Fair Value Hierarchy Measures: Post-Implementation Evidence on IFRS 7

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Abstract - **Using a balance sheet valuation model, this study examines if information on the fair value hierarchy of on-balance sheet financial assets and financial liabilities are incorporated in the market's valuation of companies' equities in Singapore. The results of the study show significant associations between *as-reported* Level 1 and Level 2 fair value measures of financial assets and market values. However, the results are not significant for Level 3 fair value measures of financial assets and each of the three levels of fair value measures of financial liabilities. The results also show that returns are more positively associated with *as-reported* gains and losses from Level 1 and Level 2 fair value measures than those from Level 3 fair value measures. Overall, the evidence suggests that information on the fair value hierarchy of IFRS 7 *Financial Instruments: Disclosures* are used by market participants in their pricing decisions. The market however appears to place greater weights on fair value changes taken to the income statement than those taken to OCI, notwithstanding the level of the fair value measure. While the fixation with income statement measures remains a puzzle, the results are consistent with prior studies that show that investors largely ignore OCI in their pricing of shares.**

Keywords - **Fair value hierarchy, IFRS 7, Disclosure, OCI**

I. INTRODUCTION

One of the primary concerns of fair value accounting is the real risk of measurement errors and earnings management. The financial crisis of 2008 brought these concerns to the forefront. In a focused response to the financial crisis, the IASB issued amendments to IFRS 7 in March 2009 to improve disclosures about fair value measurements. These amendments were aimed at improving transparency in reporting and providing guidance on the measurement and disclosure of fair values of financial instruments when markets are no longer active. While many studies have been carried out on value relevance[1] of fair value information *per se*, no significant research has been carried out to determine if the "quality" or objectivity of fair value information determines the market's pricing of equity value. This study examines the value relevance of fair value information reported by Singapore companies on the implementation of IFRS 7 (or the equivalent Singapore Financial Reporting Standard 107).

In a nutshell, there are three levels of fair value measures that must be disclosed. Level 1 fair value is determined by the unadjusted quoted price of an identical asset or liability in active markets. It is the most independent and objective measure in the hierarchy. Level 2 fair value measure uses observable inputs other than quoted prices. Level 3 is the least objective and relies on the use of unobservable inputs. Reporting companies are likely to want to minimize Level 3 fair value measurements, particularly in the aftermath of the financial crisis of 2008. Inevitably, a Level 3 fair value measure is likely to be interpreted with a greater deal of caution than the other two levels. However, as Kothari and Lester (2011) note, poor implementation of the fair value standards may also confound the relevance of Level 1 and Level 2 fair value information. During the financial crisis, firms switched to Level 3 rather than refined their Level 1 and Level 2 benchmarks. In doing so, they potentially misapplied the fair value hierarchy to adopt more sympathetic internal valuations to postpone the onset of regulatory intervention. Hence, one does have to examine the relevance of the fair value hierarchy in a post-crisis period. From a cost and benefit perspective, it will be meaningful to examine if and how the information on each level is being used by market participants. By examining the association of the information on the fair value hierarchy and the market values of reporting entities, this study hopes to provide a greater understanding of whether market participants collectively use the detailed fair value disclosures in their pricing decisions.

In assessing the value relevance of fair value information on financial instruments, the study examines both balance sheet (levels) and income items (changes) relating to fair value measures. The study uses a balance sheet model to evaluate the relationship between information on Level 1, Level 2 and Level 3 financial assets and financial liabilities and market value of equity. With respect to income effects, the study examines if the disclosed changes in Level 3 fair value are priced in by investors differently from the changes in Level 1 and Level 2 fair value measures[2]. Further, the study examines whether it matters if fair value gains and losses from financial instruments are reported in net income or OCI. The study uses a returns model to evaluate the significance of the relationship between returns and reported fair value gains and losses from financial instruments reported in net income and OCI.

II. RELATED PRIOR RESEARCH AND EMPIRICAL RELATIONS

In his survey of capital market research, Landsman (2007) indicates that evidence from research shows that disclosed and recognized fair values are informative but he cautions that the level of informativeness is affected by the extent of measurement error and reliability of estimates. Barth and Landsman (1995) note that measurement errors may be either systematic errors or unsystematic errors. While unsystematic

[1] This line of research generally examines the association of particular accounting measures and equity values and provides inferences on the explanatory power of these measures with respect to equity values.

[2] Under IFRS 7, companies are not required to disclose changes in fair value of Level 1 and Level 2 measures separately. For purposes of this study, the combined changes in the two levels are used to proxy for changes in fair value arising from more objective measures.

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errors arise from general conditions such as market uncertainty, systematic errors are related to firm-specific conditions such as management's use of estimates. All said, the process of providing fair value information is complex and is affected by a number of internal and external factors. The persistent conflict between relevance and reliability is very significant in fair value accounting.

