

WORKING PAPERS IN ECONOMICS

DEPARTMENT OF ECONOMICS  
UNIVERSITY OF SYDNEY

ASSET REVALUATIONS  
AND STOCK MARKET PRICES

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PAPER NO. 2

JUNE 1975

ISBN 0 9090426 12 0

Several recently reported studies have considered whether changes in accounting methods by firms whose securities are publicly traded have led to any discernible response in the form of shifts in share prices. (I) These studies have been framed in differing terms, and have looked at share price movements under a variety of conditions. But a common finding has been that changes in accounting methods do not appear to have had much of an effect on stock market prices.

This paper presents some evidence of changes in accounting method which lead to shifts in stock prices. It describes an examination of movements in share prices of a sample of relatively large Australian public companies which announced upward asset revaluations during the period 1960-70. This examination revealed that announcements of asset revaluations were associated with substantial upward movements in stock prices, and that these shifts in stock prices were generally sustained in the post-announcement months. Furthermore, the stock market appears to digest this new information quickly into stock prices as the adjustment was almost complete at the close of the announcement month. Further analysis suggested that the observed movements in stock prices could not be attributed entirely to such additional information signals as earnings and dividend changes. Nor were the results explained by induced changes in volatility which could conceivably result from the release of revaluation information. Given that the revaluations reflected changes in the worth of assets which had predominantly taken place but had not been recorded during prior accounting periods, then the findings are consistent with claims that the failure of accounting to systematically

provide contemporary information about the affairs of firms can deprive the stock market of valuable information and lead to the inequitable treatment of individual investors.

Asset revaluations

The upward revaluation of "fixed" assets is commonplace in Australia,<sup>(2)</sup> familiar in the U.K.,<sup>(3)</sup> but effectively banned in the U.S.A.<sup>(4)</sup>

Australian asset revaluations are carried out at the discretion of company managements. There are no explicit guidelines concerning the basis or comprehensiveness of these revaluations to be found in companies legislation, stock exchange rules or pronouncements of professional bodies. Some revaluations are conservative. For example, managements may disclose that the new asset figures are still well below appraisal values or that they have reported properties at the level of out-of-date "valuations" prepared for the use of rating authorities. However, it appears that most revaluations bear some relationship to "current values" in the sense of current resale prices. Hence, the announcement of an upward revaluation typically recognises gains from holding assets that have previously been ignored in financial statements prepared in accord with "generally accepted accounting principles."

There do not appear to have been previous studies aimed at investigating the effect of asset revaluations on share prices. However, there is some related evidence available from an examination of Australian experience with takeover bids during 1960-1970.<sup>(5)</sup> Frequently takeover bids have been the occasion for directors of offeree firms to comment on the extent to which book values diverged from "current values". A comparison between the gross share price movements of a sample of firms which

released "new information" in response to takeover bids, and the shifts in the share prices of all offeree firms for which the movement in month-end prices before and after the bid could be obtained, produced the following findings: (6)

<u>Share price movement (pre/post bid)</u>	<u>Firms which released new information</u>	<u>All offerees</u>
Decreases 1-80%	2	108
Increases 0-20%	7	241
21-40%	14	156
41-60%	6	77
61-80%	4	49
81% over	8	57
	<u>41</u>	<u>688</u>

The distribution of share price movements of the two groups differed significantly<sup>(7)</sup> thereby suggesting that the release of contemporary information in these instances may have had some bearing on share price movements.

However, since these announcements occurred in conjunction with takeover contests, the subsequent price movements cannot be directly attributed to the release of "new information" about the net worth of the offeree firm. Moreover, since a proportion of these responses concerning the relative significance of book figures and current values were unquantified, it is impossible to assess the "significance" of the announcements,

vis a vis prior accounting reports. It should also be noted that these announcements were not always followed by a formal adjustment of a firm's books, and hence the incorporation of the valuations in subsequent financial statements.

In contrast to this study of takeover bids, the study reported below focusses on the effect of announcements of asset revaluations on share prices, in circumstances where these changes in accounting method could be interpreted as constituting significant revisions of prior accounting representations of the position and performance of firms.

The Sample

A number of formal asset revaluations were selected from cases recorded on a file compiled within the Department of Accounting, University of Sydney, from a review of the Sydney Stock Exchange 'Investment' and 'Mining' Services. Asset revaluations were located from an examination of balance sheet summaries, together with a review of "capital changes", the latter since asset revaluations followed by bonus issues which immediately "capitalised" revaluation reserves would not necessarily show up clearly in year-end balance sheets.

With the object of ensuring that any price movements which might be associated with the asset revaluations could not be attributable to take-over contests, the sample period was limited to the 1960's, since particulars of takeover activity were not available for earlier years. Also, the sample was limited to asset revaluations of some "size" - a figure of \$1 million "increase" was selected initially, but this was later lowered to \$900,000 in order to increase the size of the sample. To further ensure that the changes in method constituted important changes in the manner in which a firm's affairs were depicted by accounting reports, the cases were also restricted to those in which the revaluations constituted an addition of at least 10% to shareholders' funds (as indicated in the most recent balance sheet prior to the revaluation).

Some additional limitations were imposed. Revaluations of holding companies' investments in subsidiary companies were excluded, on the

ground that the prior presentation of consolidated statements would have provided some indication of the distortion previously embodied in cost-based valuations of these assets. Revaluations of marketable securities were also excluded on the ground that information about the market value of these assets would have been disclosed in notes to annual balance sheets in compliance with Australian disclosure laws<sup>(8)</sup>. Of the cases which fitted these prescriptions, several were found to have been made by firms whose stock exchange listing was limited to senior securities. These cases were rejected so that the sample would be composed entirely of announcements by firms whose common stock was publicly traded in Australia. Finally, the form of analysis adopted led to the exclusion of several cases in which multiple revaluations occurred within a period of three years. This left a sample of 34 asset revaluations by 32 listed companies. The dates on which these revaluations were announced were obtained from Sydney Stock Exchange files, and (in some instances) cross-checked against newspaper reports.

