

Managerial Incentives Behind Fixed Asset Revaluations: Evidence from New Zealand Firms

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Abstract

This study investigates the underlying management incentives of the upward fixed asset revaluation behaviour of New Zealand listed companies over the period 1999 to 2003.

Prior research conducted in Australia (e.g. Whittred and Chan, 1992; Brown et al., 1992) and the U.K. (e.g. Lin and Peasnell, 2000a and 2000b) provided empirical evidence that upward fixed asset revaluation decisions were used to reduce contracting costs, political costs and information asymmetry.

This study provides evidence to support the findings of earlier research with regard to the political costs only. That is, larger firms are found to be more likely to revalue their assets in order to mitigate political costs. In addition, this study finds that most revaluation activities of New Zealand companies were conducted regularly by independent valuers. It also finds that some companies choose to disclose current values of fixed assets in notes to their accounts rather than recognising them in their financial statements. It is argued that a perceived benefit of disclosing rather than recognising these current values is a more conservative and, therefore, more credible balance sheet (Cotter, 1999).

Key words: Fixed assets; Revaluation; Leverage; Political costs; Information asymmetry.

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1. Introduction

The revaluation of fixed assets has become a common practice in Australia and New Zealand¹. While New Zealand Financial Reporting Standard FRS-3² “Accounting for Property, Plant and Equipment” requires historical cost to be used for reporting non-current assets, it does allow the alternative treatment of revaluing assets to fair value³ at regular intervals. Why, then, have asset revaluations been allowed in New Zealand and elsewhere? The purpose of undertaking asset revaluation is to provide more relevant information about an organisation’s financial position to users of financial statements. In most countries, however, whose accounting rules allow revaluation of assets, the decision to revalue assets is optional upon manager’s discretion. The considerable inconsistency among the timing, frequency, and methods of revaluation practice raises the question as to whether the “relevance” is the sole reason of companies’ asset revaluation decisions (Lin and Peasnell, 2000a). Positive accounting theory suggests that managers’ choice of accounting methods may be influenced by economic incentives.

Earlier research (e.g. Strong and Meyer, 1987; Brown et al., 1992; Francis et al., 1996; Cotter et al., 1998; Holgate and Ghosh, 2000) revealed that a firm’s decision as to whether or when to revalue fixed assets could be partially explained by management incentives relating to commercial or political influences. It was found that upward revaluations were used to reduce contracting costs, political costs, and information asymmetries. This study attempts to investigate the underlying management incentives of the voluntary upward fixed asset revaluation behaviour of New Zealand listed companies. The results provide little evidence to support the hypotheses that the asset revaluation activities of New Zealand companies are motivated by contracting costs, information asymmetry or other opportunistic incentives. This study also examines the regularity and the

¹ Asset revaluations are also common practice in the United Kingdom (U.K.) and the Netherlands, and are permitted in France; they are not permitted in United States, Germany or Japan (Easton, Eddey and Harris, 1993). In Canada revaluations were permitted until 1 December 1990 (White, Sondhi and Fried, 2003).

² FRS-3 became effective on or after 31 March 2002. It replaced the Statement of Standard Accounting Practice No.28 (SSAP-28) “Accounting for Fixed Assets” which was issued in July 1991. FRS-3 requires revaluations to be carried out at least every five years. FRS-3 is now superseded by New Zealand International Accounting Standard 16 (NZ IAS-16).

valuation methods of companies' revaluation practice. It reveals that some New Zealand companies choose to disclose the current values of fixed assets in the notes to annual reports rather than to recognise them in the balance sheet. Cotter (1999) argued that a perceived benefit of disclosing rather than recognising these current values is a more conservative and, therefore, more credible balance sheet.

The next section addresses the prior literature and hypothesis development. In section 3 the research design is developed while section 4 presents the results of univariate and multivariate tests. The discussion of the results is provided section 5 and the last section contains the conclusions.

2. Prior literature and hypothesis development

Accounting standards provide companies some flexibility in choosing from alternative accounting methods when dealing with accounting issues that are complex and uncertain. Fixed asset revaluation is one of the areas that granted such discretion. The amount of revaluation can be either increments or decrements. This study investigates only the upward asset revaluation. Traditional financial reports prepared under the historical cost accounting method are criticised for its lack of relevance to users of those financial reports. An asset revaluation modifies original historical costs of assets to current market value, therefore providing more up-to-date value of a firm's assets to users (Brown et. al, 1992). Earlier research by Brown et al. (1992), Lin and Peasnell (2000a and 2000b) documented three potential benefits of upward fixed asset revaluation. These are the reduced debt contracting costs, the decreased profit and therefore lessened political attention, and the reduced information asymmetry regarding future prospects of the firm.

³ Replacement cost is commonly used in the Netherlands, and net realisable value can be used under circumstances. Fair value is the valuation base for New Zealand (FRS-3), Australia (AAS38), and International Accounting Standards (IAS16).

2.1. Contracting Factors

Fixed asset revaluation may affect a firm's power in negotiating debt contracts with debtholders. Two main contracting factors that were examined in previous studies are leverage level and declining cash flows from operations.

2.1.1 Leverage Level

It is well recognised that technical default on covenants in debt agreements is costly and negatively affects shareholder wealth. Brown et al. (1992) argued that either the technical violation of accounting-based debt covenants, or a high level of leverage on balance sheet, would result in costly debt repayment or an increase in future renegotiation costs to the firm. Beneish and Press (1995) stated three principal consequences of technical default following renegotiation process: additional covenants, increased interest rates, and reduced allowable borrowing. Whittred and Chan (1992) and Smith (1993) further argued that the existence of tight debt limit would restrict a firm's investment opportunities, as highly profitable projects might be passed over due to restriction in the firm's borrowing capacity. Therefore, a firm's management tend to choose an accounting method that helps the firm to reduce these contracting costs associated with the firm's gearing and debt covenants (Whittred and Zimmer, 1986).

