	10.61	12.12	0.372	20	15.54	13	17.83	0.922
15	The Herald and Weekly Times	Australian Newsprint mills holdings	1979	5	6.05	5.50	0.534	10	10.27	14.14	0.661	18	13.75	15	22.00	0.136
16	J. Gadsden	Consolidated Foods	1979	4	8.00	4.33	0.594	11	14.00	9.42	0.940	20	20.22	11	13.13	0.610
17	Email	Kelvinator Australia	1979	9	6.75	5.57	0.025	16	9.36	11.89	0.025	24	13.70	9	20.18	0.013
18	Co stain Australia	Person Bridge Holdings	1980	7	6.56	3.50	0.374	10	12.22	9.58	0.355	14	17.50	9	15.67	0.088
19	Amalgamated Wireless	Queensland Television	1980	10	6.14	5.75	0.005	19	9.80	12.92	0.000	28	13.21	3	19.79	0.000
20	Sleigh (H.C)	Tasmanian Board Mill	1980	4	5.50	0.00	0.721	12	11.74	4.00	0.217	20	16.63	10	10.17	0.020
21	Australian Gas Light	The North Shore Gas Company	1980	4	7.75	4.00	0.721	12	12.58	8.89	0.217	20	19.42	12	11.63	0.020
22	Watty!	T.C. White Holdings	1980	4	7.75	4.00	0.230	13	12.58	8.89	0.795	23	19.42	10	11.63	0.063
23	Blue Circle Southern Cement	Swan Portland Cement	1980	8	4.88	6.64	0.026	17	10.35	13.17	0.001	26	16.72	7	17.65	0.000
			12	7.25	2.67			13.21	5.70			19.79		16.64		

24	Cheetham Salt Consolidated	Central Queensland Salt Industries	1981	11	0	0.003	21	1	0.000	29	4	0.000
			7	6.00	0.00	11.90	3.00	18.59	5.50			
25	Speed Holdings	Formfit of Australia	1981	5	6	0.689	11	11	0.355	18	15	0.080
			7	7.50	4.75	14.09	8.91	21.03	12.17			
26	Mayne Nickless	Computer Accounting	1981	8	3	0.033	16	6	0.006	22	11	0.015
			8	7.13	3.00	13.19	7.00	18.93	13.14			
27	Pioneer Sugar Mills	Aqua Steal Company	1981	8	3	0.248	14	8	0.445	18	15	0.979
			12	5.75	6.67	10.71	12.88	15.67	18.60			
28	Martin Bright Steel	Scruttons Holdings	1982	4	7	0.286	10	12	0.495	15	18	0.549
			2	5.25	6.43	10.55	12.25	16.47	17.44			
29	Softwood Holdings	S.A. Plywood Holdings	1982	5	6	0.824	14	7	0.251	22	10	0.194
			2	6.10	5.92	10.61	11.79	15.16	19.45			

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

2. *Rank indicates uptrend of rank after takeover.

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

4. The company name has "limited" at their end.

Table 1b. Wilcoxon Matched-Pairs Signed-Ranks Test of corporations before and after corporate takeovers (1,2,3,4)

Acquiring Firm	Delisted	Acquired firm	Year	Month	4 years Before and after Takeovers		5 years Before and after Takeovers		6 years Before and after Takeovers	
					*rank	means	*rank	means	*rank	means
1 Wormald International	1976	Jonn (M.B.)								
2 United Packages	1976	Smith (W.E.)								
3 Thomas National Transport	1976	Reninsular group holdings			17	25				
4 G. E Crane & Sons	1977	C.O.N. Holdings			14	30				
5 Comeng Holdings	1977	Gregory (H.P.) & Co			28	16				
6 Tooth & Co,	1977	PenfoldsWines Australia			9	35				
7 Philips Industries Holdings	1977	Pye Industries			15	28				
8 Fielders	1978	Gillespie Brother holdings			26	17				
9 Siddons Industries	1978	Insul Fiber Holdings			17	27				
10 F. H. Fauldings & Co.	1978	Rocxe Tompsitt & Co.			32	11				
11 Carpenter (W. R) Holdings	1979	Dolton Brothers Holdings			17	27				

		4 years Before and after Takeovers		5 years Before and after Takeovers		6 years Before and after Takeovers	
		*rank	means	*rank	means	*rank	means
	Two tail Prob.						
	Two tail Prob.						

		4 years Before and after Takeovers		5 years Before and after Takeovers		6 years Before and after Takeovers	
		*rank	means	*rank	means	*rank	means
	Two tail Prob.						
	Two tail Prob.						

