Comprehensive versus Partial Deferred Tax and Equity Market Values

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ABSTRACT: This paper investigates the value relevance of the deferred tax liability recognized using comprehensive allocation, an accounting method where the tax effect of all timing differences is recognized on the balance sheet, and partial allocation, where the tax effect of only reversing timing differences is recognized. Our research examines New Zealand firms who, prior to the introduction of international financial reporting standards, were free to choose between comprehensive and partial allocation. We test the joint hypothesis that the partial, as opposed to comprehensive, deferred tax liability is relevant for equity valuation and is sufficiently reliable to be reflected in investors’ valuation assessments. Our results indicate that the partial (comprehensive) deferred tax liability is (not) value relevant and sufficiently reliable to be reflected in share prices, and that share returns are (not) significantly related to annual changes in the partial (comprehensive) deferred tax liability. These findings indicate that investors find partial allocation useful for valuation. Investors’ preference for partial allocation has an important implication for accounting standard-setters like the International Accounting Standards Board because they should reconsider partial allocation as an alternative to the prescribed comprehensive allocation.

JEL Classification: G14; M41

Keywords: deferred tax liability; comprehensive and partial allocation; value relevance; reliability; valuation.

Data Availability: All data are available from public sources.
I. INTRODUCTION

Accounting for deferred tax has been the subject of much debate in the literature. A vexed issue is the recognition of the deferred tax liability. Studies that track the long term behavior of companies’ deferred tax liabilities indicate that a sizeable portion of these liabilities does not result in future tax payments (Davidson 1958; Davidson et al. 1977; Beechy 1983; Wise 1980 and 1986). Davidson (1958, 180) attributes this to the growing investment in fixed assets where “the firm can look forward to an ever-increasing annual tax saving continuing year after year”. Similarly, Livingstone (1967) indicates a long-term trend of fixed asset expenditures would prevent repayment of the deferred tax liability. A growing investment in fixed assets generates recurring depreciation timing differences such that the related deferred tax liability is not settled in the foreseeable future. Commentators have argued that reporting the deferred tax liability under such circumstances would be inconsistent with the notion of a liability (Chaney and Jeter 1989; Wolk et al. 2001).

In spite of these concerns, most countries require firms to recognize the tax effect of all timing differences in their deferred tax liability, that is, a prescription to adopt the comprehensive allocation procedure. However, some countries do not have this single method prescription. Prior to their adoption of international financial reporting standards (IFRS) that prescribe the comprehensive allocation procedure, accounting standard setters in the United Kingdom required partial allocation only (Gordon and Joos 2004), while New Zealand firms had a choice between comprehensive and partial allocation (Wong 2005).

In comparing the two procedures, comprehensive allocation recognizes the tax effect of all timing differences while partial allocation recognizes the tax effect of only those timing differences that will result in a future tax payment in the foreseeable future. The former
method generally reduces earnings and increases the deferred tax liability,\(^1\) while the latter method increases earnings and reduces the deferred tax liability. For the partial allocation method, the tax effect of the unrecognized timing differences and the associated unrecognized deferred tax liability are disclosed in the notes to the financial statements. This disclosure enables a reader to convert the partial deferred tax liability to the comprehensive deferred tax liability by adding the unrecognized deferred tax liability disclosed in the notes to the partial deferred tax liability recognized on the balance sheet.

Capital market studies by Beaver and Dukes (1972) and Ayers (1998) indicate the value relevance of deferred tax liabilities without distinguishing between comprehensive and partial deferred tax liabilities. This distinction was first explored in Givoly and Hayn (1992), who provide evidence that investors discount deferred tax liabilities according to the timing and likelihood of their settlement. They conclude that “For accounting rule-making bodies, the results indicate that deferred taxes, arising from comprehensive interperiod tax allocation, are being transformed by investors into a value that appears to be consistent with the notion of partial allocation” (Givoly and Hayn 1992, 406).

The U.K. Accounting Standards Board’s (1985) SSAP No. 15 *Accounting for Deferred Taxation* prescription for partial allocation provided a setting for Citron (2001) and Lynn et al. (2008) to test the value relevance of the recognized partial deferred tax liability and the unrecognized note-disclosed deferred tax liability. Citron (2001) uses data from 1989 to 1991 and finds value relevance only for the recognized partial deferred tax liability, thereby supporting partial allocation, while Lynn et al. (2008) use data from the 1993 to 1998 and find both components of the deferred tax liability, the recognized partial deferred tax liability and the unrecognized note-disclosed deferred tax liability, value relevant, thereby supporting comprehensive allocation.

\(^1\) Timing differences that give rise to a deferred tax asset would have the opposite effect: comprehensive tax allocation would increase earnings and increase the deferred tax asset.
Our study extends the above research by examining the market’s response to comprehensive versus partial deferred tax liabilities. This contrasts with Givoly and Hayn (1992) who infer the market’s preference for partial allocation from U.S. firms’ use of comprehensive allocation and Citron (2001) and Lynn et al. (2008) who examine value relevance in the U.K. partial allocation regime. Our study looks at the comprehensive versus partial choice available to New Zealand companies up to 2005, so we are able to stack comprehensive against partial allocation to see which is more closely related to equity values. Given that the partial allocation procedure recognizes only a liability that is associated with future cash outflows, we hypothesise that the market value of the firm’s equity is more closely related to the partial deferred tax liability than the comprehensive deferred tax liability. We evaluate this proposition by investigating the value relevance of the recognized deferred tax liability for firms employing the comprehensive tax allocation procedure and the value relevance of the recognized and note-disclosed deferred tax liability for firms adopting the partial tax allocation procedure.