Since an upward revaluation of fixed assets would increase the book value of total assets and the asset revaluation reserve, the firm's debt-to-asset or debt-to-equity ratios would be improved. Given a strong balance sheet position, lenders would be willing to loosen debt restrictions or reduce interest charges. It was, therefore, argued that firms are more likely to undertake assets revaluation when the leverage level is high in their balance sheets (Lin and Peasnell, 2000a).

A number of researchers have found a positive relationship between Australian firms' revaluation action and their financial leverage as well as debt covenants (Brown et al., 1992; Whittred and Chan, 1992). Easton et al. (1993)'s survey of Australian firms reported that the primary motive of revaluation was to present true and fair financial statements, and the second was to loosen debt

constraints and enhance financial flexibility. Lin and Peasnell (2000a and 2000b) carried out revaluation studies in the U.K. using two different samples, and the results of both studies supported their hypotheses that there was a positive relationship between the upward revaluation action and firms' gearing and debt covenants. It is thus expected that firms with high leverage may tend to use upward asset revaluation to expand asset base, reduce debt ratio, and therefore restore firms' borrowing capacity. Hence, a positive relationship is predicted between firms' leverage and the incentive to revalue their fixed assets.

H1: Firms with higher level of leverage are more likely to revalue their fixed assets.

2.1.2 Declining Cash Flows From Operations

A firm's borrowing capacity depends not only on existing leverage but also on the firm's ability to repay debt. Declining cash flows from operations may cause debtholders to be concerned with the firm's liquidity. An Australian study by Cotter and Zimmer (1995) argued that an upward revaluation would signal a higher value of the firm's collateral assets, which may help to convince debtholders about the firm's ability to repay debts through the potential to realise the firm's assets at a higher market value. Therefore, upward revaluations would restore firms' borrowing capacity. They proposed that firms with declining cash flows are more likely to revalue their assets in the current year. The results of their study generally supported this argument. However, Cotter (1999) used this variable again, but found no significant relationship between this variable and the decision to revalue. She explained that it was because of the changed institutional setting of Australia. The closer relationship between firms and their bankers has made it unnecessary to use costly revaluations to reduce debt contracting costs. It is predicted that firms declining operating cash flows is positively related to the upward asset revaluation decision.

H2: Firms experiencing declining in cash flows from operations are more likely to revalue their fixed assets.

2.2 Political Factor

It was believed that a firm's size was an important factor related to the revaluation decision. Previous studies suggested that governmental price controls have focused more heavily on large firms than on small ones because large firms are perceived to have greater freedom from regulations, and are more likely to take price leadership roles (Lin and Peasnell, 2000a). Unions may also pay more attention to large firms and demand higher salaries from these firms (Brown et al., 1992). In order to reduce adverse political influence, firms tend to avoid reporting excessively high profits (Standish and Ung, 1982). An upward asset revaluation can be an effective way to reduce reported profit through increased depreciation charges on the asset revaluation increments, and it is therefore expected to mitigate the political pressures faced by larger firms from government or unions (Lin and Peasnell, 2000a). Therefore, it is expected that there is a positive relationship between firm size and the revaluation decision.

H3: Larger firms are more likely to revalue their fixed assets.

2.3 Information Asymmetry

The presence of information asymmetry in accounting generally refers to the situation where external users of the financial reports cannot obtain full information about the firm due to the disparity between the reported information and the true economic reality of the firm (Brown et al., 1992). Factors that affect the degree of information asymmetry are expected to influence the management's decision as to whether and when to revalue the firm's assets. These factors include prior revaluation, fixed asset intensity, growth options, takeover offer and bonus issue.

2.3.1 Prior Revaluation

As revaluation is costly, a firm may not choose to revalue its assets every year. Instead, the firm might delay exercising revaluation to a later time when the revaluation is perceived to be most beneficial (Lin and Peasnell, 2000b). As the disparity between book value and current value increases with the passage of time, the impact of this disparity on the financial statements may

become greater. Hence, the decision as to whether to revalue in the current year may depend on the length of time since the firm's last revaluation. Brown et al. (1992) found that the longer the time since the last revaluation, the greater the probability that the firm will revalue in the current year. Lin and Peasnell (2000a) also found that the decision to revalue was positively correlated to previous revaluation.

H4: The longer the time since the last asset revaluation, the more likely that firms will revalue their fixed assets.

2.3.2 Fixed Asset Intensity

Since the revaluation process is costly, a large investment in assets enables the revaluation to be made with economies of scale and therefore to be more cost-effective (Brown et al., 1992; Whittred and Chan, 1992). Revaluations are more worthwhile where fixed assets constitute a greater proportion of total assets, enabling the generation of a significant increase in a firm's value, and therefore has a greater potential to enhance the asset base (Lin and Peasnell, 2000b). The studies of Brown et al. (1992) and Lin and Peasnell (2000b) predicted a positive relationship between the decision to undertake revaluations and the fixed asset intensity. Their results confirmed this relationship. However, while Lin and Peasnell (2000a) also hypothesized a positive relationship between fixed asset intensity and revaluation possibility, they did not find evidence of this relationship. No further explanation was provided in their study.

H5: Firms with higher fixed asset intensity are more likely to revalue their fixed assets.

2.3.3 Growth Options

Brown et al. (1992) argued that firms with greater growth potential are more likely to revalue their assets. This can be explained by two reasons. First, the revaluation activity will be conducted to signal the firm's sufficient financial slack to external parties. Financial slack may take the form of liquid assets and reserve borrowing capacity. Firms are concerned that some profitable investment projects might be passed up due to higher external financing costs. Second, undertaking revaluation

would help firms to restore borrowing power, lower the cost of debts, and avoid potential underinvestment. Brown et al. (1992) and Whittred and Chan (1992) found evidence to support the hypothesis that revaluers tend to have more growth opportunities than non-revaluers. Therefore, the asset revaluation decision is predicted to have a positive relationship with firms' growth potential.