Prior studies (for example Barth 1994, Barth, Beaver and Landsman 1996, Nelson 1996 and Eccher, Ramesh and Thiagarajan 1996) examine the relation between share prices and fair value disclosures of recognized financial assets and financial liabilities and report mixed findings with respect to the incremental explanatory power of fair values over book values. Venkatachalam (1996) examines whether fair values and notional amounts of derivatives exhibit a significant association with bank stock prices, after controlling for the fair values of on-balance sheet assets and liabilities. That study provides evidence on the value relevance of disclosed fair values of banks' off-balance sheet derivative financial instruments used for risk management purposes.

Prior studies report mixed findings with respect to the significance that markets attach to fair value information in valuing equities of companies. As Barth (1994) notes, early research provides stronger support for historical cost information than their fair value equivalent. Measurement errors, particularly with respect to current and replacement cost information and omitted correlated variables potentially explain the weak incremental explanatory power of fair value information (Bublitz, Frecka and Mckeown 1985).

Following the introduction of the fair value hierarchy in FAS 157 *Fair Value Measurements* in the United States, studies in the United States were able to examine if markets are partial towards more objective information measures, namely Level 1 and Level 2 fair value measures. More recent studies show that the market participants place greater weights on more objective measures of fair value information. Song, Thomas and Yi (2010) use quarterly information of banking firms in 2008 and find that Level 1 and Level 2 fair value measures to have greater value relevance than Level 3 fair value information. A moderating factor to the value relevance of Level 3 fair value information is the state of corporate governance of the reporting entity.

A. Internal measures of fair value versus more independent measures

Research in the 1990s show surprisingly strong support for the value relevance of non-financial assets notwithstanding that these valuations are dependent on proprietary information and unobservable inputs. Clearly, these are mainly Level 3 measures. For example, Aboody, Barth and Kaznik (1999) find that fixed asset revaluation amounts are positively associated with prices after controlling for net income and book value of equity. Easton, Eddey and Harris (1993) investigate value relevance of Australian asset revaluations during the period 1981 to 1990 and find that revaluation reserves have significant explanatory power, both in the changes and levels specification. Notably, Barth and Clinch (1998) find surprisingly strong support for the value relevance of fair values of intangible assets, among other assets. One can infer from the studies on fixed asset and intangible asset revaluation that the market places great weight on proprietary information on firm-specific assets, notwithstanding the presence of measurement error, bias and lack of independence that are inherent in such information.

Interestingly, research on financial instruments report quite the opposite trend from the aforementioned research on non-financial assets. Stronger results are noted for instruments that have more readily available market prices (e.g. investment securities) than for those that are internally valued. For example, Nelson (1996) finds that only the reported fair values of investment securities have incremental explanatory power relative to book value but is not able to find reliable evidence for fair value disclosures of loans, deposits, long-term debt or net off-balance sheet financial instruments. One plausible explanation is that financial instruments are primarily market-based assets and there is less information asymmetry between the market and insiders with respect to the fair value measures on these assets. With respect to financial instruments, the information on the fair value hierarchy is potentially useful to markets as markets are likely to place different weights according to the objectivity of input measures. Further, the fair value hierarchy relates to information pertaining to on-balance sheet items. Prior research has found that items reported on the balance sheet are related to market values differently from items that are off-balance sheet (Schrand 1997, Mozes 2002 and Ahmed Kilie and Lobo 2006 among others).

Prior studies have also found that reliability matters in how the market interprets fair value information. Size has been used to proxy for a measure of reliability. For example, Khurana and Kim (2003) find that fair value disclosures are more likely to be more informative than historical cost for large bank holding companies than for their smaller counterparts. Similar results are reported by Schrand (1997) that show that the degree of associations between on-balance sheet exposure and derivative use was significantly associated with market interest sensitivity for larger firms but not smaller firms. A more direct measure of reliability potentially strengthens the empirical investigation of the market's assessment of fair value information. Studies have been carried out in the United States on the impact of FAS 157 on pricing decisions. For example, Song, Thomas and Yi (2010) find strong support for Level 1 and Level 2 fair value measures for their sample of banking companies in the United States. However, very few studies have been carried out on the value relevance of the fair value hierarchy of IFRS 7 within an IASB member country. My study uses the levels information from the fair value hierarchy to assess the market's pricing of reliability information of Singapore companies. All things being equal, this study expects markets to be skeptical of Level 3 fair value measures. Hence, a stronger association is expected between market values and Level 1 and Level 2 measures than is the case with Level 3 measures. Hence the first research proposition in this study is as follows:

Research proposition 1: All things being equal, Level 1 and Level 2 fair value measures are more likely to be significantly associated with market value of equity than Level 3 fair value measures.