We also conduct further tests to provide additional confidence in our results. First, we examine the relation between changes in the deferred tax liabilities and contemporaneous share returns to investigate the timeliness of the deferred tax expense. Second, given the relation between growing investments in fixed assets and the non-payment of deferred taxes (Davidson 1958; Livingstone 1967), all the comprehensive and partial firms are ranked on the basis of the growth in the depreciable asset base, deciles are then formed, and separate regressions are performed of the market value of equity on comprehensive and partial deferred tax liabilities to test the sensitivity of the relation for varying deciles of growth in the depreciable asset base. Neither Citron (2001) nor Lynn et al. (2008) conduct these tests.
Our results indicate that the recognized comprehensive deferred tax liability is not value relevant or sufficiently reliable to be reflected in share prices. In contrast, our findings suggest that the market finds the recognized partial deferred tax liability more relevant and sufficiently reliable to be reflected in equity values. We find similar results by examining the relation between annual changes in deferred tax liabilities and contemporaneous annual share returns: share returns are not significantly related to annual changes in the comprehensive deferred tax liability, but they are negatively and significantly related to annual changes in the partial deferred tax liability.

Additional tests show that the comprehensive deferred tax liability is value relevant for a subset of low asset growth firms whose comprehensive deferred tax liability is most likely to represent future tax payments. However, this is not so for high asset growth firms whose comprehensive deferred tax liability is unlikely to represent future tax payments. Conversely, our significant findings for the recognized partial deferred tax liability are being driven by a subset of high asset growth firms, whose recognized partial deferred tax liability is most likely to represent future tax payments. Overall, our results suggest that partial dominates comprehensive allocation in terms of value relevance, and the low/high asset growth results are consistent with this finding.

This paper contributes to the literature in two ways. First, it supports previous findings in the U.S. that part of the comprehensive deferred tax liability is a not a “real and imminent liability” (Givoly and Hayn 1992, 395) and that the market discounts the comprehensive deferred tax liability to reflect the “likelihood and timing of its settlement” (Givoly and Hayn 1992, 406). The evidence from the U.K. indicates that the partial deferred tax liability and the resultant unrecognized deferred tax liability convey relevant information about the future profitability of the firm (Gordon and Joos 2004). Both these studies point to the usefulness of the partial tax allocation procedure.
Second, the results of our study shed light on the usefulness of an accounting procedure for valuation even though that procedure may attract opportunistic behavior. Opportunistic contracting incentives (Watts and Zimmerman 1986) would predict the use of partial allocation to increase managers’ bonus payments and assist in avoiding debt covenant infringement (Gupta 1995; Gordon and Joos 2004), and our results indicate that, in spite of the possibility for such behavior, investors find the partial procedure relevant and reliable in their valuation of the firm’s equity. Hence, it adds to the finding in Wong (2005, 1172) - that the partial allocation method is contracting efficient for some New Zealand firms - in that partial allocation has a useful role in equity valuation.

The paper is structured as follows. The next section discusses institutional background. Section III outlines our research design. Section IV describes the data and descriptive statistics and presents our findings. Section V discusses the results of our additional tests. We summarize and conclude the paper in Section VI.

II. INSTITUTIONAL BACKGROUND

The method for recognizing the deferred tax liability has been subject to much debate in the accounting literature. The debate is whether the deferred tax liability should be recognized using comprehensive allocation, where the tax effect of all timing differences is recognized, or partial allocation, where the tax effect of timing differences that reverse in the relatively short run is recognized. The matching argument, where the income tax expense is matched against revenues, is used to justify comprehensive allocation on the grounds that this principle requires a complete matching of expenses and revenues. The argument against comprehensive allocation is that all the timing differences do not reverse and their tax effect does not result in a payment of the deferred tax liability. As a result, comprehensive allocation does not report a deferred tax liability that reflects the future cash outflows to the
tax authority. On the other hand, partial allocation would recognize only that portion or part of the comprehensive tax liability that results in future cash outflows to the tax authority.

Prior to the adoption of IFRS, which was voluntary from 2005 but mandatory from 2007, New Zealand GAAP, promulgated in SSAP-12 *Accounting for Interperiod Allocation of Income Tax*, allowed firms to choose either comprehensive or partial tax allocation (Wong 2005). This setting provides an ideal opportunity to investigate whether investors value the deferred tax liability under comprehensive or partial allocation.

**III. RESEARCH DESIGN**

Our objective is to assess whether the deferred tax liability under comprehensive or partial allocation is associated with share prices. We hypothesise that shares prices are more closely related to the deferred tax liability under partial allocation because it reflects future tax payments, whereas the deferred tax liability under comprehensive allocation is not necessarily linked to the future tax payments. Finding that the deferred tax liability under partial allocation is relevant for the equity valuation of firms adopting this procedure is supportive of the efficiency explanation for this accounting choice and that the estimated liability is sufficiently reliable to be reflected in share prices. Because our priors are that the deferred tax liability under partial allocation is relevant to investors, failure to find a significant negative relation with share prices could be due to measurement error, given that the reversing timing differences and the related future tax payments depend on management’s forecasts “in the foreseeable future” of future profitability, “growth, estimate of asset useful lives, asset impairments, and plans for plant closures” (Gordon and Joos 2004, 100).

