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On the Relationship between Earnings, Cash Flows and Returns: An Australian Postscript to Lev and Zarowin (1999)

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Abstract:

In a recent US study, Lev and Zarowin (1999) documented a steady decline in the value relevance of financial statements over a twenty year period. They attribute this decline, in part, to the inadequate financial reporting of intangibles, and particularly US accounting requirements for the immediate expensing of these items. In contrast to US accounting standards, capitalization of R&D expenditure is permitted in Australia under Approved Australian Accounting Standard AASB 1011 "Accounting for Research and Development Costs." As expected, the capitalization of intangibles was found to be significantly higher in the new economy sector, with an increasing trend towards capitalization over the past five years. The results are broadly consistent with the US study. However, while not unequivocal, the results also suggest that the earnings-return relationship was steadier, and the cash flow-return relationship stronger overall in the new economy sector, indicating some tentative support for proponents of capitalization.

Key Words: *Earnings, cash flows, book value, stock returns, intangibles.*

Data Availability: *All data are available from public sources.*

I. Introduction

In a recent study by Lev and Zarowin (LZ) ('The Boundaries of Financial Reporting and How to Extend Them', *Journal of Accounting Research*, 1999), the usefulness of financial information to investors in comparison to the total information in the market place was compared over the period 1978-1996. More specifically, the authors regressed earnings, cash flow and book value measures against stock returns (measured as annual stock price growth plus dividends) and stock prices. Consistent with previous research (e.g Collins, Maydew and Weiss, 1997; Ely and Waymire, 1999; and Francis and Schipper, 1999), LZ document a significant decline in the relevance of earnings information, cash flows and book value (equity) values over the twenty year sample period. They document this decline notwithstanding the increased investor demand for quality information coupled by efforts of regulators to improve both the quality and timeliness of information over the past two decades. LZ attribute this decline primarily to business *change* factors, especially the *uncertainties* associated with change, and the apparent inadequacy of conventional financial reporting to reflect such factors on a firm's operations and economic conditions. According to LZ, this is particularly manifest in the valuation and disclosure of intangible assets. They (1999, p.353) note, for example, that some of the large corporate investments which drive change, such as R&D expenditures, are immediately expensed in the US. This results in the benefits of change being recognized in later periods, potentially causing distortions to the proper matching of costs and revenues and resulting profit determination.

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To examine the usefulness of financial information over time, LZ performed three essential tests. First, the relation between stock returns and earnings (using reported earnings before extraordinary items) and change in reported earnings to proxy for 'earnings surprises'. For the period 1978-1996, LZ note a steady decline in the adjusted R square values. Furthermore, using an autoregressive procedure, this decline was found to be statistically significant over time. Second, the relationship between stock returns and cash flows were estimated using a similar procedure to the above. Here the regression parameters were estimated on operating cash flows and the change in operating cash flow, and on accruals and the changes in accruals (defined as the difference between earnings and cash flows). LZ found that the association between stock returns and cash flows + accruals were not appreciably higher than stock prices and earnings. As to the pattern of temporal association, the results revealed a statistically significant decline in the R square values over time. While LZ claim that cash flows do not appreciably augment the usefulness of financial statements over the earning figures, the decline in usefulness of cash flow was not as pronounced as earnings. Third, following the work of Ohlson (1995), LZ also explored the association between prices, and earnings and book value. Stock price was regressed on the earnings per share and book value per share variables. LZ report a similar pattern in the results, also noting a statistically significant decline in R square values over the sample period.

A major conclusion of the LZ paper is that conventional accounting techniques are inherently flawed as they do not adequately address the problem of intangible assets which drive the information age and the new economy. To rectify some of these deficiencies LZ recommend some major changes to financial statement presentation, including (i) capitalization of intangibles which have attributable benefits (having first passed certain prespecified technological feasibility tests) (p.377), (ii) systematic restatement of financial statements to reflect 'change-drivers' and other uncertainties which can affect the quality of financial information (p.380).