H6: Firms with more growth options are more likely to revalue their fixed assets.

2.3.4 Takeover Offer

Any takeover offer received by a firm will have a negative effect on investor expectations of the firm's value, as it implicitly means that the firm's performance is problematic. In this situation, managers of the firm may be concerned about the firm's public image and would also be concerned about their own job security (Brown et al., 1992). Hence, there may be an incentive to defend against a takeover by providing favourable information to shareholders and other parties. A common defence is using an upward asset revaluation to signal that the real value of the firm's assets is higher than that envisaged by bidder companies or by the public (Casey and Eddey, 1986). Trotman (1981) also agreed that revaluations could be used as a defence to demonstrate the inadequacy of the bid. Easton et al. (1993) found some support for this motivation in a telephone survey with chief financial officers saying "keeping the balance sheet up to date helped prevent an unwelcome and underpriced bid" (p.9).

Firms that have received takeover bids during the review year are, therefore, more likely than other firms to undertake a revaluation to fend off the threat. Therefore, it is hypothesised that there is a positive relationship between the upward asset revaluation and a takeover offer the firm receives.

H7: Firms under threat of a takeover are more likely to revalue their fixed assets.

2.3.5 Bonus Issue

One way to signal good news to the share market is by way of a bonus issue. A bonus issue is an issue of shares to existing shareholders in proportion to their current shareholdings at no cost to the shareholders. It is a transfer from one equity account to another, so it does not increase or decrease the

total equity of the company. The bonus issue is usually understood as an indicator that the firm will have a higher future cash flow, and therefore it may have a positive impact on a company's share prices (Ball et al., 1977). Emanuel (1979) argued that a bonus issue may imply a dividend increase, and it also can be interpreted as a signal of future earnings growth. Brown et al. (1992) argued that when a firm declares a bonus issue, one could reasonably expect that the firm would have created a sufficient level of reserves. The revaluation of fixed asset would increase the asset revaluation reserve, and ensures that bonus shares could be issued. Therefore, it was proposed that firms are more likely to revalue their assets in the year they declare bonus issues. This argument was supported by Brown et al. (1992) and Easton et al. (1993).

H8: Firms that declare bonus issues are more likely to revalue their fixed assets.

3. Research design

3.1 Sample

The original sample consists of 170 firms listed on the New Zealand Stock Exchange from 1999 to 2003 financial year. This sample will be further refined by a number of exclusion criteria discussed as follows. Firstly, previous studies of asset revaluation generally exclude companies in certain industries such as banking, finance and investment (Brown et al., 1992; Whittred and Chan, 1992). Generally, these companies do not need many fixed tangible assets to support their major business activities. The asset and capital structures of these companies are fundamentally different from industrials, and they may be regulated by industry-specific regulations which could potentially affect their asset revaluation policy (Whittred and Chan, 1992). Secondly, companies whose annual reports are not available in the data source are excluded from the sample. Thirdly, new companies that provided only one year's annual report during the five review years are also excluded, as no comparison can be done for their revaluation behaviour in other years. The sample selection process is summarised as follows:

Original NZSE Listed Companies		170
Less: Bank, Investment, Finance	35	
Less: No Annual Report Available	16	
Less: Only One Year Report Available	<u>14</u>	<u>65</u>
Final Adjusted Sample Companies		105

Thus, 105 firms are included in the sample. Over the five financial years from 1999 to 2003, a total of 435 company-years were collected. A single company-year is treated as one case in the study.

The frequency of revaluation activities for the 105 sample companies and their group classification as non-revaluer and revaluer during 1999 to 2003 is shown below.

Frequency of revaluation	No. of sample firms	Percentage %
0	76	72.38%
1	4	3.81%
2	11	10.48%
3	2	1.90%
4	3	2.86%
5	9	8.57%
Total	105	100.00%

Group Classification

Year	Non-Revaluer	Revaluer	Total (cases)
1999	60	11	71
2000	65	13	78
2001	80	11	91
2002	87	12	99
2003	85	11	96
Total	377	58	435

Sample firms' annual reports are sourced from the web site of Datex Services Ltd. That web site's archives provide electronic version of previous five years' annual reports of currently listed New Zealand companies since the 1999 financial year. Data of takeover offers and bonus issues are collected from New Zealand Stock Exchange Weekly Diaries.

3.2 *Measurement of the variables*⁴

The dependent variable in the present study is the management's decision to revalue fixed assets upwards in any of the years under review. The word revaluation is used interchangeably with upward revaluation. Firms disclose their revaluation activities in the notes of financial reports, with the net amount of revaluation recognised in asset revaluation reserve in the statements of movement in equity. The dependent variable is represented by R_N. The variable has two possible values. In any single review year, if the firm did not revalue assets (N), the value will be 0; and for firms that had an upward revaluation (R), the value will be 1.

3.2.1 *Independent Variables*

The independent variables are divided into contracting costs, political costs and information asymmetry variables.

3.2.1a *Contracting Costs Variables*

Contracting costs variables are represented by firms' leverage level (DEBT) and declining cash flow from operations (CFFO). The leverage level is measured by the ratio of total liabilities to total tangible assets prior to the revaluation adjustment. This ratio has been found to be one of the commonly used ratios in debt contracts to limit the borrowing ability of a firm (Whittred and Zimmer, 1986; Emanuel, 1989; Law et al., 1993). Intangible assets are excluded from the calculation because they have no collateral value for the debts (Brown et al., 1992). The decline in cash flows from operations is determined by the change of cash flows from operating activities over two years divided by the total tangible assets (Cotter and Zimmer, 1995; Cotter, 1999).