We use share price as a summary measure of information relevant to investors and examine the ability of financial statement information to explain this measure, as indicated in (1).
\[ MVE_{it} = \alpha_0 + \alpha_1 BVE_{it} + \alpha_2 NI_{it} + \epsilon_{it} \]  

where \( MVE \) is the market value of equity, \( BVE \) is the book value of equity, and \( NI \) is the net income from continuing operations; the latter two variables are summary measures of information reflected in the financial statements. Equation (1) is consistent with the theoretical model in Ohlson (1995).

We can partition \( BVE \) as follows:

\[ BVE = BV + DTL \]  

where \( BV \) is book value of equity excluding the amount of deferred tax liability (DTL) that is recognized in the financial statements.

Substituting (2) for \( BVE \) in (1), and including a set of dummy variables to control for each of the years 2001 to 2004 in our sample, results in our principal regression equation:

\[ MVE_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 DTL_{it} + \sum_{Y=01}^{04} \alpha_{4Y} YR_{Yit} + \epsilon_{it} \]  

where the variables \( BV, NI, \) and \( DTL \) are described above and they are deflated by number of shares outstanding, and \( YR \) is a set of dummy variables to capture each of the years 2001 to 2004, respectively. We expect \( \alpha_1 \) and \( \alpha_2 \) to have significant positive values. If investors view the deferred tax liability as a “real and imminent liability” (Givoly and Hayn 1992, 395), we expect \( \alpha_3 \) to have a significant negative value. The test on \( \alpha_3 \) is a joint test of relevance and reliability, that is, we expect a significant negative relation between share prices and \( DTL \) only if \( DTL \) is relevant to investors and is measured with sufficient reliability to be reflected in their valuation assessments.

**Value Relevance of Comprehensive Deferred Tax Liability**

We use regression equation (3) as the basis for two tests. The first examines the value relevance of the comprehensive deferred tax liability. We test this using (i) the sample of firms that use comprehensive allocation, where \( DTL \) for regression equation (3) is the amount
recognized on the balance sheet, and (ii) the sample of firms that use partial allocation, where $DTL$ for regression equation (3) is the amount recognized on the balance sheet plus the unrecognized amount that is disclosed in the notes to the financial statements. We tailor regression equation (3) for this test as follows:

$$MVE_{it} = \alpha_0 + \alpha_1BV_{it} + \alpha_2NI_{it} + \alpha_3DTLC_{it} + \sum_{y=01}^{Y} \alpha_{4y}YR_{it} + \varepsilon_{it} \quad (4)$$

where $DTLC$ is the comprehensive deferred tax liability. If investors view the comprehensive deferred tax liability, $DTLC$, as a “real and imminent liability” (Givoly and Hayn 1992, 395), then $\alpha_3$ should be negative and statistically significant; otherwise, $\alpha_3$ should not be statistically significant.

**Value Relevance of Partial Deferred Tax Liability**

The second test examines the value relevance of the partial deferred tax liability and this test applies to the sample of firms that use partial allocation. We tailor regression equation (3) for this test as follows:

$$MVE_{it} = \alpha_0 + \alpha_1BV_{it} + \alpha_2NI_{it} + \alpha_3DTLP_{it} + \alpha_4DTLU_{it} + \sum_{y=01}^{Y} \alpha_{5y}YR_{it} + \varepsilon_{it} \quad (5)$$

where $DTLP$ is the partial deferred tax liability that is recognized on the balance sheet and $DTLU$ is the unrecognized deferred tax liability that is disclosed in the notes to the financial statements. We hypothesize that $\alpha_3$ is significantly negative, and if $DTLU$ is not a “real and imminent liability” (Givoly and Hayn 1992, 395), then $\alpha_4$ would not be statistically significant. Evidence of a negative and statistically significant $\alpha_3$ and an insignificant $\alpha_4$ indicates that only the partial deferred tax liability that is recognized on the balance sheet captures value relevant and reliable information. Such a finding could be consistent with the mechanistic view that investors respond to earnings as reported, regardless whether the information is value relevant. To rule out this possibility, for the partial firms in regression
(5), $\alpha_3$ and $\alpha_4$ will have to be statistically significant and insignificant, respectively, and, for the comprehensive firms in regression (4), $\alpha_3$ will have to be statistically insignificant. These joint findings would provide evidence that investors are not simply reacting to the deferred tax liabilities reported on the balance sheet, but are going behind the reported numbers to assess their underlying economics.

IV. DATA AND RESULTS

Sample Selection

The sample employed in our analyses consists of New Zealand publicly listed firms that (1) operated during the period 2000 through to 2004, (2) have annual report coverage for the sample period on the NZX Annual Reports database, (3) disclose sufficient data to construct the variables employed in our empirical model, and (4) provide a clear indication of whether they employ comprehensive or partial allocation to recognize their deferred tax liability. This selection procedure results in a final sample of 411 firm-year observations. Of these, 319 firm-year observations employ comprehensive allocation (referred to as the comprehensive group), while the remaining 92 firm-year observations use partial allocation (referred to as the partial group).

Descriptive Statistics

Panel A of Table 1 reports descriptive statistics on the variables employed in the study for the comprehensive and partial groups, as well as results from parametric (non-parametric) tests of the difference in the mean (median) values across the two groups.