A comparison of the list of revaluations with the list of takeover bids<sup>(9)</sup> indicated that only one of the 34 revaluations occurred within three years of a takeover offer being directed at the revaluing firm. This case was that of A.P.A. Holdings Ltd. which revalued in October 1968, and in December 1968 was subject to a first-come-first-served bid for 10% of its issued shares. This bid was unsuccessful, and did not attract a counter offer. These circumstances did not suggest that the case should be excluded from the sample; subsequent examination of the data indicated that its retention had not noticeably influenced the results.



Examination of the revaluation announcements indicated that the majority related to properties and Investments:

<u>Assets revalued</u>	
"Land and buildings", "freehold property", "properties"	13
"Investments", shares in associated companies	8
"Plant and equipment"	3
Other descriptions (e.g. "fixed assets", "capital assets") or combinations of items (e.g. "freeholds and leaseholds", "properties and plant")	10
Total revaluations	<hr/> 34 <hr/>

In this respect it is important to note that, until recently, it was not common for Australian firms to provide for depreciation on buildings. (10) Hence during the 1960's the upward revaluation of properties would not normally have led investors to expect that subsequent accounting periods would face increased depreciation charges.

The basis of revaluation was not always indicated in unambiguous terms. The following are a selection of extracts from the revaluation announcements.

"Directors (of G.E. Crane Holdings Ltd.) reported that the fixed asset figures shown in the accounts increased during the year, due to additions and a revaluation of certain freeholds and plant. Two of the company's properties were revalued to agree in the company's books with the Valuer General's most recent assessment. In addition to this, some items of plant were raised to bring them closer to present-day values after depreciation" (11).

"Just prior to the close of the financial year the Board (of Castlemaine Parkins Ltd.) caused a valuation to be made by well-known valuers of certain of its properties and, guided by that valuation, revalued these properties in the Company's books ..."(12)

"... the directors (of McPherson's Ltd.) advise that acting on valuations received from the Company's Valuers they have revalued the Company's freehold properties"(13)

"(Silverton Transport and General Industries Ltd.) has revalued its terminals and Broken Hill Cockburn railway line from 290,239 to 1,781,744. The Assets are not necessarily expected to realise this enhanced figure."(14)

The Analysis

Share price movements around the date of the revaluations were examined using what has come to be known as the "market model."<sup>(15)</sup> This method of analysis eliminates the effect of market-wide influences on individual stock prices. For each company in the sample, an equation of the form

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it} \quad (1)$$

was estimated using the ordinary least squares regression technique where

$R_{it}$  = the monthly return for company 'i' in month 't' calculated from end of month prices (obtained from the Sydney and Melbourne Stock Exchange Gazettes) and including dividends. Appropriate adjustments were made for stock splits, bonus issues, and "rights".

$R_{mt}$  = the "market" rate of return (represented by the average monthly rate of return on a portfolio consisting of some 500 Australian stocks traded on the Melbourne Stock Exchange assuming dividends are reinvested and adjustments made for capital changes<sup>(16)</sup>).

$\alpha_i$  = a constant, equal to the riskless rate of return.

$\epsilon_{it}$  = a random error term for month 't'.

$\beta_i$  = a measure of volatility of the return on company i's shares relative to the market return.

Approximately 60 monthly observations were used to estimate the parameters

$\alpha_1$  and  $\beta_1$ . These did not include 12 observations before, and 12 observations after, the announcement month since it was assumed that responses to asset revaluations would be reflected in share prices within this period. Inclusion of these observations for the purposes of estimating the coefficients  $\alpha_1$  and  $\beta_1$  in equation (1) would have violated the ordinary least squares assumption that the expected value of the error term,  $\epsilon_{1t}$ , is zero.

The revaluation announcement month was numbered month zero. Using the estimated values of  $\alpha_1$  and  $\beta_1$ , and known values of  $R_{mt}$ , predicted values of  $R_{1t}$  for the excluded months ( $t = -12$  to  $+12$ ) were calculated. These predicted values were then subtracted from the actual monthly returns in those months producing residuals  $\hat{\epsilon}_{1t}$  for  $t = -12$  to  $+12$ . These were then averaged across all the 34 revaluation cases to produce a series of average residuals

$$\mu_t = \frac{1}{34} \sum_{i=1}^{34} \hat{\epsilon}_{1it}$$

Findings

The results of the application of the "market model" are summarised in Tables 1 and 2 and in Figure 1. They indicate that an announcement of a revaluation of assets was accompanied, on average, by a cumulative average increase in return of about 18% or 19% above that expected from the general state of the stock market. Approximately half of this took place prior to the announcement date (though the shift at month -6 can perhaps be attributed to the publication of the half-yearly report). But there was an unmistakable jump in the average residual of the announcement month, and the cumulative average residuals (CAR) indicate that this response was sustained over the twelve post-announcement months.

Prima facie these results indicate that the release of information about upward revaluations (which usually implies that previous financial statements had "undervalued" assets) was both accompanied and preceded by a strong increase in the price of the company's shares. To the extent that the share price movements were attributable to the revaluations, then it may be argued that buyers and sellers in the stock market regard revaluation announcements as information of significance.