3.2.1b *Political Costs Variables*

There has been controversy over the measure of firms' size. Brown et al. (1992) argued that asset revaluations were used to increase depreciation expenses and reduce profits, thus mitigating political attention. However, their study used "total assets before revaluation increment" as the

⁴ See also Appendix 1.

measure of a firm's size. The paradox was that if total assets represented the firm size, the upward revaluation would only further increase the firm size and attract more political attention. Profitability-related measures are preferred in other prior studies, such as the logarithm of sales (Lin and Peasnell, 2000a) or operating revenues (Cotter, 1999). Lemke and Page (1992) found that profitability-related measures and total assets are highly correlated. Based on these grounds, in this study, both the natural logarithm of operating revenue (SIZE_1) and the natural logarithm of total assets before revaluation adjustment (SIZE_2) will be used to proxy a firm's size.

3.2.1c Information Asymmetry Variables

Information asymmetry variables are represented by prior revaluation, fixed asset intensity, growth options, takeover offers and bonus issues. Prior revaluation (NYEARS) is the length of time that lapsed since the previous revaluation and is measured by the number of years between the current revaluation and last revaluation. It should be noticed that this variable should only be tested among firms that have revalued their fixed assets at least once during the five-year period, and it is not applicable to firms that do not have a revaluation policy for fixed assets.

The fixed asset intensity (INTENSITY) is measured by the ratio of total fixed assets to total assets. Both fixed assets and total assets values will exclude the revaluation adjustments.

Growth options (GROWTH) are proxied by the percentage change in total tangible assets over two years, with data in the review year adjusted by excluding revaluation amounts (Brown et al., 1992). Other market-related measures used in previous studies include market-to-book value of equity (Whittred and Chan, 1992) and P/E ratio (Brown et al., 1992). Due to the lack of sufficient market-related information in the data source, these measures are not used in this study.

The variable takeover offer (TAKEOVER) is measured by the number of takeover offers that a company has received in each year. The value of the variable will be 1 if the company received a takeover bid in the review year and 0 otherwise.

The bonus issue (BONUS) is measured by whether the company announced a bonus issue in the review year. The value of the variable will be 1 if there was a bonus issue and 0 otherwise. This information on takeover and bonus issue is obtained from New Zealand Stock Exchange Weekly Diaries. Table 1 presents the descriptive statistics of the independent variables.

[Insert Table 1]

The correlation matrix of coefficients is presented in Table 2.

[Insert Table 2]

3.3 *Statistical tests*

Both univariate and multivariate methods are used to test the hypotheses developed above. Univariate methods evaluate the relationships between the individual explanatory variables and the dependent variable. Because most of the variables are not normally distributed, the Mann-Whitney U test was used as it tests for differences in the explanatory variables between two different groups of non-revaluers and revaluers.

Also, a logistic regression is used for the multivariate test. Logistic regression does not rely on assumptions of normality, and it is particularly useful for situations in which the dependent variable is a dichotomous variable.

The general form of the logistic regression model is as follows:

$$Y_i = \alpha_0 + \alpha_1 DEBT + \alpha_2 CFFO + \alpha_3 SIZE_1 + \alpha_4 SIZE_2 + \alpha_5 NYEARS + \alpha_6 INTENSITY + \alpha_7 GROWTH + \alpha_8 TAKEOVER + \alpha_9 BONUS + \varepsilon$$

$i = 0, 1$ (0, if no revaluation was made; 1 if upward revaluation was made);

ε is an error term

The subscripts for firm j and for time t are omitted here for their brevity.

Y represents the effect of accounting choice: zero if the firm chooses not to revalue its fixed assets (i.e., non-revaluer) and one if the firm chooses to revalue upward its fixed assets (i.e., revaluer).

4. Results

4.1 Univariate Tests

The Mann-Whitney U test is performed on the pooled sample of all years. Brown et al. (1992) suggested that the estimation precision is improved by the increase in the pooled sample size, and since observations are pooled across a relatively short period (five years for this study), the non-stationary problem should not be serious for the pooling method. Anderson and Zimmer (1992) asserted that accounting choices are temporally independent in each year and therefore the pooling method is reliable for research on accounting choice. The Mann-Whitney U test is also carried out on an individual year to provide comparison against the pooling results⁵. For brevity, only pooled results are discussed here. The independent variable, prior year revaluation (NYEARS) was tested separately, as it only applies to those companies that have revaluation policy during the five review years. Table 3 presents the Mann-Whitney U test results of the difference in the means of the two groups of non-revaluers and revaluers.

[Insert Table 3]

The results showed that the two measures of political variable SIZE_1 and SIZE_2 (hypothesis 3) and the information asymmetry variable fixed asset INTENSITY (hypothesis 5) are statistically significant at the 0.01 level. All other variables are not found to have significant relationships with upward revaluation decisions.

4.2 Multivariate Tests

The results of the logistic regression for upward revaluation decisions are shown in Table 4. All variables, except for prior year revaluation (NYEARS), are included in the model. NYEARS is excluded because its value is unavailable for some company-years, and its missing data will cause the data of other variables in these company-years to be excluded in the regression model.

⁵ The results on year-to-year sample are also consistent with the pooled results. These results can be obtained from the authors.

[Insert Table 4]

The results of multivariate tests are consistent with those obtained in univariate tests except that the INTENSITY is not found to be significant at the 0.05 level. On the whole, the results from both the univariate and multivariate tests show that firms revalue to avoid political costs and other variables have statistically insignificant explanations for the assets revaluation decision.

However, it should be noted that the models' explanatory power is rather low as shown by the pseudo R^2 (Nagelkerke)⁶ of 4.1%.

5. Discussions

5.1 *Leverage*

The level of the debt leverage is hypothesised to have a positive relationship with companies' revaluation decisions. However, the results indicate that the debt leverage of revaluers is not significantly higher than that of non-revaluers; instead, it is slightly lower (although statistically insignificant) as shown in Table 3.