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2 We restrict our study to a period before 2005 because prior to the adoption of international financial reporting standards, which is voluntary from 2005 but mandatory from 2007, New Zealand GAAP promulgated in SSAP-12 (Revised) allowed firms to choose either comprehensive or partial allocation to account for their income taxes.
A parametric test reveals that the mean share price of the comprehensive group (2.474) is significantly larger than the corresponding mean of the partial group (1.484) at the 1 percent level. Next, a non-parametric test indicates that the median book equity per share of comprehensive group (0.731) is significantly smaller, at the 1 percent level, than the median book equity per share of the partial group (0.974). While both groups operate profitably during the sample period, there is no significant difference between their profitability. Both the mean and median deferred tax liability of the comprehensive group are significantly smaller, at the 1 percent level, than the mean and median total deferred tax liability (i.e., recognized plus note-disclosed deferred tax liability) of the partial group. Finally, the mean (median) deferred tax liability that is unrecognized but disclosed in the notes for the partial group is 0.093 (0.049). Results from a paired $t$-test (not tabulated) reveal that there is a significant difference between the mean recognized deferred tax liability and note-disclosed deferred tax liability of the partial group (at the 1 percent level). These results could suggest the possibility of the partial group acting opportunistically to reduce total recognized liabilities by opting to disclose a significant portion of their total deferred tax liability in the notes to the financial statements instead of recognizing them in the balance sheet. However, these results could also reflect exactly why the partial group chose the method that it did: these companies have large and growing deferred tax liabilities and the partial method presents a more accurate estimate of their firms’ future tax payments.

At the empirical level, if investors consider the note-disclosed deferred tax liability to be value relevant, then our regression analysis for the partial group should reveal a significant relation between share prices and both the recognized and note-disclosed deferred tax liability. Alternatively, if investors have strong confidence in the firms’ decision to adopt the
partial allocation method, on the basis that the note-disclosed deferred tax liability is unlikely to materialize, then we should find a significant relation between share prices and the recognized deferred tax liability but not the note-disclosed deferred tax liability.

Panel B of Table 1 reports summary statistics on unscaled equity, net income and deferred tax. We find that the mean (median) value of the unscaled total deferred tax liability for the partial group is more than $25 ($8) million. Moreover, on average, partial firms opt to disclose more than $25 million of their deferred tax in the notes to the financial statements and recognize only $763,000 in the balance sheet. In contrast, firms in the comprehensive group have a lower mean total deferred tax liability, all of which is recognized in the balance sheet, amounting to $1.102 million.

Regression Analysis

<<< INSERT TABLE 2 ABOUT HERE >>>

Panel A of Table 2 reports the results from the estimation of equation (4) using the comprehensive group. Consistent with expectations, the coefficients on the book value of equity, $BV$, and net income, $NI$, are positive as predicted and significant at the 1 percent level. However, the coefficient on the comprehensive deferred tax liability, $DTLC$, does not take the predicted negative sign and it is indistinguishable from zero. This result indicates that the comprehensive deferred tax liability of the comprehensive firms is not related to share prices, so $DTLC$ lacks relevance and reliability. One interpretation for this finding is that some firms in the comprehensive group are incorrectly accounting for deferred tax and that partial allocation may be the more appropriate procedure. Later in section V of the paper, we undertake an additional test to investigate this possible explanation.
The results from the estimation of equation (4) using the partial group, reported in panel B of Table 2, also indicate that share prices are positively and significantly related to the book value of equity, $BV$, and net income, $NI$, at the 1 percent level, but insignificantly related to the partial companies’ total deferred tax liability, $DTLC$, comprising the partial deferred tax liability recognized on the balance sheet and the unrecognized deferred tax liability disclosed in the notes to the financial statements. It is possible that, while investors do not value the information provided by the total deferred tax liability, $DTLC$, they may react significantly to information provided by its two separate components - the partial deferred tax liability recognized on the balance sheet and the unrecognized deferred tax liability disclosed in the notes to the financial statements.\(^3\)

Table 3 reports the results from the estimation of equation (5) for the partial group, which evaluates the separate effects of the recognized and note-disclosed deferred tax liability on share prices. As predicted, the coefficients on the book value of equity, $BV$, and net income, $NI$, are positive as predicted and significant at the 1 percent level. In striking contrast to the previous results, the coefficient on the partial deferred tax liability, $DTLP$, is negative as predicted and significant at the 1 percent level. There is an insignificant relation between share prices and the note-disclosed deferred tax liability, $DTLU$. Hence, while our results reported in panel B of Table 2 indicate that investors do not consider the total deferred tax liability, $DTLC$, to be relevant, our results in Table 3 suggest that investors do value the information provided by the separate components of the deferred tax liability.

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\(^3\) We also estimate equation (4) after combining the comprehensive and partial groups and introducing a new explanatory variable, $PARTIAL$, to represent observations from the partial group, and another independent variable ($PARTIAL \times DTLC$) that captures the interaction of $PARTIAL$ with $DTLC$. The interaction variable is employed to evaluate whether there is a difference between investors’ valuation of $DTLC$ for comprehensive and partial firms. However, the results from this regression (not reported) indicate that the parameter estimate on $PARTIAL \times DTLC$ is statistically insignificant, suggesting no difference in the valuation of $DTLC$ between the two groups.
tax liability, $DTLC$, of the partial group as being value relevant and reliable, they react negatively to the partial deferred tax liability, $DTLP$, recognized for those timing differences that are likely to result in future tax payments. Further, despite the large magnitude of the unrecognized deferred tax liability disclosed in the notes to the financial statements, $DTLU$, by the partial group, investors do not consider $DTLU$ to be value relevant. This is consistent with the notion that the note-disclosed deferred tax liability represents timing differences that are unlikely to reverse. While it is management that assesses that some timing differences are unlikely to reverse, and hence, do not recognize their related deferred tax liability on the balance sheet, the results here suggest that investors also do not reflect the unrecognized deferred tax liability in their valuation assessments.