Table 1

Company	Revaluation Date/s	Dividends*	$\hat{\beta}$ **	R <sup>2</sup>
Elec. Equipment	Aug. 1969	D	.086 (.42)	.014
Dunlop Rubber	Mar. 1963	I	1.138 (5.81)	.382
G. E. Crane	Sept. 1960	D	.942 (3.15)	.185
Concrete Industries	Apr. 1960	I	1.476 (4.18)	.250
Castlemaine Perkins	Aug. 1960	I	.891 (5.13)	.414
Brickworks Ltd.	Sept. 1961	S	.645 (2.44)	.120
B.H.P.	Sept. 1960	S	.685 (3.83)	.224
Fairymead Sugar	Aug. 1960	I	.808 (2.24)	.111
Comeng	Nov. 1960	I	.859 (2.81)	.182
Broons	Apr. 1969	I	.424 (1.54)	.045
Adelaide Cement	Aug. 1961	S	.650 (2.96)	.124
	Jan. 1969	I		
Advertiser News	Oct. 1963	I	1.081 (3.41)	.172
Aust. United Investment	July 1967	I	.274 (1.19)	.042
Bennett & Fisher	Feb. 1967	S	.355 (2.09)	.080
Wynyard Holdings	Aug. 1963	S	.481 (1.20)	.063
Trustees Executors	Aug. 1963	I	.122 (.94)	.057
Howard Smith	Jan. 1960	I	.731 (3.28)	.197
Qld. Cement & Lime	June 1967	I	.452 (2.70)	.130
Provincial Traders	May 1969	S	1.087 (4.95)	.306
Perth Arcade	Sept. 1967	I	.157 (1.07)	.021
Myer	Oct. 1969	I	1.182 (6.24)	.481
Mt. Isa Mines	Apr. 1960	S	.724 (3.31)	.180
	July 1963	S		
McPhersons	May 1961	S	.863 (5.75)	.393
Silverton	Oct. 1964	S	.798 (2.29)	.117
Hardie Holdings	July 1960	I	.499 (1.91)	.071
John Martin	Oct. 1969	S	.905 (3.18)	.157
Industrial Engineering	Oct. 1967	D	.287 (1.25)	.045
Mauri Bros.	Oct. 1960	I	1.050 (4.44)	.314
Malleys	Oct. 1964	I	.278 (.80)	.017
Aust. Paper Manuf.	Jan. 1962	I	1.148 (7.05)	.474
A.P.A. Holdings	Oct. 1968	D	.574 (2.81)	.222
North B.H.P.	Jan. 1960	D	1.008 (2.68)	.178