There has been arguments on whether decreasing the debt leverage would be a sufficient management incentive to trigger asset revaluations. Cotter (1999) suggested that using asset revaluation to avoid imminent default on a debt covenant would reduce the credibility of management and may increase contracting costs in the future. Henderson and Goodwin (1992) argued that lenders are well aware of asset revaluations and therefore the possibility of the revaluation has already been taken into consideration when lenders determine the debt covenants. Lin and Peasnell (2000a) pointed out that whether revaluation is an effective accounting tool in enhancing borrowing capacity was uncertain, since it is within the power of lenders to exclude revaluations from the base used to calculate debt ratios.

⁶ The values of R^2 obtained from the logistic regression are typically much smaller than that obtained from the linear regression model. They are difficult to interpret and thus should be used carefully (Norusis, 1999).

If the companies intend to use revaluation to reduce the debt to asset ratio and restore borrowing power, it is reasonable to expect a significant improvement in a company's debt-to-asset ratio after revaluation. To further analyse this issue, a frequency test is carried out in this study to examine the impact of companies revaluation adjustment on companies leverage (refer to Appendix 2). The results indicated that the revaluation increments only reduce companies' debt to asset ratios by about 6% on average. Only 15.5% revaluation adjustments have a higher than 10% effect on the firms' leverage ratios. Nearly 80% revaluation adjustments have a less than 6% effect on the leverage ratio. Therefore, the argument that revaluation is used to reduce debt leverage is not justified. The evidence above indicates that, for New Zealand companies, improving the leverage level may not be a general motivational factor for management revaluation decision.

5.2 Declining Cash Flows From Operations (CFFO)

Declining CFFO was found not to be a significant reason for upward revaluation decisions. Instead, the Mann-Whitney test found that revaluers had slightly higher CFFO (although statistically insignificant) than non-revaluers had. CFFO is only part of the company's overall cash flow. It is possible that the decline in operating cash flows can be offset by cash flows from other activities such as financing and investing activities. Therefore, lenders may look at the overall cash flows provided by the firm rather than focusing on the operating cash flows alone.

5.3 Political Variables

The results generally support that hypothesis that larger firms are more likely to revalue their assets. Both measures of firm size (i.e. operating revenue and total assets) are significantly higher for revaluers than those for non-revaluers. However, there is a further question that may be asked. Do big companies actually revalue assets for the purpose of reducing their profits? Henderson and Goodwin (1992) argued that not all big companies are willing to reduce profits, as the amount of the incremental revaluation, once having been depreciated, might not be recovered in subsequent periods. Shaw (1995) argued that divisional managers who are accountable for divisional turnover

of profit might object to a sudden drop in profit due to the increased depreciation. Some other researchers questioned the role of revaluation in making a firm politically invisible. Whittred and Chan (1992) argued that although the fixed asset revaluation reduces the reported profit to some degree, it would also increase the asset base of the firm, which could make the organisation more visible. Brown et al. (1992) raised a similar question as to whether the effect of expanding asset size would mitigate the benefits of reporting smaller profits.

Based on these arguments, it is premature to conclude that larger companies' revaluation action is motivated by the resulting lower profits and reduced political pressure.

5.4 Prior Revaluation

No evidence is found to suggest that companies tend to revalue assets when longer time lapses since their last revaluation. To further investigate the timing issue of revaluation decision, additional analysis is carried out to examine the regularity of revaluer companies' revaluation action. Table 5 shows that over 80% revaluation activities were conducted regularly either annually (67%) or at a three-year interval⁷ (16%) under companies' revaluation policies. This result indicated that most revaluation activities in New Zealand tend to follow the pattern predetermined in the revaluation policy, rather than deciding discretionally in each individual year. Therefore, although managers in New Zealand companies have certain discretion over the timing of revaluation, there is no evidence showing that they are taking excessive advantages over such discretion.

[Insert Table 5]

5.5 Fixed Asset Intensity

The results of Mann-Whitney test revealed a significantly higher fixed asset intensity of revaluers than that of non-revaluers. However, this result was not significant at the same level in the multivariate test. It remains unclear why the explanatory power of this variable is low in the logistic regression model. This could be due to the poor goodness of fit of the whole model. Lin and

⁷ Prior to 31 March 2002, Statement of Standard Accounting Practice No.28 (SSAP28): Accounting for Fixed Assets (issued in July 1991) requires revaluations to be undertaken at least every three years.

Peasnell (2000a) also failed to find the hypothesized positive relationship between fixed asset intensity and asset revaluation possibility.

5.6 *Growth Options*

It was hypothesised that companies that have more growth options tend to revalue their assets to restore borrowing capacity to finance potential investment projects. The variable of growth option was not found to be significant in this study. An issue that needs to be considered is the validity of the increase in firm's tangible assets to be used as an appropriate proxy for firm's growth potential. Brown et al. (1992) provided little explanation of the use of this measure. Collins, Blackwell and Sinkey (1994) suggested that the market value of common equity to the book value of common equity is the best proxy for the investment opportunity. Other market related measures are not chosen for this study due to the data unavailability.

To further investigate whether firms revalue their fixed assets to raise funding and support future promising investment projects, the Mann-Whitney test is used to compare the increase in total debt of both revaluers and non-revaluers (refer to Appendix 3). If revaluer companies tend to revalue assets to enhance their borrowing capacities and capture investment opportunities, they are expected to have a higher increase in total debts in the year following the revaluation⁸. The result indicated that the increase in total debts of non-revaluers and revaluers is not significantly different. This result does not support the argument that revaluer companies used revaluation to increase their financial slack for future investments.

5.7 *Takeover Offer*

As shown in both univariate and multivariate tests, there is little difference among revaluers and non-revaluers in terms of the number of takeover offers they received during the five review years.