Together, the insignificance of the coefficient of $DTLC$ ($\alpha_3$) for the comprehensive firms in equation (4) and the significance of the coefficient of $DTLP$ ($\alpha_3$) and the insignificance of $DTLU$ ($\alpha_4$) for the partial firms in equation (5) rule out the mechanistic view that investors respond to reported earnings without understanding the underlying economics behind the reported numbers.

To summarize, the analyses reported above indicate that the comprehensive deferred tax liability, $DTLC$, and the unrecognized deferred tax liability, $DTLU$, are not significantly associated with share prices. In striking contrast, the partial deferred tax liability, $DTLP$, is negatively and significantly associated with share prices so we find evidence that the partial deferred tax liability is relevant to investors and it is measured with sufficient reliability to be reflected in their valuation assessments. This finding indicates that investors find partial allocation useful for valuation.

V. ADDITIONAL TESTS

Alternative Model Specification
To evaluate the robustness of our findings in Tables 2 and 3, we also examine the relation between changes in the deferred tax liabilities and contemporaneous share returns using the following specifications:

\[
\text{RETURN}_{it} = \delta_0 + \delta_1 NI_{it} + \delta_2 \Delta NI_{it} + \delta_3 \Delta DTLC_{it} + \sum_{Y=01}^{04} \delta_{4Y} YR_{Yit} + \nu_{it} \quad (6)
\]

\[
\text{RETURN}_{it} = \lambda_0 + \lambda_1 NI_{it} + \lambda_2 \Delta NI_{it} + \lambda_3 \Delta DTLP_{it} + \lambda_4 \Delta DTLU_{it} + \sum_{Y=01}^{04} \lambda_{5Y} YR_{Yit} + \epsilon_{it} \quad (7)
\]

where \( \text{RETURN}_{it} \) is firm \( i \)'s year \( t \) share return measured from three months after year end for \( t-1 \) to three months after year end of year \( t \), \( \Delta \) indicates the annual change, and \( NI \) and \( \Delta NI \) are adjusted for the \( \Delta DTLC \) (\( \Delta DTLP \)) in equation 4 (5) because the deferred tax expense under the comprehensive (partial) method is reflected in the reported \( NI \) figure.

The returns (changes) specification mitigates potential omitted variable bias (Kothari and Zimmerman 1995) and also enables us to investigate the timeliness of the deferred tax expense. Timely means that the deferred tax expense for a year reflects changes in the deferred tax liability during the year. If the deferred tax liability captures valuation relevant information, but is not timely, we would observe a significant relation in the price specification but not in the returns specification. Consistent with our earlier approach, we estimate equation (6) separately for both the comprehensive and partial groups while equation (7) is applied to the partial group only. Untabulated results from the estimation of equation (6), for both the comprehensive and partial groups, indicate that share returns are not significantly related to the annual change in \( DTLC \), the comprehensive deferred tax liability. However, the results for equation (7) reveal that the share returns of firms in the partial group are negatively and significantly related to the annual change in the recognized partial deferred tax liability at the 5 percent level and unrelated to the annual change in the note-disclosed deferred tax liability. The results from the estimation of equations (6) and (7) are consistent
with our main results and provide further support for the notion that investors only consider the recognized deferred tax liability of firms in the partial group to be value relevant.

**Impact of Firm Growth**

As discussed earlier, the insignificant relation between share prices and the comprehensive deferred tax liability, *DTLC*, for the comprehensive group may be due to garbled data. For some firms in the comprehensive group, the comprehensive deferred tax liability may be an accurate reflection of their future tax payments because all their timing differences will reverse and the deferred tax liability will crystallize, while this may not be so for other firms with timing differences that are expected to grow rather than reverse. For the former subset of firms within the comprehensive group, their choice of comprehensive allocation is tantamount to partial allocation because they recognize all the timing differences in the deferred tax liability that will result in a tax payment in the foreseeable future. Such firms are likely to experience smaller growth in their depreciable asset base in comparison to other firms in the comprehensive and partial groups.

To investigate this, we begin by comparing the mean and median growth in the depreciable assets of the comprehensive and partial groups. Untabulated descriptive statistics reveal that the mean (median) growth rate in the depreciable assets of firms in the comprehensive group over the sample period is 31.61 percent (9.86 percent) while the comparable mean (median) for firms in the partial group is 40.52 percent (8.59 percent). Parametric and non-parametric tests fail to reject the null hypothesis that there is no difference between the mean and median growth rate in the depreciable assets of the two groups. Hence, we find no support for the view that firms in the comprehensive group experience smaller growth in their asset base. This finding adds further support to the view that the use of comprehensive allocation may be inappropriate for some firms within the
comprehensive group, resulting in recognizing deferred tax liabilities with questionable relevance and reliability.

In light of the above, if comprehensive allocation is more appropriate for firms with smaller growth in their asset base, then we should find a negative relation between share prices and the comprehensive deferred tax liability, \( DTLC \), if we re-estimated equation (4) for firms in our comprehensive group with smaller growth in their asset base. To conduct this analysis, we assign all our sample firms into deciles based on their mean depreciable asset base growth rate during the sample period. We find that of the 124 firm-year observations from firms assigned to the three most bottom deciles for mean asset base growth, 108 observations are from the comprehensive group.\(^4\) Panel A of Table 4 reports the results from the estimation of equation (4) based on these 108 observations.

\[ \text{<<< INSERT TABLE 4 ABOUT HERE >>>} \]