12	Australian Paper Manufacturers	Brown & Dureau	1979	23.12	22.11	0.411	30	21	0.041	37	25	0.047
13	Mascott Industries	Australian Conversion Service	1979	17	27	0.071	29.35	21.21		34.04	27.74	
14	Davis Consolidated Industries	Lawrence (Alfred) Holdings	1979	26	18	0.935						
15	The Herald and Weekly Times	Australian Newsprint mills holdings	1979	19.31	27.11							
16	J. Gadsden	Consolidated Foods	1979	29	13	0.198	38	15	0.042			
17	Email	Kelvinator Australia	1979	32	13	0.005	24.88	32.37				0.004
18	Co stain Australia	Person Bridge Holdings	1980	18	26	0.030	27.95	28.13				0.019
19	Amalgamated Wireless	Queensland Television	1980	37	5	0.000	22.25	31.83				0.000
20	Sleigh (H.C)	Tasmanian Board Mill	1980	26	17	0.008	29.01	11.25				
21	Australian Gas Light	The North Shore Gas Company	1980	26	17	0.008						
22	Watty!	T.C. White Holdings	1980	30	13	0.027						
23	Blue Circle Southern Cement	Swan Portland Cement	1980	35	9	0.000						

24	Cheetham Salt Consolidated	Central Queensland Salt Industries	1981	7
25	Speed Holdings	Formfit of Australia	1981	7
26	Mayne Nickless	Computer Accounting	1981	8
27	Pioneer Sugar Mills	Aqua Steel Company	1981	12
28	Martin Bright Steel	Scruttons Holdings	1982	2
29	Softwood Holdings	S.A. Plywood Holdings	1982	2

∞

1. The number of cases one year before and after takeover is 11, and two years before and after takeover is 22, an increase of 11 cases for each year up to six years (66 cases).
2. *Rank indicates uptrend of rank after takeover.
3. ○ and □ mean a statistically significant difference of the 5% level or less, ○ for a higher rank and □ for a lower rank after takeover
4. The company name has "limited" at their end.

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 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 degradation.

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), totaling 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 calendar years, using 11 variables. Before and after 1977, there is a statistically significant difference with lowering rank after takeovers.

4. 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.

5. Analysis of Frequent Takeover Companies by Nonparametric Test

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 types 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

Table 2. Wilcoxon Matched-pairs Signed-Ranks test before and after takeovers (1)

Before and after	Number of cases	Same rank	+rank means	-rank means	Two tail Prob.
One year	319	5	171	143	0.094
			160.36	154.08	
Two years	638	10	339	289	0.053
			317.29	311.23	
Three years	957	14	518	425	0.004
			475.55	467.67	
Four years	836	13	440	383	0.125
			409.08	415.36	
Five years	495	11	292	192	0.000
			243.63	240.76	
Six years	352	5	191	156	0.018
			181.23	165.14	

1. The number of sample firms decreases after “four years before and after mergers”.

Table 3. Wilcoxon Matched-pairs Signed-Ranks test before and after Calendar Years (1)