It is also necessary to consider the income effects of fair value measures. Prior research has shown that gains and losses on fair value measures are subject to greater measurement errors than the measures themselves. Barth (1994) notes that even if investment securities fair value estimates are reasonably

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reliable, the gains and losses in the fair value of investment securities may be subject to a noisy estimation process. If the variance of the error term in the fair value gains and losses of investment securities is large relative to the gains and losses, measurement errors can be significant and the incremental explanatory power of the fair value gains and losses is diminished.

All things being equal, this study expects the explanatory power of gains and losses from Level 3 fair value measures to be particularly weak relative to the other two measures. Because the fair value changes are disclosed only for Level 3 financial instruments, the gains and losses from Level 1 and Level 2 are tested as a combined item.

Research proposition 2: All things being equal, gains and losses on Level 1 and Level 2 fair value measures are likely to be more significantly associated with returns on market value of equity than gains and losses on Level 3 fair value measures.

B. Fair value changes reported in net income versus those reported in OCI

Another interesting question relates to the location where changes in fair value are reported. Does it matter if a gain or loss from a financial instrument is reported in the net income or OCI? Are expected weak associations of Level 3 fair value measures exacerbated if the changes are reported in OCI vis-à-vis net income? Prior research reports mixed evidence on the value relevance of OCI. Dhaliwal, Subramanyam and Trezevant (1999) find that comprehensive income (the combined measure of net income and OCI) does not have a stronger association with stock returns than net income alone. However, on further analysis, they find that comprehensive income has incremental explanatory power over net income if the change in fair value of Available-for-sale financial securities is the only OCI component included. O'Hanlon and Pope (1999) find no support for the pricing of OCI and its components in their sample of U.K. firms. Bhat (2008) finds that net income (NI) contributes more to unexpected stock return volatility than fair value gains and losses (FVGL) and both NI and FVGL contribute significantly more than OCI. Chambers, Linsmeier, Shakespeare and Sougiannis (2007) on the other hand find support that OCI is priced on a dollar-for-dollar basis. Chambers *et al* explain that one difference between their study and earlier studies is that they use *as-reported* measures of OCI whereas earlier studies use *as-if* reported measures. *As-if* reported measures are necessarily used because earlier studies were carried out in periods that preceded the required presentation of comprehensive income and other comprehensive income. Statement of Financial Accounting Standard (SFAS) 130 *Reporting Comprehensive Income* became effective only for periods beginning 15 December 1997. Chambers *et al* explained that some of the *as-if* OCI measures of studies carried out on financial statements prior to the implementation of SFAS 130 may include measurement errors. Given the mixed evidence that mainly slant towards the poor explanatory power of OCI, it is necessary to consider the theory underlying the pricing of OCI by markets. OCI is transitory. Chambers *et al* (2007) note that OCI items are mainly affected by interest rates and foreign exchange rate movements that follow random walk processes. The market may interpret OCI in one of two ways. One view is that OCI is noise which cancels out over time and hence has little impact on firm's value in the long term. The other view supported by Chambers *et al* (2007) follows the theory developed by Ohlson (1999) that transitory components of earnings are priced dollar-for-dollar in perfect and complete markets.

This study uses *as-reported* data on Level 1, Level 2 and Level 3 information. Hence, the noise expected in *as-if* measures do not apply to this study. Learning curve issues however may arise with respect to this data set. Since this study uses 2009 data from the first set of financial statements that presents "comprehensive income" and OCI, there is no assurance that market participants price the information on OCI on a dollar-for-dollar basis. The well-known phenomenon of fixation with net income is likely to persist in the first year of presentation of the statement of comprehensive income. Hence, this study expects the market to place a higher weight on fair value changes taken to income statement than to OCI. However, changes in Level 3 fair value measures are not expected to be significant regardless of the location.

Research proposition 3: All things being equal, gains and losses on fair value measures taken to net income are likely to be more significantly associated with returns on market value of equity than gains and losses on fair value measures taken to OCI.

Research proposition 4: All things being equal, gains and losses on Level 3 fair value measures taken to either net income or OCI are not likely to be significantly associated with market value of equity.

C. Empirical equations relating to fair value information

In a simple setting that is economically equivalent to perfect and complete markets, measurement error is zero and fair value unambiguously equals market value. In such a setting, the balance sheet provides all the value relevant information that a market needs and the income statement is redundant (Barth and Landsman 1995). We may then assume the following accounting identity:

$$MVE_{jt} = MVA_{jt} - MVL_{jt} \quad (1)$$

Where *j* and *t* denote firms and years; *MVE* is market value of common equity; *MVA* is market value of assets and *MVL* is market value of liabilities.