\* I = INCREASE

S = STEADY

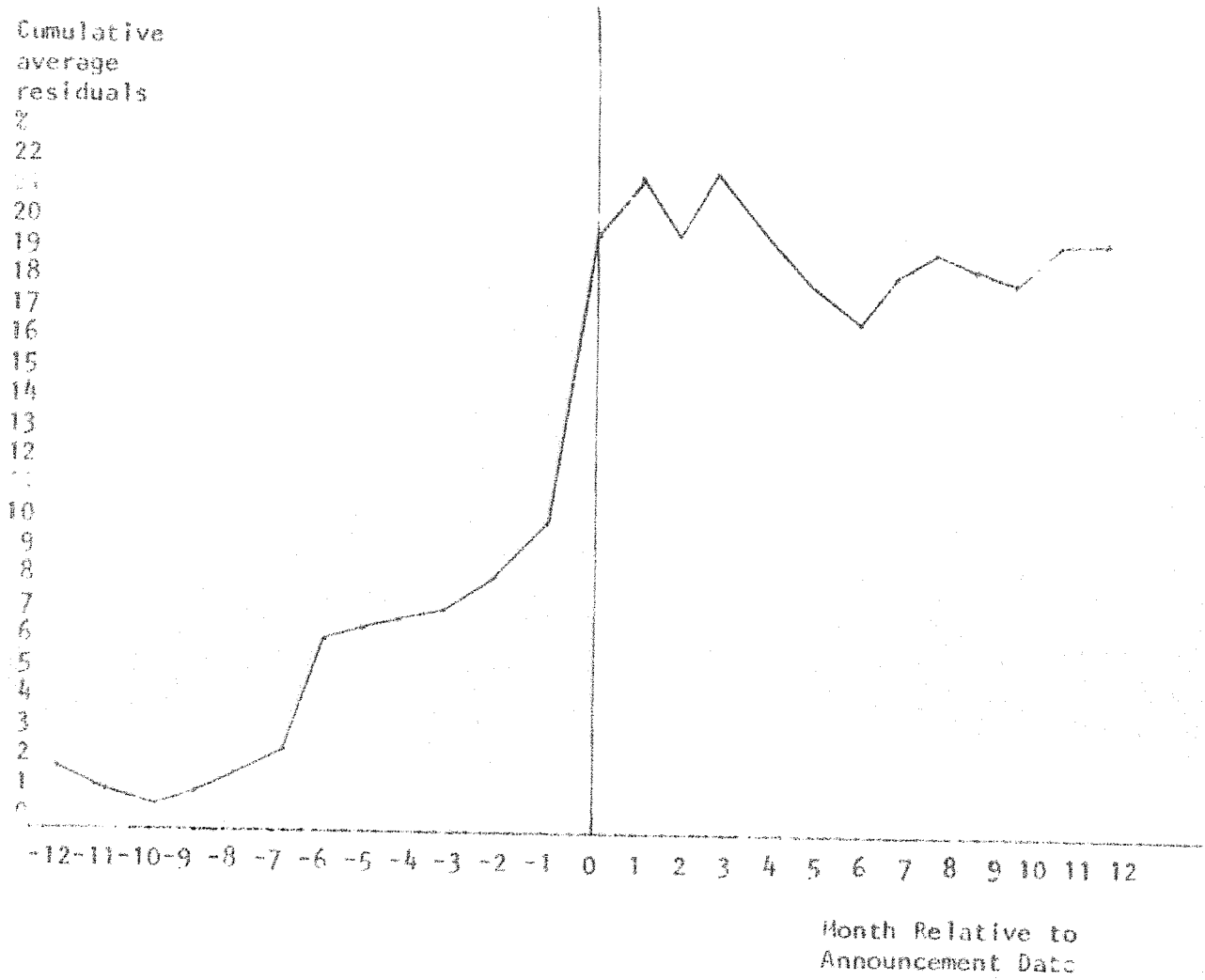
D = DECREASE

\*\* 't' statistic of  $\beta$  in parenthesis

Table 2

Month Relative to Announcement Date	Average Residuals (%)	Cumulative Average Residuals (%)
-12	1.47	1.47
-11	-.62	.85
-10	-.74	.11
-9	.44	.55
-8	.66	1.21
-7	.90	2.11
-6	3.56	5.67
-5	.33	6.00
-4	.76	6.76
-3	.23	6.99
-2	.90	7.89
-1	2.15	10.04
0	9.59	19.63
1	1.44	21.07
2	-1.57	19.50
3	1.64	21.14
4	-1.58	19.56
5	-2.24	17.32
6	-1.46	15.86
7	1.78	17.64
8	.49	18.13
9	-.57	17.56
10	-.41	17.15
11	1.48	18.63
12	.32	18.95

Figure 1



Source: Table 2



Earnings or dividends changes

It might be supposed that the results in table 2 could be attributable to factors other than asset revaluations. In particular, it may have been the case that investors responded to announcements of reported earnings rather than to the disclosure of asset revaluations.

Calculations were made of the rate of increase in earnings reported by the revaluing companies. Earnings for the accounting period ended closest to the announcement month were related to earnings reported in the preceding year, after due allowance for capital changes. These calculations revealed that the sample was comprised of companies with an average rate of increase in reported earnings, in the revaluation year, somewhat greater than the average for all companies in Australia.

The cases of revaluation announcements were divided into two groups, corresponding to the upper and lower halves of the distribution of the rates of change in earnings. The mean rates of change in earnings for the two groups were 34% and -2% while the mean beta coefficients were .828 and .589 respectively. In contrast, the mean annual rate of growth of net profit for Australian companies in the fiscal years 1959/60 to 1969/70 was 7.7%<sup>(17)</sup>. Thus the two groups roughly corresponded to better than average (or market) and worse than average performers in terms of rates of growth of earnings of all companies. However, there was also a tendency for the returns of the companies in the better than average earnings group to be more volatile, relative to the market, than the poorer earnings performers.

The stock market's reaction to an earnings report will depend upon whether the reported earnings were "better" or "worse" than expected. If we postulate that the market expects a company's earnings to grow (decline) by the same percentage in the revaluation year as in the preceding year, then the lower half earnings sample consists of fourteen "worse" than expected earnings cases and three slightly "better" than expected earnings cases. On the other hand, the upper half earnings sample is composed of fourteen cases where earnings were "better" than expected and three cases where earnings were slightly "worse" than expected. Thus, in terms of the postulated definition of expected earnings, the 34 revaluations appear to be evenly distributed between "better" and "worse" than expected earners. A significant positive residual in the revaluation announcement month for the lower half earnings sample would clearly be inconsistent with the anticipated negative residual due to the "worse" than expected earnings performance of this sample.

Average residuals were calculated for the two groups, the results being depicted in Table 3. These results must be evaluated cautiously because of the smallness of the samples. Asset revaluations accompanied by "high" (above average) increases in reported earnings were associated with a cumulative average residual of approximately 30%; approximately half of this adjustment took place prior to the announcement date. Asset revaluations accompanied by "low" (below average) increases in earnings also experienced substantial share-price movements: the average residual in the announcement month for this group was 10.47%, but the cumulative average residual drifted downwards in later months to around 5% twelve months after the revaluation date. For both groups, six-monthly interim reports may have influenced the pattern of the residuals both before and after the revaluation date. While differences in earnings performance and/or average betas could explain the difference in the pattern of residuals between the upper and lower earnings groups, it seems most unlikely that the positive average residual in the announcement month for the latter (worse than average earnings performance) group was attributable to earnings performance.

Some of the asset revaluation announcements were accompanied by announcements of changes in dividend rates; in other cases reports of changes in dividend policies were announced around the time of the revaluation. These reports of dividend changes may have had some effect on share prices. Apart from the supposition that dividend changes per se affect share prices, it could also be argued that changes in dividend payouts could be interpreted as signals of forth-

Table 3

Month Relative to Announcement Date	Lower Half Rates of Change in Earnings Sample		Upper Half Rates of Change in Earnings Sample	
	AR	CAR	AR	CAR
-12	1.67	1.67	1.27	1.27
-11	-.73	.94	-.51	.76
-10	.81	1.75	-2.29	-1.53
-9	-.68	1.07	1.56	.03
-8	1.40	2.47	-.08	-.05
-7	.00	2.47	1.80	1.75
-6	2.39	4.86	4.73	6.48
-5	-1.11	3.75	1.77	8.25
-4	.58	4.33	.94	9.19
-3	-1.29	3.04	1.75	10.94
-2	.82	3.86	.98	11.92
-1	-.16	3.70	4.46	16.38
0	10.47	14.17	8.71	25.09
1	1.91	16.08	.97	26.06
2	-1.15	14.93	-1.99	24.07
3	.06	14.99	3.22	27.29
4	-1.81	13.18	-1.35	25.94
5	-2.43	10.75	-2.05	23.89
6	-3.84	6.91	.92	24.81
7	2.32	9.23	1.24	26.05
8	-1.81	7.42	2.79	28.84
9	-3.32	4.10	2.18	31.02
10	.05	4.15	-.87	30.15
11	1.11	5.26	1.85	32.00
12	-.68	4.58	1.32	33.32