In contrast to our results from Table 2, the results in Panel A of Table 4 indicate that there is a negative relation, which is significant at the 5 percent level, between share prices and the comprehensive deferred tax liability, \( DTLC \). Hence, for firms with low asset growth, a characteristic associated with reversing timing differences and future tax payments, we find evidence of a significant negative relation between share prices and the comprehensive deferred tax liability, \( DTLC \); the coefficients on the book value of equity, \( BV \), and net income, \( NI \), continue to be positive (as predicted) and significant at the 1 percent level. The results from the estimation of equation (4) for the remaining 211 comprehensive group observations with high asset growth, a characteristic associated with non-reversing timing

\[^4\text{Our results are unaffected if we define comprehensive group observations with low depreciable asset base growth rates as those that belong to firms that are assigned to the bottom two or bottom four deciles for mean asset base growth.}\]
differences and the non-crystallization of the deferred tax liability, are reported in Panel B of Table 4. In comparison to the results reported in Panel A, the coefficient for the comprehensive deferred tax liability, $DTLC$, is significant at the 1 percent level but it is positive. Upon closer examination, we find that this result is driven by the sub-sample of observations that are from firms assigned to the three highest deciles for mean asset base growth, so one interpretation of the positive coefficient is that investors view the deferred tax liability as part of equity (Jeter and Chaney, 1988) - the related deferred tax expense and liability should not have been recognized given the remoteness of the future tax payment. In line with our reasoning thus far, the use of comprehensive allocation is inappropriate for these firms and partial allocation would have been more suitable.

To further validate our reasoning based on the depreciable asset growth rate, we undertake a similar exercise for the partial group. More specifically, given that partial allocation is most appropriate for firms with high asset growth, it is possible that the significant negative relation between share prices and the partial deferred tax liability, $DTLP$, reported in Table 3 is driven by firms with high growth in depreciable assets. Accordingly, Panel A of Table 5 reports the replication of our analysis from equation (5) using observations from firms in the partial group with mean asset base growth that place them in the three highest deciles for asset growth ($n = 43$).

In line with our expectations, for high growth firms from the partial group, we find a negative (as predicted) relation, which is significant at the 5 percent level, between share prices and the partial deferred tax liability, $DTLP$. The coefficient on the note-disclosed

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5 Our results remain the same if we define partial group observations with high depreciable asset base growth rates as those that belong to firms that are assigned to the top two or top four deciles for mean asset base growth.
deferred tax liability, $DLTU$, remains insignificant. For this regression, the coefficients on the book value of equity, $BV$, is, surprisingly, insignificant, while the coefficient on net income, $NI$, continues to be positive (as predicted) and significant at the 1 percent level. The results using the remaining firms from the partial group, reported in Panel B of Table 5, indicate that both $DTLP$ and $DLU$ are insignificantly related to share prices, while the coefficients on the book value of equity, $BV$, and net income, $NI$, are positive and significant at the 5 and 1 percent levels, respectively.

Overall, our findings from Tables 4 and 5 indicate that investors price deferred tax liabilities that are likely to result in future tax payments. Specifically, we find:

- For comprehensive firms with low asset growth, a characteristic associated with reversing timing differences and future tax payments, the comprehensive deferred tax liability, $DTLC$, is value relevant and sufficiently reliable to be reflected in share prices. However, for comprehensive firms with high asset growth, a characteristic associated with non-reversing timing differences and the non-crystallization of the deferred tax liability, the comprehensive deferred tax liability, $DTLC$, is not value relevant nor is it sufficiently reliable to be reflected in share prices.

- For partial firms with high asset growth, a characteristic associated with non-reversing timing differences and the non-crystallization of the deferred tax liability, the partial deferred tax liability, $DTLP$, which is an estimate of the deferred tax liability that will result in cash outflows, is value relevant and sufficiently reliable to be reflected in share prices. For partial firms with low asset growth, a characteristic associated with reversing timing differences and future tax payments, the relevance and reliability of the partial deferred tax liability, $DTLP$, loses significance and it is statistically significant at the 10 percent level.
VI. CONCLUSION

This paper investigates whether the comprehensive or partial deferred tax liability most closely reflects the information that investors assess when they value the firm’s equity. Our tests are based on New Zealand firms that, prior to the introduction of IFRS, were free to choose between comprehensive and partial allocation, and we test the joint hypothesis that the partial deferred tax liability is relevant for equity valuation and is sufficiently reliable to be reflected in investors’ valuation assessments.

We conduct a number of tests to provide additional confidence in our results. First, we provide evidence that the comprehensive deferred tax liability is not value relevant or sufficiently reliable to be reflected in share prices. Second, we provide evidence that the partial deferred tax liability is value relevant and sufficiently reliable to be reflected in share prices.

Third, we take a subset of low asset growth firms from the sample of comprehensive firms, whose comprehensive deferred tax liability is most likely to represent future tax payments, and we find evidence that the comprehensive deferred tax liability for this particular set of firms is value relevant and sufficiently reliable to be reflected in share prices. In comparison, for the comprehensive firms with high asset growth, whose comprehensive deferred tax liability is unlikely to represent future tax payments, we find that the comprehensive deferred tax liability is not value relevant or sufficiently reliable to be reflected in share prices.

Fourth, we take a subset of high asset growth firms from the sample of partial firms whose recognized partial deferred tax liability is most likely to represent future tax payments and we find evidence that the recognized partial deferred tax liability is value relevant and sufficiently reliable to be reflected in share prices. For the partial firms with low asset
growth, we find that the partial deferred tax liability is bordering on relevance and reliability with significance at the 10 percent level.