Since markets are not perfect and complete, the empirical equation based on the balance sheet model includes an intercept α and error term ε to recognize the presence of omitted variables and measurement errors reflecting the difficulty of markets to properly identify and value assets and liabilities of reporting entities. Further, a mixed attribute model exacerbates the problem of omitted variables. Market values of assets and liabilities are replaced by fair values in imperfect markets. Hence, an econometric equivalent of equation (1) in more realistic settings featuring mixed attribute reporting is found in equation (2).

$$MVE_{jt} = \alpha + \beta_1 HCA_{jt} + \beta_2 FVA_{jt} - \beta_3 HCL_{jt} - \beta_4 FVL_{jt} + \varepsilon_{jt} \quad (2)$$

Where *j* and *t* denote firms and years; *MVE* is market value of common equity; *HCA* is carrying amount of assets measured under the historical cost basis; *HCL* is carrying amount of liabilities measured under historical cost basis; *FVA* is the

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recognized fair value of assets and *FVL* is the recognized fair value of liabilities.

When equation (2) is applied specifically to focus on the fair value of financial instruments, equation (3) arises that becomes the subject of the first regression run in this study.

$$MVE_{jt} = \alpha + \beta_1 BVOA_{jt} + \beta_2 BVOL_{jt} + \beta_3 FVFA_{jt} + \beta_4 FVFL_{jt} + \varepsilon_{jt} \quad (3)$$

Where *j* and *t* denote firms and years; *MVE* is market value of common equity determined three months after the financial year end; *FVFA* is the fair value of financial assets and *FVFL* is the fair value of financial liabilities; *BVOA*[3] is the carrying amount of other assets (i.e. *Total assets – FVFA*); *BVOL* is the carrying amount of other liabilities (i.e. *Total liabilities – FVFL*); The variables are deflated by end of year number of issued ordinary shares to control for size differences across firms. All variables, with the exception of *MVE*, is determined as at the end of the financial year. The significance of β_3 and β_4 provide empirical evidence on the market's valuation of the fair value of financial assets and financial liabilities. Since there is no way to determine how the market will interpret the composition of items in equation (3), a two-tailed test is used in line with Jennings (1990).

The next equation analyzes the fair value of financial assets and financial liabilities further into Level 1, Level 2 and Level 3 fair value measures. To provide for a more parsimonious model, the equation uses the carrying amount of other net assets to capture remaining net assets.

$$MVE_{jt} = \alpha + \beta_1 BVONA_{jt} + \beta_2 Level\ 1\ FVFA_{jt} + \beta_3 Level\ 2\ FVFA_{jt} + \beta_4 Level\ 3\ FVFA_{jt} + \beta_5 Level\ 1\ FVFL_{jt} + \beta_6 Level\ 2\ FVFL_{jt} + \beta_7 Level\ 3\ FVFL_{jt} + \varepsilon_{jt} \quad (4)$$

Where *j* and *t* denote firms and years; *MVE* is market value of common equity determined three months after the financial year end; *BVONA* is the carrying amount of other net assets (i.e. *BVOA – BVOL* as defined above); *FVFA* is the fair value of financial assets and *FVFL* is the fair value of financial liabilities with *Level 1 FVFA* being the Level 1 fair value measure of financial assets in accordance with the fair value hierarchy and so on. The variables are deflated by end of year number of issued ordinary shares to control for size differences across firms. All variables, with the exception of *MVE*, is determined as at the end of the financial year. The significance of β_2 to β_7 provide empirical evidence of the market's valuation of the information on the level of fair value of financial assets and financial liabilities reported in accordance with IFRS 7.

Applying the changes model from prior research (e.g. Ahmed, Kilie and Lobo, 2006), this study tests different specifications of the relationship between fair value information on financial instruments and returns. The first equation regresses returns against *as-reported* fair value changes in financial instruments in net income and other net income. Other movements in equity are included in the equation to mitigate the problem of omitted variables.

$$R_{jt} = \alpha + \beta_1 ONI_{jt} + \beta_2 OOCI_{jt} + \beta_3 \Delta FVNI_{jt} + \beta_4 \Delta FVOCI_{jt} + \beta_5 Div_{jt} + \beta_6 \Delta OE_{jt} + \varepsilon_{jt} \quad (5)$$

[3] The term carrying amount and book value are used interchangeably in this study. However, book values do not necessarily imply historical cost accounting. Hence BVOA in this study includes both historical cost balances and fair value balances of non-financial assets.