Given the importance of this topic, it is useful to explore whether the LZ results hold up in other international financial reporting and regulatory jurisdictions. In contrast to US accounting requirements, Approved Australian Accounting Standard AASB 1011 "Accounting for Research and Development Costs" permits firms to capitalize research and development costs when these costs can be clearly associated with a future benefit (para .31). Given the fundamental differences in accounting requirements, it is worthwhile to highlight relevant aspects of AASB 1011. According to AASB 1011, "research and development" means "systematic investigation or experimentation" that:

- (a) involves innovation or technical risk; and
- (b) is carried on for the purpose of –
 - (i) acquiring new knowledge; or
 - (ii) developing a new product or bring about a significant improvement to an existing product." (para .06).

Research and development costs are elaborated further to include activities "undertaken with specific commercial objectives and involve the translation re-

search findings and other scientific knowledge into plans or designs for new products or for significant improvements to existing products" (para x). The specific clause that permits capitalization is stated as follows:

"Costs incurred during the financial year on a research and development project shall be deferred to future financial years to the extent that such costs, together with unamortized deferred costs in relation to that project, are expected beyond and reasonable doubt to be recoverable" (para. 31).

Such capitalized costs are required to be amortized, commencing on the commercial product of the product, over the useful life of the asset (para xiii). These fundamental differences in regulatory requirements provides a useful test bed for examining a basic proposition of LZ - whether the capitalization of intangibles broadly affects the usefulness of financial statements to investors, particularly in the new economy sector, where a higher incidence of intangibles capitalization typically occurs.

II. Study Objectives and Hypothesis

This study tests the LZ results on Australian listed firms over an eleven year period (1990-2001). The study is confined to the year 1990 because of the difficulty of generating reliable data from existing Australian financial databases prior to this period. While the time span is shorter, it overlaps the LZ study by five years, thus extending the time interval by which the results can be evaluated.¹ While the LZ study draws major conclusions concerning the relevance of capitalizing intangible assets, it is noteworthy that the authors do not attempt to calibrate their findings on subsamples, most notably between the old and new economy sectors. Given the fundamental importance of intangibles to the new economy (Francis and Schipper, 1999), this paper extends the LZ study to Australia's old and new economy sectors. This step is important in order provide a more informative indication of how the value relevance of financial statements have changed over time and to better evaluate the LZ proposition that the capitalization of intangibles can potentially enhance the usefulness of financial statements.

To enhance the comparability of the present study with LZ, their regression analysis methodology is adopted. Specifically, the following relationships are examined: (i) the earnings-return relationship (ii) cash flow-return relationship and (iii) the price-earnings-book value relationship over an eleven year period. The logic of exploring these relationships can be explained from the perspective that the usefulness of historical financial statement information to investors depends on the level of its correspondence with uncertain future cash flows and profits. Assuming investors have rational expectations, then usefulness can be defined in operational terms as the level of correlation between financial statement information and equity returns, since investors tend to make correct inferences about uncertain future cash flows and profits on average, and subsequently use these inferences in making trading decisions. If the claims of LZ are valid we would expect that the value relevance of financial statements to be relatively higher in the new economy over time - or at least that the overall rate of decline in the relevance of financial statements would be relatively lower in the new economy sector viz a viz the old economy. This assumes that

the incidence of intangibles capitalization would be significantly higher in the new economy sector, a result which is confirmed in Table 1 below.

The above discussion leads to the following hypothesis:

H1: The value relevance of financial statements will be relatively higher over time in the new economy, where significantly higher rates of R&D capitalization are observable and permitted under accounting standards

III. Research Design and Results

The sample included all firms listed on the Australian stock exchange since 1990. A complete set of financial data was obtained from Huntley's *Financial Analysis Database* (2002), a leading database product in Australia. To enhance comparability with the LZ study, the same regression models employed by LZ were adopted in the present study. Furthermore, the same definitions were employed for earnings, cash flows, stock returns and other measures. Because a refined cash flow measure is already provided by extant Australian accounting standards (AASB 1026 "Statement of Cash Flows"), only cash flow measures prior to 1992 needed to be reconstructed using the formula suggested by LZ.² It is noted that for consistency with the LZ study, none of the variables have undergone any form of data transformation (such as logarithmic). Definitions of old and new economy firms also need to be considered. The Australian Stock Exchange classifies the new economy into four specific industries: (i) telecommunications, (ii) healthcare and biotechnology, (iii) high technology, and (iv) internet companies. Old economy firms are defined for the purpose of this study as any firm not belonging to a new economy industry.