Finally, we examine the value relevance of deferred tax liabilities by investigating the association between annual changes in deferred tax liabilities and contemporaneous annual share returns. A returns specification investigates the timeliness of changes in deferred tax liabilities, whereby timely means that the change in deferred tax liabilities from one year to the next reflects changes in the value of the firm’s deferred tax liabilities during the year. We find that share returns are not significantly related to annual changes in the comprehensive deferred tax liability, but they are negatively and significantly related to annual changes in the partial deferred tax liability.

Taken together, our results are robust and consistent across various tests, thereby giving us confidence that partial deferred tax liabilities are value relevant and sufficiently reliable to be reflected in investors’ valuation assessments. The implication of this finding for accounting standard-setters is echoed in Givoly and Hayn (1992, 406): “For accounting rule-making bodies, the results indicate that deferred taxes, arising from comprehensive interperiod tax allocation, are being transformed by investors into a value that appears to be consistent with the notion of partial allocation”. Our evidence indicates that investors’ preference for partial allocation still stands. In light of these findings, accounting standard-setters like the International Accounting Standards Board may wish to reconsider partial allocation as an alternative to the prescribed comprehensive allocation.
### TABLE 1
Descriptive Statistics

#### Panel A: Variable Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comprehensive Group(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 319)</td>
</tr>
<tr>
<td></td>
<td>Std. Dev.</td>
</tr>
<tr>
<td>(MVE)</td>
<td>Mean 2.474</td>
</tr>
<tr>
<td>(BV)</td>
<td>Mean 1.339</td>
</tr>
<tr>
<td>(NI)</td>
<td>Mean 0.138</td>
</tr>
<tr>
<td>(DTLC)</td>
<td>Mean 0.003</td>
</tr>
<tr>
<td>(DTLP)</td>
<td>Mean 0.003</td>
</tr>
<tr>
<td>(DTLU)</td>
<td>Mean 0.093</td>
</tr>
</tbody>
</table>

#### Partial Group\(^a\)

|            | (n = 92)                   |
|            | Std. Dev.                   |
| \(MVE\)    | Mean 1.484  | Median 1.000  | Std. Dev. 1.365 |
| \(BV\)     | Mean 1.177  | Median 0.974  | Std. Dev. 0.717 |
| \(NI\)     | Mean 0.096  | Median 0.087  | Std. Dev. 0.105 |
| \(DTLC\)   | Mean 0.096  | Median 0.049  | Std. Dev. 0.145 |

#### Test of Differences

<table>
<thead>
<tr>
<th>Test of Differences</th>
<th>(t)-statistic</th>
<th>Wilcoxon Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVE</td>
<td>2.83***</td>
<td>1.44</td>
</tr>
<tr>
<td>BV</td>
<td>0.76</td>
<td>-2.89***</td>
</tr>
<tr>
<td>NI</td>
<td>1.32</td>
<td>-0.61</td>
</tr>
<tr>
<td>DTLC</td>
<td>-8.62***</td>
<td>-9.62***</td>
</tr>
</tbody>
</table>

#### Panel B: Unscaled Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comprehensive Group(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 319)</td>
</tr>
<tr>
<td></td>
<td>Std.</td>
</tr>
<tr>
<td>Market capitalization ($000)</td>
<td>Mean 305,154</td>
</tr>
<tr>
<td>Book value of equity ($000)</td>
<td>Mean 128,039</td>
</tr>
<tr>
<td>Net income from cont. operations ($000)</td>
<td>Mean 12,290</td>
</tr>
<tr>
<td>Total deferred tax liability ($000)</td>
<td>Mean 1,102</td>
</tr>
<tr>
<td>Recognized deferred tax liability ($000)</td>
<td>Mean 763</td>
</tr>
<tr>
<td>Disclosed deferred tax liability ($000)</td>
<td>Mean 25,660</td>
</tr>
</tbody>
</table>

#### Partial Group\(^a\)

|                                   | (n = 92)                   |
|                                   | Std.                       |
| Market capitalization ($000)      | Mean 720,530  | Median 149,853  | Std. Dev. 1,843,657 |
| Book value of equity ($000)       | Mean 524,150  | Median 144,868  | Std. Dev. 1,014,978 |
| Net income from cont. operations ($000) | Mean 36,342  | Median 11,993  | Std. Dev. 90,056 |
| Total deferred tax liability ($000) | Mean 26,423   | Median 8,215  | Std. Dev. 54,314 |
| Recognized deferred tax liability ($000) | Mean 763     | Median 0  | Std. Dev. 21,905 |
| Disclosed deferred tax liability ($000) | Mean 25,660 | Median 7,091 | Std. Dev. 53,606 |

#### Variable definitions:

- \(MVE\)\(_{it}\): the share price of firm \(i\) at the end of year \(t\);
- \(BV\)\(_{it}\): the book value of equity (after adjusting for \(DTLP_{it}\)) scaled by the number of shares outstanding of firm \(i\) at the end of year \(t\);
- \(NI\)\(_{it}\): the net income from continuing operations scaled by the number of shares outstanding of firm \(i\) at the end of year \(t\);
- \(DTLC\)\(_{it}\): the total of deferred tax liability that is recognized on the balance sheet and that is disclosed in the notes to the financial statements scaled by the number of shares outstanding of firm \(i\) at the end of year \(t\);
- \(DTLP\)\(_{it}\): the deferred tax liability recognized on the balance sheet scaled by the number of shares outstanding of firm \(i\) at the end of year \(t\);
- \(DTLU\)\(_{it}\): the deferred tax liability not recognized on the balance sheet but disclosed in the notes to the financial statements scaled by the number of shares outstanding of firm \(i\) at the end of year \(t\).