TABLE 4

Month Relative to Announcement Date	Dividend Increases (18 revals.)		Dividend Steady or Decrease (16 revals.)		Dividend Steady (10 revals.)	
	AR	CAR	AR	CAR	AR	CAR
-12	1.986	1.986	.885	.885	2.82	2.82
-11	1.917	3.903	-3.468	-2.583	.21	3.03
-10	-0.153	3.750	-1.412	-3.995	-2.61	.42
-9	.662	4.412	.184	-3.811	-.48	-.06
-8	-0.576	3.836	2.059	-1.752	4.30	4.24
-7	1.626	5.462	.091	-1.661	-.99	3.25
-6	3.117	8.579	4.068	2.407	7.15	10.70
-5	1.978	10.557	-1.531	.876	-1.15	9.25
-4	.206	10.763	1.339	2.215	.51	9.76
-3	-0.141	10.622	.643	2.858	-.01	9.75
-2	1.641	12.263	.064	2.922	.47	10.22
-1	3.050	15.313	1.143	4.065	1.93	12.15
0	8.437	23.750	10.893	14.958	9.39	21.54
1	-0.369	23.381	3.471	18.429	4.90	26.44
2	-1.402	21.979	-1.752	16.677	-.58	25.86
3	3.823	25.802	-.820	15.857	1.24	27.10
4	-0.973	24.829	-2.272	13.585	-1.43	25.67
5	-1.960	22.869	-2.561	11.024	.93	26.60
6	-2.507	20.362	-.286	10.738	2.90	29.50
7	1.901	22.263	1.650	12.388	4.08	33.58
8	1.905	24.168	-1.106	11.282	-.28	33.30
9	2.060	26.228	-3.519	7.763	-4.14	29.16
10	.107	26.335	-.935	6.828	-.34	28.82
11	-0.425	25.910	3.625	10.453	5.52	34.34
12	.297	26.207	.345	10.798	2.32	36.66

coming reports of improved earnings.

Table 1 refers to the relative level of dividend distributions subsequent to the revaluation announcements. The classification was generally based upon an examination of dividend payouts in the twelve months following the revaluation, after allowing for capital changes. In some cases a shift in dividend patterns just prior to the revaluation was the determining factor. In other cases, the issue of bonus shares with accompanying promises of overall rises in dividends was categorised as an "increase" even though the shares did not rank for dividends for some time so that strictly speaking, changes in distribution levels were not discernable within the 12 months following the revaluation. Using this basis of classification, there were 18 cases where the revaluations were associated with higher dividends, 11 cases of steady dividend payouts, and 5 declines.

A disaggregation of the residuals by dividend performance is shown in Table 4. Again these results must be evaluated cautiously because of the smallness of the samples. Asset revaluations accompanied by increased dividends were associated with a CAR in excess of 25%; about two-thirds of this adjustment took place prior to the announcement date. Revaluations in the "steady" and decreasing dividend" classes were initially grouped because of the smallness of the sample. The CAR for this group was roughly 10%, equivalent to the average residual in the announcement month. Finally, residuals were averaged for 10 cases in which revaluations were accompanied by "steady" dividends. (This

sample excluded Wynyard Holdings which at the time of revaluation had yet to pay a maiden dividend). The CAR after the revaluation amounted to between 25% and 30% - approximately half of this adjustment occurred before the revaluation date.

As noted above the rate of increase of reported (operating) earnings of a substantial number of the revaluing companies was considerably less than the average for all companies in Australia during the period under review. For example, the mean rate of increase of earnings for the companies included in the "lower half" sample of Table 3 was -2% compared with the mean annual rate of growth of net profit for all Australian companies between 1959/60 and 1969/70 of 7.7%. Moreover, it is evident from Table 1 and Footnote (17) that a majority of revaluations were undertaken when relatively high rates of increases in earnings were being reported.

In an attempt to produce a sample of revaluations by firms whose earnings performance was more in line with that being recorded by other firms whose stocks were publicly traded, the data for the "lower half" earnings cases were combined with the data for the lowest 13 cases in the "upper half" of the distribution. The mean rate of increase of earnings of the companies in this sample of 30 revaluations in the announcement period was 10.0%, roughly equivalent to the rate of change of earnings for the market as a whole in the corresponding years.<sup>(18)</sup> AR and CAR for this sample are shown in Table 5.

Table 5

Month Relative to Announcement Date	Sample of 30 Cases (See text)		Sample of 23 Cases (See text)	
	AR	CAR	AR	CAR
-12	1.52	1.52	2.12	2.12
-11	.84	2.36	.27	2.39
-10	-.44	1.92	-.06	2.33
-9	-.33	1.59	-1.06	1.27
-8	1.08	2.67	1.60	2.87
-7	.02	2.69	.92	3.79
-6	3.70	6.39	2.72	6.51
-5	.69	7.08	.55	7.06
-4	.37	7.45	-.02	7.04
-3	-.65	6.80	-.24	6.80
-2	.70	7.50	.64	7.44
-1	2.40	9.90	2.02	9.46
0	9.15	19.05	8.98	18.44
1	1.72	20.77	1.70	20.14
2	-1.84	18.93	-.71	19.43
3	2.04	20.97	2.44	21.87
4	-1.90	19.07	-2.41	19.46
5	-2.11	16.96	-2.25	17.21
6	-1.87	15.09	-1.76	15.45
7	2.05	17.14	1.33	16.78
8	-.11	17.03	-.73	16.05
9	-1.00	16.03	-.59	15.46
10	-.46	15.57	-2.01	13.45
11	1.74	17.31	3.09	16.54
12	-.03	17.28	.06	16.60



The average rate of increase of earnings of this group of 30 revaluation cases was very much influenced by a large decline in the earnings reported by Wynyard Holdings Ltd. Hence, another sample was devised consisting of all companies in the "Lower half" of the distribution, except Wynyard Holdings Ltd., plus the lowest 7 cases in the "upper half" of the distribution. The 23 cases in this sample also reported increases in earnings averaging 10.0%. Residuals for this sample are reported in Table 5.<sup>(19)</sup>