As expected, new economy firms were found to have a significantly higher proportion of intangible assets (excluding goodwill) capitalized in the balance sheet when compared to old economy firms. Table 1 below presents means and standard deviations for the ratio of intangible assets scaled to total assets for both sectors, from 1990-2001. The descriptive results indicate that new economy firms capitalize intangibles at a significantly higher rate (average of 8.81% of total assets over eleven years) than the old economy (average of 4.3% of total assets over eleven years). The mean difference is statistically significant (t value = 5.61). Furthermore, the highest concentrations of firms capitalizing intangibles were in the high technology industry (average of 16.74% over eleven years) and health and biotechnology (average of 10.12% over eleven years). Table 1 also reveals that the capitalization of intangibles has been more or less steady in the old economy over the entire sample period. However, the new economy results indicate an increasing trend in capitalization levels over the past five years.

Having established that capitalization levels for intangibles are significantly higher in the new economy, the basic regression results are now presented. Following the approach of LZ, these results are divided up between (i) the earnings-return relationship; (ii) the cash flow-return relationship and (iii) the price-earnings-book value relationship.³

Table 1: Descriptive Statistics: Intangibles Assets/Total Assets (%), 1990-2001

| Year | Telecommunications | | Health and Biotechnology | | High Technology | | Internet and Other | | New Economy | | Old Economy | |
|------|--------------------|-------|--------------------------|-------|-----------------|-------|--------------------|-------|-------------|-------|-------------|-------|
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 1990 | 0.73 | 1.22 | 13.72 | 22.08 | 41.54 | 55.28 | 24.37 | 38.34 | 15.50 | 26.53 | 4.00 | 10.73 |
| 1991 | 5.95 | 11.95 | 12.08 | 24.15 | 27.35 | 37.35 | 12.99 | 25.87 | 12.62 | 13.04 | 3.89 | 10.21 |
| 1992 | 4.18 | 8.18 | 7.81 | 11.14 | 24.16 | 22.51 | 8.62 | 12.77 | 9.05 | 19.88 | 4.28 | 10.97 |
| 1993 | 2.23 | 5.48 | 11.83 | 22.30 | 14.47 | 25.94 | 7.00 | 13.49 | 9.76 | 11.96 | 4.17 | 11.29 |
| 1994 | 1.54 | 2.42 | 8.11 | 14.60 | 9.35 | 14.15 | 2.11 | 6.04 | 5.92 | 15.52 | 3.90 | 10.50 |
| 1995 | 4.10 | 11.91 | 9.47 | 16.75 | 14.96 | 22.17 | 1.87 | 4.94 | 7.36 | 16.75 | 4.28 | 11.76 |
| 1996 | 3.32 | 7.17 | 8.75 | 15.90 | 14.93 | 20.85 | 6.61 | 20.31 | 8.06 | 13.91 | 4.07 | 11.30 |
| 1997 | 3.82 | 8.97 | 6.89 | 13.49 | 11.98 | 17.72 | 5.33 | 15.04 | 6.70 | 15.20 | 4.11 | 11.83 |
| 1998 | 3.82 | 11.29 | 7.09 | 16.91 | 10.96 | 17.00 | 6.21 | 15.07 | 6.65 | 17.47 | 4.15 | 12.13 |
| 1999 | 4.69 | 14.59 | 10.14 | 21.84 | 9.40 | 16.88 | 4.66 | 13.30 | 7.19 | 19.10 | 3.99 | 11.50 |
| 2000 | 9.41 | 20.53 | 12.02 | 22.56 | 9.83 | 18.68 | 4.56 | 10.51 | 9.05 | 22.57 | 4.02 | 11.00 |
| 2001 | 11.79 | 20.08 | 13.54 | 23.62 | 12.02 | 21.48 | 14.61 | 24.29 | 13.18 | 22.57 | 5.99 | 14.66 |