Where *j* and *t* denote firms and years; *R* denotes the returns over the 12 months period from nine months before the year-end to three months after the year end; *R* is computed by dividing ΔMVE_{jt} by MVE_{jt-1} where *MVE* is market value of equity; $\Delta FVNI$ is the change in fair value of financial instruments that is taken to net income; $\Delta FVOCI$ is the change in fair value of financial instruments that is taken to OCI; *ONI* is other net income (i.e. Net income - $\Delta FVNI$); *OOCI* is other OCI (i.e. OCI - $\Delta FVOCI$), i.e. the remaining components of OCI that do not relate to financial instruments; *Div* is total dividends declared during the financial year and ΔOE are other changes in equity. The variables are deflated by the beginning market value of equity MVE_{jt-1}.

The next changes specification analyzes gains and losses by levels. Since Level 1 and Level 2 fair value changes are not separately disclosed, they are tested as one unit. Separately disclosed Level 3 fair value changes are featured in the following specification:

$$R_{jt} = \alpha + \beta_1 ONI_{jt} + \beta_2 OOCI_{jt} + \beta_3 \Delta Level1\&2FVNI_{jt} + \beta_4 \Delta Level1\&2FVOCI_{jt} + \beta_5 \Delta Level3FVNI_{jt} + \beta_6 \Delta Level3FVOCI_{jt} + \beta_7 Div_{jt} + \beta_8 \Delta OE_{jt} + \varepsilon_{jt} \quad (6)$$

The variables are the same as in equation (5) except that $\Delta Level1\&2FVNI$ is the change in Level 1 and Level 2 fair value measures that is taken to net income and $\Delta Level1\&2OCI$ is the change in Level 1 and Level 2 fair value measures that is taken to OCI; $\Delta Level3FVNI$ and $\Delta Level3FVOCI$ refers to change in Level 3 fair value measures that is taken to net income and OCI respectively.

III. DATA AND ANALYSIS OF RESULTS

The sample comprises 100 [4] companies listed on the Singapore Exchange that has the highest market capitalization. Since FRS 107 applies to financial periods commencing January 1, 2009, I use data subsequent to this date, namely data from financial periods that ended at the earliest on December 31, 2009 and at the latest on September 30, 2010. The data on reported financial statement items are hand collected from the financial statements that are available on the Singapore Exchange's website. Table 1 presents the descriptive statistics of the data of the sampled companies.

On a per-share basis, fair value of financial assets constitutes 24% of total assets while fair value of financial liabilities constitutes only a paltry 4% of total liabilities. If materiality matters to the market, investors' attention would focus on the fair value of financial assets rather than the fair value of financial liabilities. On a net basis, the fair value of net financial assets constitutes 75% of total net assets. This is considerably higher than the carrying amount of the remaining net assets. Overall, fair value information is material to shareholders' equity on the accounting balance sheet under the mixed attribute model.

The statistics on the changes in fair value on a per-share basis show that the change in fair value taken to net income is only about 3% of total net income. However, changes in fair value taken to OCI is about 70% of total OCI indicating that fair value changes from Available-for-sale securities is clearly the largest component in total OCI (Refer Table 1).

[4] Market capitalization is determined as of April 27, 2010.

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The correlation matrix shows statistically significant correlations among market value and all levels of fair value measures. However, weak correlations are noted for market returns and changes in fair value measures. Whether the market emphasizes the balance sheet more than the income statement and OCI needs to be examined through the multivariate analysis in the tables that follow. (Refer Table 2)

Ordinary least squares (OLS) regression was applied to the data set for both levels and changes specifications. In the first regression run, I tested to see if the market values the total fair value measures as reported on the balance sheet. All four components (carrying amount of other assets, carrying amount of other liabilities, fair value of financial assets and fair value of financial liabilities) are highly statistically significant in explaining market value of equity. The explanatory power of the model incorporating historical cost and fair value components on the accounting balance sheet is strong with an adjusted R^2 of 75.9%. Although the total fair value of financial liabilities is insignificant to total liabilities, the market prices in the information in the expected direction. However, significance is highest for the carrying amount of other assets followed by fair value of financial assets, carrying amount of other liabilities and fair value of financial liabilities in that order. The results corroborate earlier research that fair value is mainly informative to investors. However, the level of informativeness is affected by the amount of measurement error (Landsman 2007) and further results below provide evidence on how more detailed information on fair value measures affect market's valuation. (Refer Table 3).

Table 4 below shows the results of the regression analysis of market value of equity against each of the fair value hierarchy measures. When the fair values of financial assets and financial liability are partitioned into Level 1, Level 2 and Level 3 information based on the fair value hierarchy, only the carrying amount of other net assets, Level 1 fair value of financial assets and Level 2 fair value of financial assets are statistically significant. The remaining categories (Level 3 fair value of financial assets and each of the three levels of financial liabilities) are not significant although the investors price them in the expected directions. The results are in line with the research proposition and the expectation that reliability matters to the market, particularly in the light of nasty experiences with the 2008 financial crisis. However, one unexpected result is the low explanatory power of fair value of financial liabilities. One would expect that Level 1 fair value of financial liabilities would be priced by investors in market value. This is not the case and the results with Level 1 and Level 2 fair value measures of financial liabilities are not symmetrical with those of financial assets. The puzzling results may be explained by the considerably smaller fair values of financial liabilities as compared with those of financial assets. Wong (2000) finds that results are affected by the materiality of the fair value changes. That study reported weak results on the association between disclosures on notional and fair value of foreign exchange derivatives and market values. Wong notes that one possible reason for the weak results was the low materiality of fair value items. The change in fair value of currency derivatives for an average sample firm in that study was only 0.5% of its market equity.