Although it is well known that companies use certain techniques to defend against takeover offer, whether revaluation is one of these techniques remains a question. Casey and Edey (1986) argued that target companies defend themselves against a takeover bid by using a variety of defensive

⁸ Brown et al. (1992) have carried out similar test in their study to investigate whether the main purpose of the upward revaluation is to avoid breaching debt covenant or to restore borrowing capacity.

strategies. Except for the release of profit forecasts and asset revaluations, other defensive conduct such as management buyout, right issues, or increasing dividends is generally unregulated. This brings up a question as to whether New Zealand companies would tend to use an expensive and regulated defence strategy such as asset revaluation to fend against the takeover bid.

Further examination of the data reveals that only three takeover offers were received by revaluer companies during the five review years, as shown in Table 6. In the corresponding company-year, the revaluation adjustments have only increased the company total asset base by 4.16%, 0.31%, 3.98% respectively. These effects are rather small. Moreover, all of the three companies have consistent policy to revalue fixed assets either annually or once every three years. Therefore the possibility that these companies have undertaken revaluation to defend against their takeover bid can be excluded.

[Insert Table 6]

5.8 *Bonus Issues*

With the exception that the Mann-Whitney test of the financial year 2003 showing revaluers in that year issued a significantly larger number of bonus issues than non-valuers⁹, the univariate and multivariate tests provide little evidence to support the argument that revaluers tend to make more bonus issues in the review year. Irving (1999) surveyed CEOs of revaluing firms in New Zealand and found that a bonus issue was not a significant motivation in their revaluation decision. This study also found that bonus issues were very uncommon from 1999 to 2003.

5.9 *Other Findings*

As discussed so far, the results of this study provide little evidence to support the general prediction that the asset revaluation activities of New Zealand companies are motivated by contracting costs, information asymmetry or other opportunistic incentives.

⁹ This test result can be obtained from the authors.

Additional analyses are carried out to closely examine the regularity and the valuation method of New Zealand companies' revaluation practice. It is also revealed that some New Zealand companies choose to *disclose* the current values of fixed assets rather than to *recognise* these in their financial statements. These findings provide more support for New Zealand companies' attitude towards credible accounting reporting.

5.9.1 Regularity of Fixed Asset Revaluation

The revaluation behaviour of New Zealand companies generally appears to have a rather regular pattern. As shown in Table 5, among revaluer companies, 48.28% make revaluation once every year, 31.03% revalue fixed assets once every three years. The revaluation activities conducted by these two groups of companies account for 83.7% of total revaluation activities of this research. Such high regularity and high frequency of revaluation activities provide further evidence that New Zealand companies do not choose to revalue fixed assets only in years when revaluations are expected to generate more economic benefits. Instead, they tend to provide relevant information of asset values regularly based on the specified revaluation policy.

5.9.2 Fixed Asset Revaluation Methods

In New Zealand, fixed asset revaluation can be conducted by an independent valuer or by directors of a company. Generally, a director's valuation tends to be cheaper and more convenient to obtain while independent revaluation can be more expensive. But from the investors' perspective, independent revaluation may be more objective and therefore more reliable.

[Insert Table 7]

As shown in Table 7, 90% of fixed asset revaluation was undertaken by independent valuers. Therefore, management may have very limited discretion in using asset revaluation to influence asset base, debt ratio or profit in the magnitude they expect. The preference for independent revaluation may be due to the concerns relating to legal liability as well as the public perception of the credibility of the revaluation information. Nevertheless, the willingness of New Zealand

managers to adopt independent valuations indicates their high priority on the quality of the revaluation information.

5.9.3 Disclosure of Current Value of Fixed Assets

Another interesting finding is that there are 19 companies (total 56 cases) that disclose the current values of their fixed assets in the notes to their annual accounts during the five review years (see Table 8). Instead of having a revaluation policy to recognise the changes of asset values in their revaluation reserves or profits, these companies choose to report fixed assets on historical values, and also provide current values of fixed assets as supplementary information in the notes to their financial statements. Almost 80% of the disclosed current value of fixed assets was undertaken by independent valuers. Therefore, the likelihood that these companies use revaluation to manipulate leverage ratio, asset base, or profit can be denied. A plausible reason for such disclosure of current value is to provide investors with more relevant information of the firm's asset capacities. Cotter (1999) argued that a perceived benefit of disclosing rather than recognising is a more conservative and, therefore, more credible balance sheet. This perceived benefit can be achieved because of the closer relationships between firms and their bankers.

[Insert Table 8]

This analysis provides additional evidence that New Zealand has a rather credible reporting environment, within which companies tend to weigh more on the "true and fair value" aspect of the company's financial reporting when they make accounting policy decisions.

In summary, the discussions above provide a general picture that New Zealand companies do not commonly use fixed asset revaluation to reduce contracting or other commercial costs. Overall, in most companies that choose to have a revaluation policy, the revaluation behaviour is consistent, regular, and undertaken by independent third parties. There is little evidence of account and information manipulation related to fixed asset revaluations.

6. Summary and conclusions

This study examined the fixed asset revaluation behaviour of New Zealand companies during the period 1999 to 2003. It is hypothesised that upward revaluations are used to reduce companies' contracting costs, political costs and information asymmetry.

The results did not find the predicted relationships between revaluations and variables proxying for contracting costs. Firm size was found to be significantly associated with upward revaluations, and therefore revaluations are used by large firms to reduce political costs. In terms of the variables proxying for information asymmetry, only the fixed asset intensity was found to be significant in univariate test but it was statistically insignificant in logistic regression model. All other variables of information asymmetry were found to be insignificant.