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

1. 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

Financial ratio	One Year		Two Years		Three Years		Four Years		Five Years		Six Years	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
1 Total Market Value Rank	Means	33.1	38.8	31.8	39.7	30.9	38.7	32.2	41.4*	28.8	47.6	39.7
	Standard	27.4	25.7	27.0	24.3	26.4	26.7	25.8	27.0	21.7	36.6	31.2
	Deviation											
2 Ord. Earnings / Ord. Shareholders' Dividends Rank	Means	49.6	47.9	49.3	50.2	48.0	53.7	52.2	62.5	50.8	53.4	53.7
	Standard	28.5	28.8	26.6	27.3	27.8	26.7	28.3	26.1	25.9	22.1	26.4
	Deviation											
3 Debt / Equity Rank	Means	39.1	44.9	35.3	45.0	38.7	37.6	35.9	31.1	29.0	41.1	41.2
	Standard	27.1	24.6	27.1	27.3	24.8	24.8	24.5	15.0	14.7	18.8	22.7
	Deviation											
4 Dividend Yield Rank	Means	55.7	50.3	52.2	50.5	48.8	47.3	48.1	42.5	38.8	42.2	33.3
	Standard	24.4	24.7	23.4	24.1	26.0	25.1	27.3	26.0	30.0	18.2*	26.8
	Deviation											
5 Price / Earnings Per Share Rank	Means	40.8	52.6	44.3	50.6	45.3	50.0	42.8	49.0	45.2	49.8	41.1
	Standard	23.3	24.0	24.8	24.5	24.6	22.2	24.0	23.7	22.8	22.4	22.5
	Deviation											
6 Price / Gross cash Flow Rank	Means	51.1	57.7	50.6	56.8	50.0	60.7*	51.8	66.8*	58.0	58.6	47.9
	Standard	24.2	23.4	24.4	24.3	22.4	23.6	22.3	19.9	21.9	25.1	23.9
	Deviation											
7 Price / Net Tangible Assets Rank	Means	45.2	48.5	47.7	49.5	47.9	53.4	52.5	63.8	54.7	54.0	53.4
	Standard	26.3	24.8	27.2	26.9	23.8	27.3	23.8	25.8	21.0	25.9	22.9
	Deviation											
8 Growth Rate / Dividend Per Share Rank	Means	48.0	51.9	47.0	50.7	45.7	51.5	51.0	56.5	52.7	64.2*	52.4
	Standard	25.3	25.5	24.6	23.9	27.5	26.3	26.6	27.9	26.2	17.4	23.3
	Deviation											
9 Growth Rate / Profit Per Share Rank	Means	52.5	48.0	52.4	47.5	51.7	49.5	53.2	56.0	57.1	57.6	56.9
	Standard	23.9	25.4	23.8	24.6	28.2	24.4	28.6	27.2	27.4	14.2**	27.7
	Deviation											

10	Growth Rate / Gross Cash Flow Rank	Means Standard Deviation	50.0 21.7 53.4	49.3 22.4 53.7	53.7 25.6 48.4	52.1 26.9 50.0	54.1 27.8 57.2	60.1 17.2 64.8	58.4 24.2 70.3
11	Growth Rate / Net Tangible Assets Rank	Means Standard Deviation	53.1 28.1 57.6	52.7 27.6 58.1	52.2 27.2 57.4	55.0 28.2 50.0	60.3 29.6 67.8	64.8 16.0 70.3	70.3 17.7 70.3
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 (1)

		One year before and after takeovers Accuracy = 60.34%			Two years before and after takeovers Accuracy = 62.93%			Three years before and after takeovers Accuracy = 72.41%				
Pred. Act.	Total	Before	After	Total	Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total
		Before	16	13	29	Before	36	22	58	Before	66	21
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 Accuracy = 65.13%			Five years before and after takeovers Accuracy = 76.67%			Six years before and after takeovers Accuracy = 68.75%				
Pred. Act.	Total	Before	After	Total	Pred. Act.	Before	After	Total	Pred. Act.	Before	After	Total
		Before	48	28	76	Before	34	11	45	Before	22	10
After	25	51	76	After	10	35	45	After	10	22	32	
Total	73	79	152	Total	44	46	90	Total	32	32	64	

1. Pred. = Prediction, Act. = Actual Value

Table 6. Friedman Test of corporations with frequent Takeovers (1,2,3,4)