Aside from materiality, the market may also be skeptical of fair value measures of liabilities. With criticisms on the counter-intuitive effect of own credit risk on the fair value of financial liabilities, investors may not reward a company even if it uses more reliable measures of fair values for its financial liabilities. Further, financial liabilities are issued by the reporting entity. The degree of objectivity in the valuation of the instruments is weakened by the close links that the entity has with these instruments.

Table 5 presents the results of the test of changes in fair value. The results show strong support for changes in fair value taken to income statement but not for changes in fair value taken to OCI. The results are anomalous as the change in fair value taken to OCI is proportionally more significant than the change in fair value taken to net income. The results appear to support the view that investors perceive the OCI as "noise" rather than value creation. However, one has to remember that this test was done in the first year when companies have to present the statement of comprehensive income. In the sample, the majority of companies used the two statement approach to present comprehensive income perpetuating the perceived significance that is commonly placed on net income as a performance measure. Potentially, there could be learning curve issues in the first year of introducing the OCI measure.

Table 6 shows the results of the changes in fair value by levels of the fair value hierarchy. Strong results are shown for changes in fair value taken to income for Level 1 and Level 2 financial instruments and weak results for Level 3 financial instruments. While the weak results for Level 3 financial instruments are expected, the poor results for changes in fair value taken to OCI for Level 1 and Level 2 financial instruments is surprising, given the materiality of the amounts reported in OCI for these instruments. One inference is that the market perceives the impact of OCI items on value to be more distant and less relevant to predicting future earnings.

IV. CONCLUSIONS

This study confirms findings from earlier research that reported fair value balances are able to explain market values of equity. When more detailed information on the fair value hierarchy is incorporated in the specification, robust results are found for Level 1 and Level 2 fair value measures of financial assets. However, weak results are found for Level 3 fair value measures of financial assets and all levels of fair value measures of financial liabilities. The results of this study support the proposition that investors are concerned about reliable measurements and objectivity of input measures used. The evidence provides support for the value relevance of information on the fair value hierarchy of reporting entities. However, the results on financial liabilities are anomalous. Investors appear to be skeptical of the valuation of financial liabilities, even for liabilities that are quoted in active markets. It will be interesting to perform follow-up tests on data based on the amended IFRS 9 *Financial Instruments* that requires changes arising from own credit risk to be taken to OCI to determine if the new treatment would mitigate skepticism. Another anomalous result is the poor explanatory power of fair value gains and losses taken to OCI. These gains and losses arise from Level 1 and Level 2 fair value measures and are material. Further research needs to be carried out to determine how OCI is priced in by the market over the long term. The study may benefit from having a larger sample size and a longer window of testing.

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TABLE 1
Descriptive Statistics

Panel A: Levels[5]

Variable	Minimum	Maximum	Mean	Std. Deviation
MVE/share	0.130000	20.90000	3.1080000	4.281450712
BVOA/share	0.024440	93.11554	5.1418751	12.92156667
BVOL/share	0.007090	105.45529	4.64369776	16.86696508
FVFA/share	0.000000	77.921430	1.67089196	8.948160619
FVFL/share	0.000000	10.791440	0.21062210	1.228685925
Level 1 FVFA/share	0.000000	37.098231	0.89992087	4.591758875
Level 2 FVFA/share	0.000000	40.697494	0.74044459	4.409798846
Level 3 FVFA/share	0.000000	0.716067	0.03052652	0.113627924
Level 1 FVFL/share	0.000000	0.629346	0.01902345	0.086313976
Level 2 FVFL/share	0.000000	9.523750	0.17941590	1.082412793
Level 3FVFL/share	0.000000	1.122820	0.01218280	0.112354404

[5] Panel B on Changes is available on request

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Table 1 variables
MVE/share = Market value of common equity per share determined three months after the financial year end
BVOA/share = Carrying amount of other assets
BVOL/share = Carrying amount of other liabilities
FVFA/share = Fair value of financial assets per share
FVFL/share = Fair value of financial liabilities per share
Level 1 FVFA/share = Level 1 fair value of financial assets per share
Level 2 FVFA/share = Level 2 fair value of financial assets per share
Level 3 FVFA/share = Level 3 fair value of financial assets per share
Level 1 FVFL/share = Level 1 fair value of financial liabilities per share
Level 2 FVFL/share = Level 2 fair value of financial liabilities per share
Level 3 FVFL/share = Level 3 fair value of financial liabilities per share
Number of firms in sample = 100