(i) Earnings-Return Relationship

The first set of results provide regression parameter estimates for the earnings-return relationship. To test this relationship the model specification of LZ is adopted as follows:

$$R_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 \Delta E_{it} + \varepsilon_{it}, t = 1990-2001 \quad (1)$$

Where:

R_{it} = firm i 's stock return for fiscal year t , measured by the formula

$$\frac{P_1 - P_0 + \text{Dividends}}{P_0}$$

E_{it} = reported earnings before extraordinary items of firm i in fiscal year t .

ΔE_{it} = annual change in earnings: $\Delta E_{it} = E_{it} - E_{i,t-1}$, proxying for the surprise element in reported earnings.

Consistent with LZ, both earnings and change in earnings were scaled by firm i 's total market value of equity at the beginning of year t . The results are presented in Table 2 below, which displays the overall R square results, R square results for the old and new economies, the earnings response coefficient (ERC) and time series results.⁴ The ERC, according to LZ, provides a different perspective on the informativeness of earnings. It is defined as the sum of the slope coefficients at the level and change of earnings in equation (1). This measure reflects the average change in stock price associated with a dollar change in earnings. A lower slope is associated with lower earnings informativeness. Panel A of Table 2 reveals low adjusted R squares values for the earnings-return relationship. These results are consistent with the LZ study. However, the ERC is considerably lower than that reported by LZ, indicating lower earnings informativeness in Australia as opposed to the US. The results also indicate that the overall R squares have not fallen as sharply as that reported by LZ, which can perhaps be attributed to the shorter sample period used in the present study. When the old and new economy results are analysed, a sharper fall in R square values appear to be reflected in the old economy results, whereas the new economy reveals a steadier pattern in earnings-return relationship. It should be noted however that Panel B time regressions are not statistically significant for either the overall results, nor for the individual old or new economy variables (Panel C). The steadier pattern in the earnings-return relationship for the new economy can potentially be explained by the 'flight to quality' in the new economy following the stock market collapse in this sector in recent years. Analysts in Australia are now focusing on more realistic 'revenue models' in this sector, with a concomitant emphasis on underlying fundamental earnings and cash flow performance. However, the results could also be explained by the proposition of LZ, that different financial reporting approaches to intangibles (i.e expensing vs capitalization) can have an impact on the relevance of financial statements over time.

(ii) Cash Flow- Return Relationships

Following the approach of LZ, a regression model was also specified in order to test the cash flow return relationship:

TABLE 2

The Association between Earnings and Stock Returns Estimates from Yearly Cross-Sectional Regressions of Annual Stock Returns on the Level and Change of Reported Earnings

Panel A: Equation (1): $R_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 \Delta E_{it} + \varepsilon_{it}$

Total Sample

| Year | Number of Observations | | R^2 | ERC | | R^2 (New Econ) | R^2 (Old Econ) |
|------|------------------------|--|-------|------|--|------------------|------------------|
| 1990 | 270 | | | | | | |
| 1991 | 299 | | .18 | .129 | | .085 | .194 |
| 1992 | 347 | | .025 | .167 | | .07 | .03 |
| 1993 | 613 | | .001 | .115 | | .043 | .007 |
| 1994 | 768 | | .011 | .096 | | .06 | .003 |
| 1995 | 932 | | .001 | .071 | | .027 | .095 |
| 1996 | 998 | | .05 | .112 | | .113 | .045 |
| 1997 | 1150 | | .002 | .003 | | .062 | .002 |
| 1998 | 1231 | | .031 | .024 | | .006 | .047 |
| 1999 | 1284 | | .002 | .044 | | .066 | .001 |
| 2000 | 1335 | | .043 | .106 | | .022 | .072 |
| 2001 | 1011 | | .017 | .145 | | .05 | .012 |