The adjustments underlying Tables 3, 4 and 5 are admittedly somewhat crude. Furthermore, there were several revaluations where the asset revaluation announcement month did not correspond with the earnings or dividend announcement month. If the stock market is efficient,<sup>(20)</sup> then, in these cases, an earnings or dividend effect would not be expected in the revaluation announcement month. Despite these obvious shortcomings of the analysis, it seems improbable that the upward movements in stock prices in the revaluation announcement month evident in the residuals of the sub-samples of (i) the "lower half" earnings companies where the average rate of growth of earnings was considerably less than for all companies in Australia (Table 3), (ii) dividend steady or decline cases (Table 4), and (iii) samples where the rate of growth of earnings was roughly equivalent to the market as a whole (Table 5), were attributable to the release of earnings or dividend information. Thus the evidence is consistent with the related hypotheses: (i) that asset revaluation announcements influence share prices; and (ii) that such announcements convey information which has not previously been

incorporated into stock prices as a result of other information sources.

Limitations of "market model" analysis

It might be claimed that the above results arise from weaknesses in the "market model" or in its application,<sup>(21)</sup> and as such do not in fact reflect a sustained response to announcements of asset revaluations.

Figure 2 shows the timing of the revaluations relative to market movements - depicted for this purpose by the Sydney Stock Exchange All Ordinaries Index. Sixteen of the 34 revaluations occurred around the market peaks of 1960 and 1969, while the remainder were fairly equally distributed over the intervening years. In view of this spread, and because relatively few firms make asset revaluations at any one time, it seems unlikely that objection could be made to the results on the grounds of either distortion of the market index or of systematic "errors" in anticipation of the market index.

Another assumption implicit in the application of the market model is that the 'riskless' rate of return (that is,  $\alpha_1$  in equation (1)) remains constant over time. In order to minimise any bias in this respect the observations used to estimate equation (1) were limited to a five year period, and whenever possible, centred on the revaluation date. In this latter respect, the primary exceptions were the regressions for the 1960 and 1969 revaluations which used post- and pre-revaluation data respectively because of data limitations.

Finally, as emphasised earlier, in the light of a priori beliefs about likely stock price adjustments in obtaining regression estimates of