TABLE 2
Correlations

Panel A: Levels[6]

Variable	*MVE/share*	*Level 1 FVFA/share*	*Level 2 FVFA/share*	*Level 3 FVFA/share*	*Level 1 FVFL/share*	*Level 2 FVFL/share*	*Level 3 FVFL/share*	*BVOA/share*	*BVOL/share*
MVE/share	1	0.554***	0.467***	0.409***	0.349***	0.467***	0.293***	0.544***	0.537***
Level 1FVFA/share		1	0.963***	0.307***	0.426***	0.548***	0.366***	0.583***	0.680***
Level 2 FVFA/share			1	0.225**	0.322***	0.336***	0.206**	0.389***	0.505***
Level 3FVFA/share				1	0.156	0.523***	0.563***	0.457***	0.447***
Level 1 FVFL/share					1	0.537***	0.176	0.695***	0.752***
Level 2 FVFL/share						1	0.881***	0.937***	0.921***
Level 3FVFL/share							1	0.722***	0.677***
BVOA/share								1	0.978***
BVOL/share									1

*** Correlation is significant at the 0.01 level (2-tailed)
** Correlation is significant at the 0.05 level (2-tailed)

MVE/share = Market value of common equity per share determined three months after the financial year end
BVOA/share = Carrying amount of other assets (i.e. Total assets less FVFA) per share
BVOL/share = Carrying amount of other liabilities (i.e. Total liabilities less *FVFL*) per share
Level 1 FVFA/share = Level 1 fair value of financial assets per share
Level 2 FVFA/share = Level 2 fair value of financial assets per share
Level 3 FVFA/share = Level 3 fair value of financial assets per share
Level 1 FVFL/share = Level 1 fair value of financial liabilities per share
Level 2 FVFL/share = Level 2 fair value of financial liabilities per share
Level 3 FVFL/share = Level 3 fair value of financial liabilities per share
Number of firms in sample = 100

[6] Panel B on Changes is available on request

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TABLE 3
Ordinary Least Squares Regression
Levels Test (Summary Measures)

Model: $MVE_{jt} = \alpha + \beta_1 BVOA_{jt} + \beta_2 BVOL_{jt} + \beta_3 FVFA_{jt} + \beta_4 FVFL_{jt} + \varepsilon_{jt}$

Variable	Coefficient	t-statistic
Intercept		1.578*
BVOA	3.918	12.158***
BVOL	-4.863	-8.999***
FVFA	2.691	9.023***
FVFL	-0.551	-5.227***
Adjusted R^2	76.7	
F value	82.56***	

*** *t*-test statistic significant at ≤ 0.01 (two-tailed)
** *t*-test statistic significant at ≤ 0.05 (two-tailed)
* *t*-test statistic significant at ≤ 0.10 (two-tailed)
MVE = Market value of common equity determined three months after the financial year end
BVOA= Carrying amount of other assets (i.e. Total assets less FVFA)
BVOL = Carrying amount of other liabilities (i.e. Total liabilities less *FVFL*)
FVFA = Fair value of financial assets
FVFL = Fair value of financial liabilities
The variables are deflated by end of year number of issued ordinary shares to control for size differences across firms, where *j* and *t* is the firm and year respectively.
Number of firms in sample = 100

TABLE 4
Ordinary Least Squares Regression
Levels Test (Fair Value Hierarchy Measures)

Model: $MVE_{jt} = \alpha + \beta_1 BVONA_{jt} + \beta_2 Level\ 1\ FVFA_{jt} + \beta_3 Level\ 2\ FVFA_{jt} + \beta_4 Level\ 3\ FVFA_{jt} + \beta_5 Level\ 1\ FVFL_{jt} + \beta_6 Level\ 2\ FVFL_{jt} + \beta_7 Level\ 3\ FVFL_{jt} + \varepsilon_{jt}$

Variable	Coefficient	t-statistic
Intercept		1.652
BVONA	2.342	11.880***
Level 1FVFA	1.509	2.022***
Level 2FVFA	1.375	2.088***
Level 3FVFA	0.069	1.100
Level 1 FVFL	-0.065	-0.493
Level 2 FVFL	-0.264	-0.515
Level 3 FVFL	-0.186	-0.609
Adjusted R^2	75.9	
F value	45.5***	

*** *t*-test statistic significant at ≤ 0.01 (two-tailed)
** *t*-test statistic significant at ≤ 0.05 (two-tailed)
* *t*-test statistic significant at ≤ 0.10 (two-tailed)