Panel B: Time Regressions

$R_{it}^2 = a + b (\text{Time}_i) = c_i; t = 1990-2001$
 $ERC_i = a + b (\text{Time}_i) = c_i; t = 1990-2001$
 (t-values in parentheses)

| | a | b | R^2 |
|--------------|---------------------|---------------------------|-------|
| Total Sample | .07022378 | -.00624418 | .073 |
| R^2 | 2.0883346) | (-1.2584) | |
| ERC | .11760139 (2.66) | -.00354190 (-.5471325) | .034 |

Panel C: Time Regressions

$R_{it}^2 (\text{New}) = a + b (\text{Time}_i) = c_i; t = 1990-2001$
 $R_{it}^2 (\text{Old}) = a + b (\text{Time}_i) = c_i; t = 1990-2001$
 (t-values in parentheses)

| | a | b | R^2 |
|--------------------|------------------------|----------------------------|-------|
| Total Sample | .07432742 | -.00335069 | |
| $R^2 (\text{New})$ | (5.2245712) | (-1.5797332) | .047 |
| $R^2 (\text{Old})$ | .08171333 2.3882405 | -.00614382 (-1.2118502) | .056 |

$$R_{it} = \beta_0 + \beta_1 CF_{it} + \beta_2 \Delta CF_{it} + \beta_3 ACC_{it} + \beta_4 \Delta ACC_{it} + \varepsilon_{it}, \quad (2)$$

Where:

- R_{it} = firm i 's stock return for fiscal year t , measured by the formula $P_1 - P_0 + \text{Dividends}/P_0$
- CF_{it} and ΔCF_{it} = cash flow from operations and the yearly change in cash flow from operations, respectively.
- ACC_{it} and ΔACC_{it} = annual reported accruals and the change in annual accruals, where accruals equal the difference between reported earnings and cash flow from operations.

Consistent with LZ, all independent variables were scaled by the beginning year market value of equity. The results are presented in Table 3 below, which displays the overall R square results, R square results for the old and new Economies, the cash flow response coefficient (CFRC) and time series results. As Panel A reveals, the overall adjusted R squares values for the cash flows-return relationship (and the cash flow response coefficient) is generally very low, consistent with LZ. Further analysis reveals that the overall R square results appear to have fallen over the decade, but the fall is not statistically significant as was reported by LZ (see Panel B). It is interesting to note that the cash flow variable appears to have higher explanatory power in the new economy sector, which reveals considerably higher overall R square values. While the overall decline in the cash flow-return relationship is statistically significant, this result can be attributed to the unusually high R square result for 1990 (Panel C).

(iii) The Price, Earnings Book Value Relationship

As noted by LZ, following the work of Ohlson (1995), it has become popular in accounting research to examine the relevance of financial statements by regressing stock prices on earnings plus book value. The following regression model is specified:

$$P_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 BV_{it} + \varepsilon_{it}, \quad t = 1990-2001 \quad (3)$$

Where:

- P_{it} = share price of firm i at end of fiscal year t ,
- E_{it} = earnings per share of firm i during year t ,
- BV_{it} = book value (equity) per share of firm i at end of t ,
- ε_{it} = other value-relevant information of firm i for year t , independent of earnings and book value.

Note that strictly the Ohlson's model relates prices to the present value of excess earnings plus book value. Table 4 displays the overall R square results, and R square results for the Old and new Economy, and the time series results. Overall, and consistent with LZ, the results indicate a much stronger relationship between share price and earnings plus book value, than earnings-return and cash flow-return

TABLE 3

The Association between Cash Flows and Stock Returns Estimates from Yearly Cross-Sectional Regressions of Annual Stock Returns on Operating Cash Flows + Accruals

Panel A: Equation (2): $R_{it} = \beta_0 + \beta_1 CF_{it} + \beta_2 \Delta CF_{it} + \beta_3 ACC_{it} + \beta_4 \Delta ACC_{it} + \varepsilon_{it}$