Figure 2

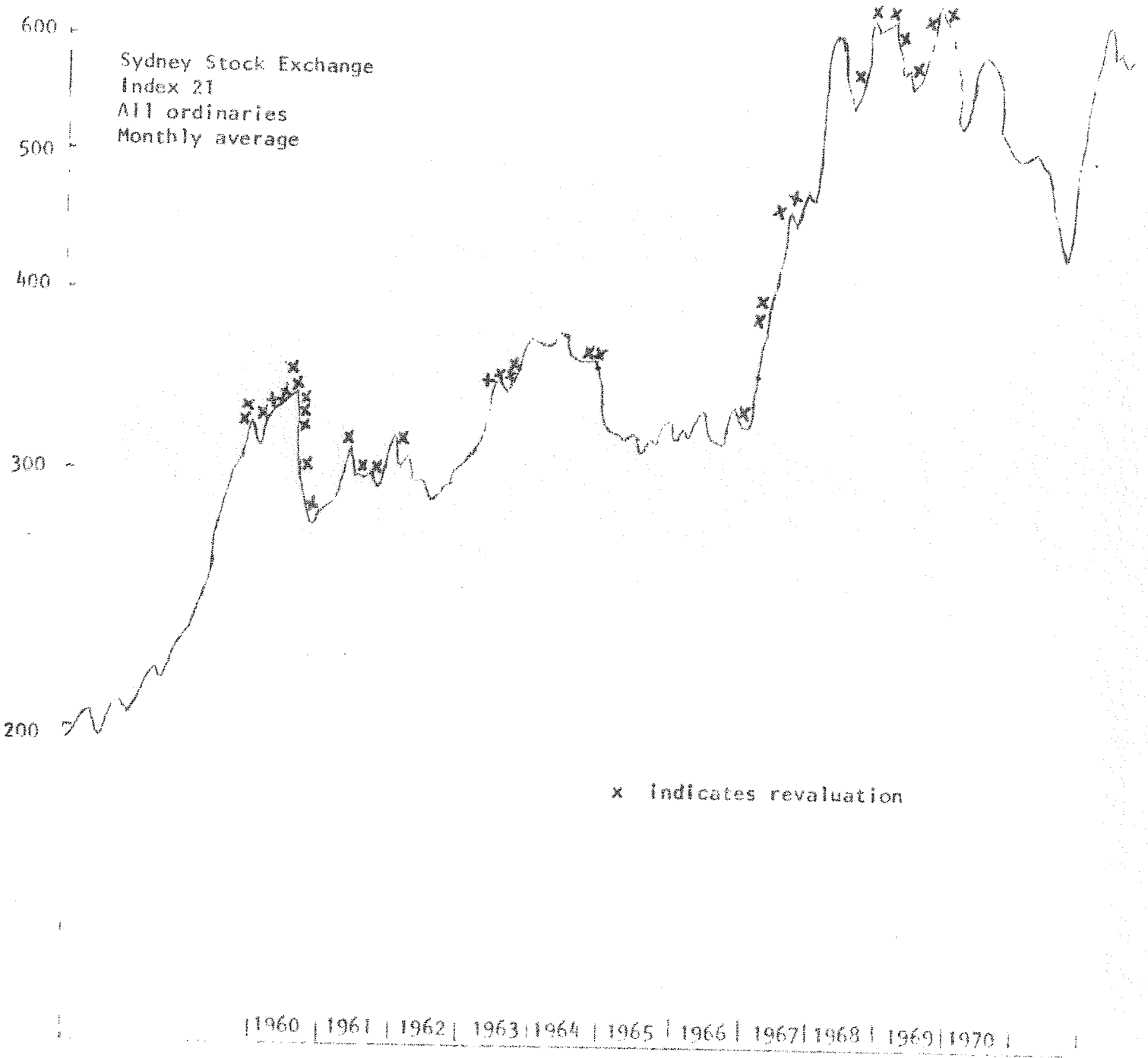


Table 6

Company	$\hat{\beta}_i^a$	$\hat{\gamma}_i$	R <sup>2</sup>
Dunlop Rubber	1.595 (5.72)	- .846 (2.23)	.433
Brickworks Ltd.	.224 (.63)	.456 (1.08)	.135
Advertiser News	1.299 (2.82)	- .417 (.65)	.179
Australian United Investments	.174 (.43)	.148 (.30)	.044
Bennett & Fisher	.063 (.18)	.378 (.93)	.095
Wynyard Holdings	.399 (.44)	.101 (.10)	.063
Trustees Executors	.420 (2.30)	- .562 (2.25)	.136
Qld. Cement & Lime	.508 (1.65)	- .079 (.22)	.131
Perth Arcade	.006 (.02)	.236 (.77)	.032
McPhersons	.837 (4.05)	- .079 (.31)	.354
Silverton	.991 (2.02)	- .360 (.56)	.122
Hardie Holdings	.560 (1.07)	.024 (.04)	.097
Industrial Engineering	.486 (1.27)	- .310 (.65)	.052
Nauri Bros.	.542 (1.43)	.579 (1.23)	.290
Malleys	.129 (.35)	.752 (1.19)	.055
Aust. Paper Manuf.	.226 (1.31)	1.133 (4.84)	.494

NOTE: Pre-announcement volatility =  $\hat{\beta}_i^a$

Post-announcement volatility =  $(\hat{\beta}_i^a + \hat{\gamma}_i)$

't' statistics in parentheses.

Table 7

Month Relative to Announcement Date	Sample of 16 (see Table 6)			
	Unadjusted for Volatility Change		Adjusted for Volatility Change	
	AR	CAR	AR	CAR
-12	3.95	3.95	4.15	4.15
-11	-0.08	3.87	-0.11	4.04
-10	-0.48	3.39	-0.75	3.29
-9	.08	3.47	.34	3.63
-8	1.11	4.58	1.30	4.93
-7	.31	4.89	.43	5.36
-6	3.44	8.33	3.41	8.77
-5	-0.44	7.89	-0.64	8.13
-4	.16	8.05	.04	8.17
-3	-0.43	7.62	-0.52	7.65
-2	1.58	9.20	1.44	9.09
-1	2.55	11.75	2.53	11.62
0	6.28	18.03	6.25	17.87
1	2.26	20.29	2.31	20.18
2	-1.77	18.52	-1.72	18.46
3	2.79	21.31	2.91	21.37
4	1.07	22.38	1.23	22.60
5	-1.11	21.27	-0.90	21.70
6	-2.08	19.19	-2.03	19.67
7	1.35	20.54	1.29	20.96
8	1.26	21.80	1.45	22.41
9	-1.42	20.38	-1.60	20.81
10	1.89	22.27	1.86	22.67
11	.63	22.90	.62	23.29
12	-0.20	22.70	-0.47	22.82

equation (1), 12 observations were excluded on either side of the announcement date. As Ball<sup>(22)</sup> has emphasised, the number of observations excluded can influence the general pattern of residuals. However, it appears extremely unlikely that this factor alone could account for the very large average residual in the announcement month which is so obvious in Tables 2, 3, 4 and 5.

Changes in volatility in response to revaluations

It might be claimed that the results in Tables 2,3,4 and 5 could have been distorted by induced changes in the volatility of stock prices. For example, it could be argued that the upward revaluation of assets may have some bearing on the volatility of stock prices. First, the change in accounting method would directly affect the denominator used to calculate some frequently utilised indicators of financial performance: rate of return on shareholders' funds, and rate of return on assets employed. The revaluation would also cast doubt on the validity of past calculations of income - the numerator of calculations of rate of return and earnings per share. Second, given that accounting representations do not always reflect real changes in a firm's affairs, it might be supposed that investors speculate on the extent to which accounting reports reflect "real" changes, so that the announcement of asset revaluations could reduce this element of uncertainty in the market.

To investigate whether the announcement of upward asset revaluations is associated with changes in the volatility of share prices, the "market model" was modified as follows:

$$R_i = \alpha_i + \beta_i^a P_m + \gamma_i DR_m + e_i \quad (2)$$

where  $\beta$  is a dummy variable or shift parameter taking the value of zero in all months up to and including the month of the announcement of asset revaluations, and unity thereafter. In equation (2),  $(\beta_i^a + \gamma_i)$  is the



post-announcement volatility. The 't' statistic or standard error of  $\gamma_i$  indicates the significance of these estimates of shifts in the Beta coefficient within 12 months of the announcement date.

This approach does not provide the basis for attributing changes to particular causes, but merely indicates whether volatility is significantly different in the period after revaluation than before. Also, this procedure may only be used when the regression equation includes both prior- and post-announcement data to estimate  $\alpha_i$  and  $\beta_i$ ; the sample used here was accordingly limited to 16 cases and for the purpose of applying this test it was necessary to add up to 12 observations of monthly returns for some companies. The findings from the application of this technique are shown in Tables 6 and 7.

Of the 16  $\hat{\gamma}_i$  coefficients in Table 6, 7 are negative and 9 positive, suggesting that there was no systematic positive or negative change in volatility. On the other hand, 10 of the 16 coefficients indicated that the post-revaluation volatility was closer to unity than previously. However, only 3 of the  $\gamma_i$  coefficients were significantly different from zero at the 95% confidence level, so that little confidence can be placed on these findings.