Additional analyses revealed a high degree of regularity and the preference for independent valuation method of the revaluation activities of New Zealand companies. It was also found that a group of companies choose to disclose the current values of their fixed assets in notes to the accounts rather than recognising these in the financial statements, thus indicating their intention of providing relevant asset values without manipulating accounts and financial ratios.

In conclusion, the study found limited evidence of opportunistic behaviour in New Zealand companies' revaluation practice. The findings of this study suggested that New Zealand companies tend to revalue their fixed assets using independent valuers on a regular basis. Overall, the revaluation practice of New Zealand companies indicates a preference towards credible reporting of asset values.

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Table 1**Descriptive Statistics (pooled data from 1999-2003)**

Variable	N	Mean	Std. Deviation	First Quartile	Median	Third Quartile
DEBT	435	.5077	.3934	.2993	.4736	.6357
CFFO	409	-.0034	.3031	-.0439	.0034	.0531
SIZE_1	435	10.6689	2.9272	9.4436	11.1296	12.7363
SIZE_2	435	11.3310	2.2167	9.7200	11.4600	12.8700
INTENSITY	435	.3603	.3194	.0940	.2970	.5980
GROWTH	409	.2221	1.2515	-.0900	.0100	.1550

DEBT is the leverage level that is measured by the ratio of total liabilities to total tangible assets prior to the revaluation adjustment. CFFO is the decline in cash flows from operations and is determined by the change of cash flows from operating activities over two years divided by the total tangible assets. SIZE_1 and SIZE_2 is the natural logarithm of operating revenue and total assets before revaluation adjustment respectively. INTENSITY is the ratio of total fixed assets to total assets before revaluation adjustment. GROWTH is the percentage change in total tangible assets over two years with data in the review year adjusted by excluding revaluation amounts.

Table 2**Spearman Correlation Coefficients (Pooled data)**

Variable	DEBT	CFFO	SIZE 1	SIZE 2	NYEARS	INTENSITY	TAKEOVER	BONUS	GROWTH
DEBT	1.000								
CFFO	.091	1.000							
SIZE_1	.332(**)	.124(*)	1.000						
SIZE_2	.198(**)	.090	.868(**)	1.000					
NYEARS	-.021	-.067	-.113	-.019	1.000				
INTENSITY	.178(**)	.066	.424(**)	.420(**)	.243	1.000			
TAKEOVER	.043	.001	.136(**)	.124(**)	-.084	.043	1.000		
BONUS	.096(*)	.085	.075	.028	.295(*)	.025	.014	1.000	
GROWTH	.146(**)	.005	.097(*)	.155(**)	.086	.057	-.005	.071	1.000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3**Univariate test: Mann-Whitney U Test for Upward Revaluation***Pooled Data Analysis (1999 – 2003)*

Variable	0 = Non-revaluer 1 = Revaluer	Hypothesis	Mean Rank	Test Statistics Significance (2-tailed)
DEBT	0	1 > 0	219.08	Z= -.455 (.649)
	1		211.01	
CFFO	0	1 > 0	204.36	Z= -.276 (.782)
	1		209.05	
SIZE_1	0	1 > 0	209.83	Z= -3.457 (.001)
	1		271.12	
SIZE_2	0	1 > 0	210.10	Z= -3.342 (.001)
	1		269.35	
NYEARS	0	1 > 0	56.67	Z= -.773 (.440)
	1		52.63	
INTENSITY	0	1 > 0	210.13	Z= -3.328 (.001)
	1		269.14	
TAKEOVER	0	1 > 0	219.02	Z= -.906 (.365)
	1		211.35	
BONUS	0	1 > 0	218.39	Z= -.452 (.652)
	1		215.48	
GROWTH	0	1 > 0	202.87	Z= -.913 (.361)
	1		218.40	

N = 377 for “no revaluation” made by firms

N = 58 for “upward revaluation” made by firms

Table 4**Multivariate Test: Logistic Regression - Upward Revaluation**

Variable	Expected sign	Coefficient	Standard error	Wald-statistic	Significance level (2-tailed)
Constant	?	-4.287	.859	24.914	.000
DEBT	+	-.594	.627	.898	.343
CFFO	+	-.026	.650	.002	.968
SIZE_1	+	.042	.122	.119	.730
SIZE_2	+	.207	.070	8.836	.003
INTENSITY	+	.417	.445	.877	.349
TAKEOVER	+	.685	.629	1.184	.277
BONUS	+	.295	.773	.145	.703
GROWTH	+	-.274	.316	.753	.385
Non-revaluer N=					377 (86.67%)
Revaluer N=					58 (13.33%)
Total N=					435
Test statistics					
-2 Log-likelihood					317.15
Chi-square					9.21
Significance level					.002
% correctly classified					86.3%
Pseudo R ² (Nagelkerke)					4.1%

Table 5**Regularity of Revaluation**

Regularity of revaluation	No. of Firms*	Percentage %	No. of Revaluation**	Percentage %
Once a year	14	48.28%	62	67.40%
Once every two years	0	0	0	0
Once every three years	9	31.03%	15	16.30%
Irregular	6	20.69%	15	16.30%
Total	29	100%	92	100%

* Number of sample firms that have revalued fixed assets with specified regularity during 1999 to 2003.

** Number of revaluation activities that were conducted under the specified regularity during 1999 to 2003.

Table 6**Summary of Takeover Offers and Revaluation Adjustment on Assets**

Company	Year of Takeover Offer	Pre-Revaluation Total Asset (\$000)	Revaluation Adjustments (\$000)	Increase in Total Assets (%)
Fletcher Building Ltd	2001	1,756,000	73,000	4.16%
Metlifecare Ltd	1999	179,782	552	0.31%
TrustPower Ltd	2001	866,256	34,477	3.98%

Table 7**Valuation Method of Fixed Asset Revaluation**

Valuation Method	No. of Firms*	Percentage %	No. of Revaluation**	Percentage %
Independent Valuation	26	89.66%	83	90.22%
Director Valuation	3	10.34%	9	9.78%
Total	29	100%	92	100%

* Number of sample firms whose fixed assets revaluation policies during 1999 to 2003 require the specified valuation methods.