Total Sample

| Year | Number of Observations | R^2 | CFRC | R^2 (New Econ) | R^2 (Old Econ) |
|------|------------------------|-------|------|------------------|------------------|
| 1990 | 270 | | | | |
| 1991 | 299 | .045 | .27 | .95 | .057 |
| 1992 | 347 | .041 | .02 | .36 | .061 |
| 1993 | 613 | .006 | .34 | .03 | .011 |
| 1994 | 768 | .051 | .72 | .13 | .07 |
| 1995 | 932 | .001 | .021 | .027 | .098 |
| 1996 | 998 | .044 | .20 | .109 | .04 |
| 1997 | 1150 | .010 | .13 | .041 | .012 |
| 1998 | 1231 | .008 | .60 | .111 | .011 |
| 1999 | 1284 | .005 | .09 | .055 | .02 |
| 2000 | 1335 | .003 | .11 | .008 | .037 |
| 2001 | 1011 | .009 | .09 | .034 | .009 |

Panel B: Time Regressions

$R_t^2 = a + b (\text{Time}_t) = c_t; t = 1990-2001$

$ERC_t = a + b (\text{Time}_t) = c_t; t = 1990-2001$

(t-values in parentheses)

| | a | b | R^2 |
|--------------|-------------------------|---------------------------|-------|
| Total Sample | | | |
| R^2 | .04241605 (9.34) | -.00378619 (-5.56) | .313 |
| CFRC | .3003997 (2.1657177) | -.00845776 (-.4108604) | .03 |

Panel C: Time Regressions

$R_t^2(\text{New}) = a + b (\text{Time}_t) = c_t; t = 1990-2001$

$R_t^2(\text{Old}) = a + b (\text{Time}_t) = c_t; t = 1990-2001$

(t-values in parentheses)

| | a | b | R^2 |
|-------------------|--------------------------|----------------------------|-------|
| Total Sample | | | |
| $R^2(\text{New})$ | .55770350 (2.9951694) | -.06115361 (-2.2638789) | .238 |
| $R^2(\text{Old})$ | .06666323 (3.4477604) | -.00466922 (-1.6428717) | .065 |

models. Furthermore, the results indicate that the price relationship has been more or less steady over the last decade – which is confirmed by the time regressions (Panel B), which are not statistically significant. However, the relationship has proven more steady in the old economy as opposed to the new economy. However, the new economy reveals an overall improvement in the trend (positive but non-significant t statistic on Panel B) on the price relationship.

TABLE 4

The Association between Stock Prices and Book Values + Earnings Estimates of Yearly Cross-Sectional Regressions of Stock Prices on Earnings + Book Values

| Panel A: Equation (3): $P_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 BV_{it} + \varepsilon_{it}$ | | | |
|--|----------------------|--------------------------|-------------------|
| Year | $R^2(\text{Total})$ | $R^2(\text{New})$ | $R^2(\text{Old})$ |
| 1990 | .72 | .29 | .75 |
| 1991 | .69 | .43 | .71 |
| 1992 | .708 | .22 | .74 |
| 1993 | .703 | .74 | .707 |
| 1994 | .74 | .72 | .748 |
| 1995 | .776 | .73 | .786 |
| 1996 | .743 | .79 | .736 |
| 1997 | .741 | .75 | .734 |
| 1998 | .748 | .78 | .740 |
| 1999 | .656 | .51 | .699 |
| 2000 | .69 | .52 | .732 |
| 2001 | .72 | .62 | .748 |
| Panel B: Time Regressions | | | |
| $R_t^2 = a + b(\text{Time}_t) = c_t; t = 1990-2001$ | | | |
| | a | b | R^2 |
| Total Sample | | | |
| R^2 | .72266276 (25.74) | -.00046897 (-.125169) | .004 |
| Panel C: Time Regressions | | | |
| $R_t^2(\text{New}) = a + b(\text{Time}_t) = c_t; t = 1990-2001$ | | | |
| $R_t^2(\text{Old}) = a + b(\text{Time}_t) = c_t; t = 1990-2001$ | | | |
| | a | b | R^2 |
| Total Sample | | | |
| $R^2(\text{New})$ | .41236364 (2.53) | .02945455 (1.209) | .056 |
| $R^2(\text{Old})$ | .73946901 (45.22) | -.00080241 (-.331979) | .13 |