Recalculation of the residuals for these 16 cases provides a check on whether the results in Tables 2, 3, 4 and 5 were distorted by the changes in volatility that did take place for individual stocks. Table 7 sets out the cumulative average residuals for these 16 revaluations, as initially calculated, and then as calculated allowing for volatility changes. It is evident that the adjustment for volatility changes has had very little effect on the pattern of cumulative average residuals. Consequently, it is extremely unlikely that our earlier results were biased in any way by instability in the volatility coefficient,  $\beta$ , over time.

Conclusion

The findings of this study must be viewed cautiously in view of the small sample involved, the nature of the market model which does not permit the identification of the factors causing the observed pattern of residuals, and the association of asset revaluations with above average rates of increase in reported earnings. Bearing in mind these reservations, the principal findings are:

- (i) After adjusting for any possible changes in volatility and standardising somewhat crudely for earnings and dividend behaviour, our results are consistent with the hypothesis that the market regards an announcement of an asset revaluation as information of significance.
- (ii) The market appears to absorb the information content of asset revaluations quickly into security prices.
- (iii) There is little evidence to support the view that the announcement of asset revaluations are associated with systematic changes in the volatility of a stock's return relative to the market.

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1. See R. Ball "Changes in Accounting Techniques and Stock Prices"

Empirical Research in Accounting: Selected Studies, 1972

Supplement of Journal of Accounting Research pp. 1-38,

T.R. Archibald "Stock Market Reaction to the Depreciation Switchback"

The Accounting Review (January 1972) pp. 22-30 E.F. Baskin

"The Communicative Effectiveness of Consistency Exceptions" The

Accounting Review (January 1973) pp. 38-51 and R.S. Kaplan and

R. Roll "Investor Evaluation of Accounting Information: Some

Empirical Evidence" Journal of Business (April 1972) pp. 225-57.

2. For some data on the incidence of revaluations in Australia 1950-70 see R.J. Chambers, Securities and Obscurities (Melbourne: Gower Press, 1973), pp. 52-3.

3. The incidence of asset revaluations among U.K. listed companies "engaged primarily in manufacturing and distribution" is reported in G. Whittington, The prediction of profitability and other studies of business behaviour, (Cambridge University Press, 1971). pp. 59-63.

4. Evidently on an interpretation of SEC Release No. 4 (1938) which states that financial statements would be presumed 'misleading or

"inaccurate" if they had been prepared in accord with accounting methods which lacked "substantial authoritative support". See G.J. Benston, "Required disclosure and the stock market; an evaluation of the Securities Exchange Act of 1934", American Economic Review, March 1973, p.133.

5. R.G. Walker (assisted by R.J. Hartman), Takeover Bids and Financial Disclosure (Melbourne: Accountancy Research Foundation, 1973).

6. Ibid, p. 42.

7. That is, using the Chi-square statistic at the 1% significance level.

8. For example, M.S.V. Companies Act, 1961, as amended, 9th Schedule.

9. As in Walker Op Cit.

10. The change was prompted by the release by the Institute of Chartered Accountants in Australia of a revised version of Statement on Accounting Practice D5 ("Depreciation, depletion and amortisation of fixed assets") in November 1970 and the subsequent release of Statement K1 ("Conformity with Institute technical statements") in May 1971 (revised February 1972).

11. Sydney Stock Exchange Investment Service, File 640A.

12. Circular to shareholders, August 30, 1960.
13. Sydney Stock Exchange Investment Service, File M71.
14. Australian Financial Review September 28, 1964.
15. The test used by Fama, Fisher, Jensen and Roll to analyse price movements in connection with stock splits. "The adjustment of stock prices to new information", International economic review, February, 1969, pp. 1-21.
16. This series was published as an appendix to a paper presented by R. Ball at the Portfolio Management Seminar sponsored by Macquarie University and the N.S.W. Branch of the Australian Society of Security Analysts, May 1973. The series was developed by P. Brown of the University of Western Australia.
17. The annual rates of growth of net profit were

1969/70	10.1	1963/4	11.4
1968/9	10.4	1962/3	14.3
1967/8	8.8	1961/2	7.0
1966/7	10.9	1960/1	-13.6
1965/6	.9	1959/60	13.9
1964/5	10.1		

Source: Reserve Bank of Australia, Statistical Bulletin Company Supplement.

The main source of information for the supplement was the Investment Service of the Research and Statistical Bureau of the Sydney Stock Exchange. Other sources included accounts published by companies and returns lodged with Registrars of Companies. It covers accounts of non-finance public companies but excludes companies primarily engaged in mining or primary industry and companies operating mainly overseas.

18. Weights were applied to the rates of growth shown in footnote (17) in accordance with the number of revaluations in the respective periods.

19. In view of the fact that the average  $\beta$  of the revaluing companies listed in Table 1 is .71, somewhat less than the weighted market average of unity, it may be argued that a sample should have been selected with an average rate of increase of earnings less than the 10.0% selected for Table 5. Residuals were in fact calculated for several samples with average rates of growth in earnings varying between -2% and 10.0%. The CAR's for these samples were bounded on the low side by the CAR results of the "lower half" earnings sample shown in Table 3 and on the high side by the CAR results of Table 5.

20. That is in the semi-strong sense as defined by E.F. Fama in "Efficient Capital Markets: A Review of Theory and Empirical Work" Journal of Finance (May 1970), pp.383-417.

21. For a rigorous discussion of the limitations of the "market model" see R. Ball "Risk, Return and Disequilibrium: An Application to Changes in

Accounting Techniques" Journal of Finance (May 1972) pp. 343-51.

21. Ibid p. 347.