*** denotes significance at the 0.01 level

\(^a\) Comprehensive group consists of firms that employ comprehensive allocation to account for deferred tax liabilities. Partial group consists of firm-year observations that recognize deferred tax liabilities using partial allocation.
### TABLE 2
Results for the Cross-section Regression

\[ MVE_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 DTLC_{it} + \sum_{Y=01}^{04} \alpha_Y YR_{Yt} + \varepsilon_{it} \quad (4) \]

#### Panel A: Results for Comprehensive Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.837</td>
<td>12.000</td>
<td>0.000***</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>4.583</td>
<td>9.480</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLC</td>
<td>-</td>
<td>0.839</td>
<td>0.640</td>
<td>0.261</td>
</tr>
</tbody>
</table>

*Year Indicators* Included

Adjusted \( R^2 \) 0.784

No. of Obs. 319

#### Panel B: Results for Partial Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.491</td>
<td>3.100</td>
<td>0.002***</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>7.924</td>
<td>7.330</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLC</td>
<td>-</td>
<td>-0.832</td>
<td>-1.120</td>
<td>0.267</td>
</tr>
</tbody>
</table>

*Year Indicators* Included

Adjusted \( R^2 \) 0.457

No. of Obs. 92

See Table 1 for variable definitions

*** denotes significance at the 0.01 level (one-tailed test)

* Comprehensive group consists of firms that employ comprehensive allocation to account for deferred tax liabilities. Partial group consists of firm-year observations that recognize deferred tax liabilities using partial allocation.
TABLE 3
Results for the Cross-section Regression for Partial Group after separately considering Recognized and Note-Disclosed Deferred Tax Liabilities

\[ MVE_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 DTLP_{it} + \alpha_4 DTLU_{it} + \sum_{y=01}^{04} \alpha_5 y YR_{yt} + \epsilon_{it} \]  

(5)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.426</td>
<td>2.690</td>
<td>0.005***</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>8.815</td>
<td>7.780</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLP</td>
<td>-</td>
<td>-8.476</td>
<td>-2.380</td>
<td>0.010***</td>
</tr>
<tr>
<td>DTLU</td>
<td>-</td>
<td>-0.563</td>
<td>-0.760</td>
<td>0.224</td>
</tr>
</tbody>
</table>

Year Indicators Included

Adjusted R² 0.486
No. of Obs. 92

See Table 1 for variable definitions
*** denotes significance at the 0.01 level (one-tailed test)
TABLE 4
Results for the Cross-section Regression for Comprehensive Group based on Asset Growth

\[ MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 DTLC_{it} + \sum_{Y=01}^{04} \alpha_{4Y} YR_{YY} + \varepsilon_{it} \] (4)

Panel A: Results for Low Growth firms in the Comprehensive Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>1.020</td>
<td>8.190</td>
<td>0.000***</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>4.310</td>
<td>4.950</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLC</td>
<td>-</td>
<td>-7.223</td>
<td>-2.320</td>
<td>0.011**</td>
</tr>
</tbody>
</table>

Year Indicators: Included

Adjusted R²: 0.852
No. of Obs.: 108

Panel B: Results for Remaining (non-Low Growth) firms in the Comprehensive Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.787</td>
<td>8.650</td>
<td>0.000***</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>5.015</td>
<td>8.860</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLC</td>
<td>-</td>
<td>3.923</td>
<td>2.900</td>
<td>0.002***</td>
</tr>
</tbody>
</table>

Year Indicators: Included

Adjusted R²: 0.635
No. of Obs.: 211

See Table 1 for variable definitions
*** denotes significance at the 0.01 level (one-tailed test)

* Low growth firms in the comprehensive group are firms in the comprehensive group that are assigned to the three most bottom deciles for mean depreciable asset base growth during the sample period.
TABLE 5
Results for the Cross-section Regression for Partial Group based on Asset Growth

\[ MVE_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 NI_{it} + \alpha_3 DTLP_{it} + \alpha_4 DTLU_{it} + \sum_{y=01}^{04} \alpha_5 YR_{yt} + \varepsilon_{it} \]  

(5)

Panel A: Results for High Growth firms in the Partial Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.138</td>
<td>0.900</td>
<td>0.186</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>7.340</td>
<td>4.220</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLP</td>
<td>-</td>
<td>-4.715</td>
<td>-2.180</td>
<td>0.018**</td>
</tr>
<tr>
<td>DTLU</td>
<td>-</td>
<td>-0.083</td>
<td>-0.110</td>
<td>0.455</td>
</tr>
</tbody>
</table>

Year Indicators Included

Adjusted R\(^2\) 0.569

No. of Obs. 43

Panel B: Results for Remaining (non-High Growth) firms in the Partial Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient Est.</th>
<th>t-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BV</td>
<td>+</td>
<td>0.582</td>
<td>2.230</td>
<td>0.016**</td>
</tr>
<tr>
<td>NI</td>
<td>+</td>
<td>9.485</td>
<td>5.770</td>
<td>0.000***</td>
</tr>
<tr>
<td>DTLP</td>
<td>-</td>
<td>-3.995</td>
<td>-1.190</td>
<td>0.121</td>
</tr>
<tr>
<td>DTLU</td>
<td>-</td>
<td>-1.064</td>
<td>-0.960</td>
<td>0.172</td>
</tr>
</tbody>
</table>

Year Indicators Included

Adjusted R\(^2\) 0.490

No. of Obs. 49

See Table 1 for variable definitions
*** denotes significance at the 0.01 level (one-tailed test)

* High growth firms in the partial group are firms in the partial group that are assigned to the three highest deciles for mean depreciable asset base growth during the sample period.
REFERENCES