MVE = Market value of common equity determined three months after the financial year end
BVONA= Carrying amount of other net assets (i.e. Carrying amount of net assets less fair value of net financial assets)

Level 1FVFA = Level 1 fair value of financial assets
Level 2FVFA = Level 2 fair value of financial assets
Level 3FVFA = Level 3 fair value of financial assets
Level 1 FVFL = Level 1 fair value of financial liabilities
Level 2 FVFL = Level 2 fair value of financial liabilities
Level 3 FVFL = Level 3 fair value of financial liabilities

The variables are deflated by beginning market value of equity to control for size differences across firms where *j* and *t* is the firm and year respectively.
Number of firms in sample = 100

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TABLE 5

Ordinary Least Squares Regression
Changes Test (Summary Measures)

Model: $R_{jt} = \alpha + \beta_1 ONI_{jt} + \beta_2 OOCI_{jt} + \beta_3 \Delta FVNI_{jt} + \beta_4 \Delta FVOCI_{jt} + \beta_5 Div_{jt} + \beta_6 \Delta OE_{jt} + \varepsilon_{jt}$

Variable	Coefficient	t-statistic
Intercept		5.761***
ONI	0.478	5.585***
OOCI	-0.007	-0.081
$\Delta FVNI$	0.180	2.203***
$\Delta FVOCI$	0.003	0.041
Div	-0.175	-2.033***
ΔOE	0.407	4.957***
Adjusted R^2	35.6	
F value	10.04***	

*** *t*-test statistic significant at ≤ 0.01 (two-tailed)
** *t*-test statistic significant at ≤ 0.05 (two-tailed)
* *t*-test statistic significant at ≤ 0.10 (two-tailed)
$R = \Delta MVE_{jt}/MVE_{jt-1}$ where *MVE* is market value of equity at three months after the financial year end and *j* and *t* are the firm and financial year end
ONI = Net income less $\Delta FVNI$;
OOCI = OCI less $\Delta FVOCI$
$\Delta FVNI$ = Change in fair value of financial instruments that is taken to net income
$\Delta FVOCI$ = Change in fair value of financial instruments that is taken to OCI
Div = Total dividends declared during the financial year
ΔOE = Other changes in equity

The variables are deflated by the beginning market value of equity MVE_{jt-1} where *j* and *t* is the firm and year respectively.
Number of firms in sample = 99 (one firm in the original sample was delisted during the year)

TABLE 6
Ordinary Least Squares Regression
Changes Test (Fair Value Hierarchy Measures)

$R_{jt} = \alpha + \beta_1 ONI_{jt} + \beta_2 OOCI_{jt} + \beta_3 \Delta Level1\&2FVNI_{jt} + \beta_4 \Delta Level1\&2FVOCI_{jt} + \beta_5 \Delta Level3FVNI_{jt} + \beta_6 \Delta Level3FVOCI_{jt} + \beta_7 Div_{jt} + \beta_8 \Delta OE_{jt} + \varepsilon_{jt}$

Variable	Coefficient	t- statistic
Intercept		5.389***
ONI	0.493	5.628***
OOCI	-0.004	-0.049
$\Delta Level1\&2FVNI$	0.215	2.459***
$\Delta Level1\&2FVOCI$	0.013	0.139
$\Delta Level3FVNI$	-0.020	-0.246
Level3FVOCI	-0.095	-1.008
Div	-0.160	-1.824**
ΔOE	0.435	5.307***
Adjusted R^2	35.6	
F value	7.774***	

*** *t*-test statistic significant at ≤ 0.01 (two-tailed)
** *t*-test statistic significant at ≤ 0.05 (two-tailed)
* *t*-test statistic significant at ≤ 0.10 (two-tailed)
$R = \Delta MVE_{jt}/MVE_{jt-1}$ where *MVE* is market value of equity at three months after the financial year end and *j* and *t* are the firm and financial year end
ONI = Net income less $\Delta FVNI$;
OOCI = OCI less $\Delta FVOCI$
$\Delta Level1\&2FVNI$ = Change in Level 1 and Level 2 fair value measures that is taken to net income
$\Delta Level1\&2FVOCI$ = Change in Level 1 and Level 2 fair value measures that is taken to OCI
$\Delta Level3FVNI$ = Change in Level 3 fair value measures that is taken to net income
$\Delta Level3FVOCI$ = Change in Level 3 fair value measures that is taken to OCI
Div = Total dividends declared during the financial year
ΔOE = Other changes in equity
The variables are deflated by the beginning market value of equity MVE_{jt-1} where *j* and *t* is the firm and year respectively.
Number of firms in sample = 99 (one firm in the original sample was delisted during the year)

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