IV. Conclusions

While the sample period is considerably shorter than LZ, the results are generally consistent with the LZ study, indicating a low and declining pattern in the relevance of financial statements over the past decade. However, while the overall results suggest that earnings and cash flow based variables possessed low explanatory value when related to stock returns over time, the statistical results reveal that the declines were not as sharp as those reported by LZ. Furthermore, capitalization levels for intangibles was found to be significantly higher in the new economy, and intangible assets represented a significant proportion of total assets in this sector. The trend towards capitalization has also been steadily increasing over the past five years, rendering intangible assets an ever important item in assessing the financial position and profitability of new economy firms. While the results are not unequivocal, the earnings and cash flow based measures tended to have more overall relevance in the new economy sector, which can in part be attributed, at least in recent years, to a 'flight to quality' in this sector, following widely publicized stock market crashes. The result can also be potentially explained by reference to LZ's assertion that the appropriate capitalization of intangibles can enhance the value relevance of financial statements, particularly in the new economy.

Some important limitations need to be considered. While the R square results of LZ and this study are low, it can be misleading to examine earnings and cash flow variables in isolation from other fundamental measures. As noted by Lev and Thiagarajan (1993) and Livnat and Zarowin (1990), nonearnings data (e.g inventories, R&D, capital expenditures) increased the explanatory value of stock returns by between 15-20%. Furthermore, as indicated by Francis and Schipper (1999), an increase in stock return variability may have contributed to the weakening earnings relationship, and neither LZ nor the present study specifically examine this issue.

Endnotes

1. In addition, as shown by Belkaoui and Jones (2001, 79-100), the past decade has been one of the most turbulent and significant periods for accounting regulatory reform in Australia. There have been numerous efforts by government and private sector regulators to improve the quality of financial reporting provided to investors. Some noteworthy events include the following. First, the release of the Australian conceptual framework for financial reporting in the early 1990s. Similar to the Statements of Financial Accounting Concepts (SFAC) in the US, the Statements of Accounting Concepts (SACs) in Australia provide basic guidelines on the definition of financial reporting, the objectives of financial statements, the qualitative characteristics of financial information, and the definition and recognition of elements of financial statements.. Second, the release of significant new accounting standards, including the cash flow standard (AASB 1026) "Statement of Cash Flows" (June, 1992) which mandated use of the direct method of reporting cash flows by all Australian reporting entities. Third, major changes to corporate regulation, beginning with the introduction of the revamped Corporations Law (1991); the introduction of the *Corporate Law Economic Reform Program* (1997) and culminating in the *Corporate Law Economic Reform Program Act* (1999). The 1999 Act resulted in sweeping changes to institutional arrangements for standard setting in Australia, including: the establishment of a reconstituted and revitalized *Australian Accounting Standards Board* (AASB); the merging of the public sector and private sector accounting standards board into a single board; a new emphasis on international harmonization; improved representation for constituent interests involved in standard setting; and the introduction of a *Financial Reporting Council* (FRC) to guide to develop of quality standards and overview Australia's harmonization drive.

2. This formula is: Cash flow from operations = Net income before Extraordinary Items + Depreciation + Annual Deferred Taxes – Annual Change in Current Assets – Cash + Annual Change in Current Liabilities – Current Maturities on Long Term Debt.

3. However, distributional characteristics of the data in this study need to be considered. For consistency with the LZ study, none of the variables were transformed. While outlier observations were removed from the data analysis, tests on the data revealed significant departures from normality. For example, the Kolmogorov and Smirnov test was statistically significant on the dependant variable across all years and subsamples. When the dependant variable was transformed (using a natural logarithm) the adjusted R squares improved by as much as 10-20% in on the earnings and cash flow regression results.

4. LZ included a "constant" sample in their analysis or a sample of firms which have existed throughout the entire sample period. This was included in order to test weather the weakening association is associated with the entry of new firms on the stock exchange. A similar procedure was adopted in the present study. In all cases, and consistent with LZ, there were no significant differences in results between the "constant" sample and the main results. Hence, these results are not reported.

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