** Number of revaluation activities that were conducted with the specified valuation method during 1999 to 2003.

Table 8**Disclosure of Current Value of Fixed Assets**

Valuation Method	No. of Firms*	Percentage %	No. of Disclosure**	Percentage %
Independent Valuation	16	84.21%	44	78.57%
Director Valuation	3	15.79%	12	21.43%
Total	19	100%	56	100%

* Number of sample firms that have disclosed current values of fixed assets with the specified valuation method during 1999 to 2003.

** Number of cases that the disclosed current values of fixed assets was valued with the specified valuation method during 1999 to 2003.

Appendices

Appendix 1: Variables Definition

- **Dependent Variable**

<i>Dependent Variable</i>	<i>Measured as</i>	<i>Represented by</i>
Revaluation Decision	0, if no revaluation; 1, if upward revaluation;	R_N

- **Independent Variable – Upward Revaluation**

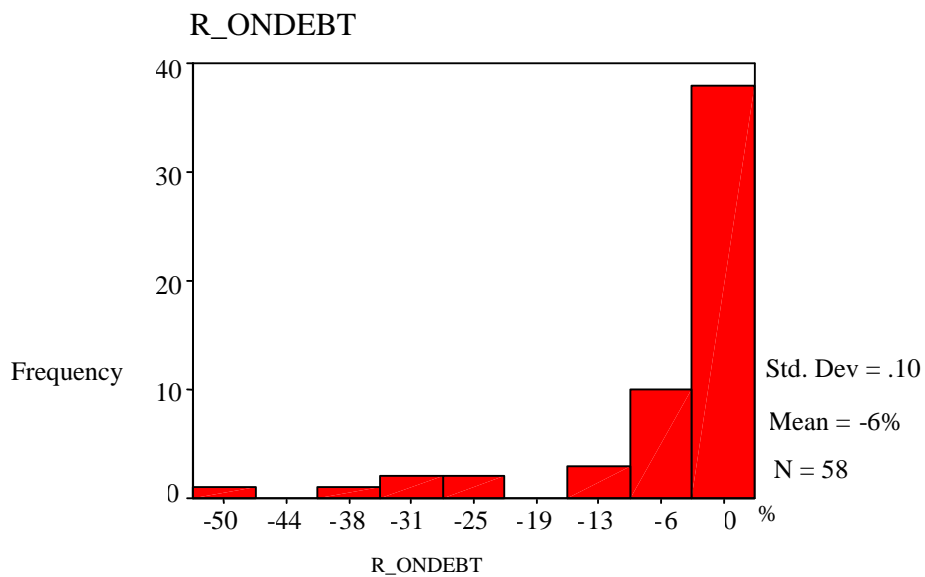
<i>Independent Variables</i>		<i>Measured as</i>	<i>Represented by</i>	<i>Expected sign of relationship</i>
Contracting Factors	Leverage	Total debts / Total tangible assets (Before the revaluation adjustment)	DEBT	+
	Declining cash flow from operations	Change in CFFO over 2 years / Total tangible assets	CFFO	+
Political Factors	Firm size	Natural logarithm of operating revenue	SIZE_1	+
		Natural logarithm of total assets before revaluation	SIZE_2	+
Information Asymmetry	Prior revaluation	Time passed between the last revaluation and the review year	NYEARS	+
	Fixed asset intensity	Book value of total fixed assets / Total assets (Both amounts before the revaluation adjustment)	INTENSITY	+
	Growth options	Change in total tangible assets over two years (Before the revaluation adjustment)	GROWTH	+
	Takeover offers	1, if a firm received of takeover offer in review year; 0, if otherwise	TAKEOVER	+
	Bonus issues	1, if a bonus issue was declared in review year; 0, if otherwise	BONUS	+

Appendix 2: Impact of Asset Revaluation on Leverage

R_ONDEBT *	Frequency	Percent %	Cumulative Percent %
-47%	1	1.72	1.72
-39%	1	1.72	3.45
-34%	1	1.72	5.17
-30%	1	1.72	6.90
-28%	1	1.72	8.62
-27%	1	1.72	10.34
-15%	1	1.72	12.07
-10%	2	3.45	15.52
-8%	1	1.72	17.24
-6%	2	3.45	20.69
-4%	7	12.07	32.76
-3%	2	3.45	36.21
-2%	10	17.24	53.45
-1%	11	19.00	72.40
0%	16	27.60	100.0
Total	58	100.0	

* R_ONDEBT represents the impact of revaluation adjustment on DEBT (i.e. a firm' total debt to total tangible asset ratio). It is calculated as:

$$\frac{(\text{DEBT after revaluation adjustment}) - (\text{DEBT before revaluation adjustment})}{\text{DEBT before revaluation adjustment}} \times 100\%$$



Appendix 3: Post-Revaluation Increase in Total Debt

- Comparison Between Revaluers and Non-Revaluers**

Ranks

	R_N*	N	Mean Rank	Sum of Ranks
POSTDEBT**	0	292	168.51	49206.00
	1	46	175.76	8085.00
	Total	338		

* R_N = 0 No revaluation made by firms

R_N = 1 Upward revaluation made by firms

** POSTDEBT represents the percentage change in total debts between the revaluation year and the following year. It is calculated as:

$$\frac{(\text{Total debts of the year following the revaluation}) - (\text{Total debts of the year of revaluation})}{\text{Total debts of the year of revaluation}} \times 100\%$$

Test Statistics^a

	POSTDEBT
Mann-Whitney U	6428.000
Wilcoxon W	49206.000
Z	-.468
Asymp. Sig. (2-tailed)	.640

a Grouping Variable: R_N