Sr #	Corporation	Year		1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
		Stat.	Year													
1	Australian Consolidated Industries	Level		0.366	0.609	0.624	0.540	0.625	0.442	0.454	0.565	0.343	0.190	0.161		
		Rank		7.64	9.180	6.64	8.50	8.05 ¹	5.86 ¹	7.950	5.360	0.343	0.190	0.161		
2	The Adelaide Steamship Company	Level		0.763	0.298	0.064	0.007	0.001	0.000	0.000	0.000	0.000	0.000	0.000		
		Rank		10.36	9.14 ¹	7.55 ²	7.27 ²	6.73 ¹	6.360	4.090	5.550	3.73 ¹	4.27			
3	Amatil	Level		0.132	0.243	0.284	0.082	0.034	0.017	0.031	0.018	0.002	0.000	0.001		
		Rank		4.82	7.050	7.68	9.14 ¹	9.550	9.500	8.09 ¹	5.910	3.500	3.91	7.95		
4	Australian National Industries	Level		0.366	0.529	0.865	0.745 ⁴	0.502	0.733	0.178	0.198	0.307	0.408	0.419		
		Rank		6.68 ²	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	0.000		
		Rank		0.546	0.032	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
6	Boral	Level		0.546	0.032	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
		Rank		11.09	8.000	7.00 ²	7.36	7.95 ¹	7.45	6.14	6.50 ²	3.41	3.18	3.82		
7	Burn, Philip & Company	Level		0.763	0.489	0.404	0.429	0.533	0.737	0.800	0.886	0.880	0.957	0.973		
		Rank		6.50	6.05 ¹	5.640	7.32 ¹	7.82 ¹	6.95	6.95	7.68	6.41 ¹	8.09	7.05 ¹	7.36	
8	Clyde Industries	Level		0.366	0.744	0.192	0.034	0.023	0.003	0.001	0.000	0.000	0.000	0.000		
		Rank		9.86	8.920	8.450	7.14	7.09	4.73 ²	5.23	4.86 ¹	4.55	5.05	6.36		
9	CSR	Level		0.763	0.853	0.786	0.732	0.732	0.825	0.836	0.836	0.836	0.836			
		Rank		4.23	3.36 ³	4.50 ¹	3.64 ¹	3.64 ¹	3.91 ¹	4.55						
10	Davis Charles	Level		0.546	0.744	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351			
		Rank		3.86 ¹	3.50	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73		
11	Dunlop Olympic	Level		0.366	0.250	0.194	0.223	0.129	0.088	0.131	0.131	0.131	0.131			
		Rank		3.95	5.14 ¹	5.500	5.77 ¹	5.91	5.95	4.09						
12	Hardie, James	Level		0.546	0.053	0.068	0.137	0.239	0.379	0.438	0.543	0.426	0.380	0.344		
		Rank		6.05	8.590	6.680	5.36	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	0.194	0.223	0.129	0.088	0.131	0.131	0.131	0.131			
		Rank		3.95	5.14 ¹	5.500	5.77 ¹	5.91	5.95	4.09						

14	Industrial Equity	Level Rank	0.763 7.05	0.494 7.550	0.233 8.86	0.160 9.36	0.237 9.23 ¹	0.202 7.23 ¹	0.362 8.23 ¹	0.175 5.77	0.194 6.64	0.082 5.05	0.039 4.55	0.012 4.18
15	LNC Industries	Level Rank	0.132 4.50 ¹	0.060 6.32 ²	0.032 4.09 ¹	0.082 4.00	0.282 4.230	0.371 4.95	0.450 5.09	0.345 6.05				
16	National Consolidated	Level Rank		6.64	0.228 5.91	0.431 6.50	0.315 5.27	0.466 6.36	0.597 6.77 ¹	0.787 6.59	0.665 5.27 ¹	0.817 6.50	0.849 5.27 ¹	0.906 4.91
17	McPherson	Level Rank	0.999 4.14	0.978 4.23	0.877 4.00 ¹	0.971 3.95	0.976 3.50	0.953						
18	OPSM Industries	Level Rank		0.366 5.86	0.078 4.05	0.096 4.77	0.080 4.05 ¹	0.120 3.55	0.170 4.36	0.192 5.05 ¹	0.029 7.36			
19	Kemtron	Level Rank		2.73	0.763 3.14 ¹	0.239 4.05	0.168 4.55 ¹	0.152 4.68	0.098 4.82	0.176 4.05				
20	Peko-Wallsand	Level Rank						0.016 4.59 ¹	0.080 3.82	0.108 2.73 ¹	0.015 5.82	0.028 3.77	0.033 3.95 ¹	
21	Pioneer Concrete Services	Level Rank	0.366 6.00	0.234 8.36 ¹	0.315 7.95	0.225 8.95	0.212 8.68	0.233 9.05 ¹	0.071 5.41	0.158 8.18	0.272 7.32 ¹	0.043 4.55	0.012 4.14	0.007 4.86
22	Repco	Level Rank	0.070 5.32	0.080 6.23	0.336 5.82	0.137 6.86	0.147 6.86	0.008 9.05 ¹	0.000 10.64	0.000 10.05	0.000 6.18 ¹	0.000 6.27 ¹	0.001 5.64	0.002 7.82
23	Aggregated Data	Level Rank	0.585 7.40 ³	0.147 7.79 ⁵	0.139 7.50 ⁷	0.262 7.41 ⁵	0.547 7.81 ⁸	0.776 8.14 ¹¹	0.606 7.28 ¹⁰	0.555 7.29 ⁴	0.027 6.46 ¹³	0.000 5.34 ⁴	0.000 4.98 ⁶	0.000 5.99

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

2. The level is the probability of X² value, example, the level of 1974 is obtained from the test between 1973 and 1974, the level of 1975 from 1973, 74 and 75.

3. Highlighted numbers mean 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 rank indicate the number of takeovers

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.

6. 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.

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