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Comprehensive Income, Future Earnings, and Market Mispricing

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Comprehensive Income, Future Earnings and Market Mispricing

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Comprehensive Income, Future Earnings and Market Mispricing

ABSTRACT

This paper examines the usefulness of comprehensive income disclosures as required by Statement of Financial Accounting Standard (SFAS) No. 130, *Reporting Comprehensive Income.* In particular, we examine the implication of current period 'other comprehensive income' (OCI) for subsequent period income and whether the stock market fully recognizes the implications of current period OCI for future periods as reflected in stock prices. The results in the paper are consistent with the notion that OCI reported under SFAS No.130 is incrementally useful in predicting one-year ahead net income. We also find that while the market correctly impounds the implication of current period net income for next period net income, it does not reflect the implications of current period OCI for subsequent period net income. Based on this mispricing, we provide evidence that it is possible to have a profitable investment strategy. Specifically, we show that a zero-investment strategy based on current period OCI yields an abnormal return of 5.4 percent over a one year period even after controlling for other correlated variables. However, given the specifics of the form of discloser requirements under SFAS No. 130, we find that the extent of this mispricing is smaller in post-SFAS No. 130 period than in pre-SFAS No. 130 period, which is perhaps attributable to the effectiveness of the disclosures under SFAS No. 130.

Keywords: *Comprehensive income, Predictive value, Market mispricing, SFAS No. 130.*

Data Availability: *Data are publicly available from sources identified in the paper.*

Comprehensive Income, Future Earnings and Market Mispricing

1. INTRODUCTION

This paper examines the usefulness of comprehensive income disclosures as required by Statement of Financial Accounting Standard (SFAS) No. 130, *Reporting Comprehensive Income,* which became effective for all financial statements reported after December 15, 1997. Most traditional approaches assess the usefulness of accounting disclosures by focusing on value-relevance in a valuation or information content sense. Such an approach relies upon an association of the disclosed information with contemporaneous and/or event period stock prices. In contrast, we focus on the predictive ability of comprehensive income disclosures. This latter approach necessarily warrants, focusing on the ability of disclosed accounting information to predict future performance, rather than a contemporaneous association. [1] Specifically, we examine two related questions to assess the predictive ability of comprehensive income. First, we examine the in-sample relation between comprehensive income in a base (current) year and the reported net income in a subsequent fiscal year, i.e., the implication of current period comprehensive income for subsequent period. Second, we examine whether the stock market fully recognizes the implications of current period comprehensive income for future periods as reflected in stock prices. Taken together, the two approaches are both aimed at assessing whether comprehensive income is useful in predicting future net income and future stock prices.

Several prior researchers have examined the usefulness of comprehensive income disclosures by examining their contemporaneous value-relevance. Cheng et al. (1993) examined the relation between abnormal returns and three measures of income: operating income, net income, and comprehensive income. Comparing the adjusted R^2s for the three models, their findings support two alternative scenarios- (a) net income and/or operating income are superior to comprehensive income as a measure of performance, or (b) that investors are "fixated" on net income, thus ignoring comprehensive income. In a

[1] This investigation is primarily in the spirit of Freeman, Ohlson, and Penman (1982) who assess the usefulness of accounting numbers without reference to contemporaneous stock prices. In addition, the predictive ability approach

similar spirit, Dhaliwal et al. (1999) compared the adjusted R^2s for several models of returns on items of other comprehensive income. They document that the only component of comprehensive income that improves the earnings-return relation is the marketable securities adjustment, i.e., gains and losses on available-for-sale securities. Further analysis shows that this result is primarily due to firms in the financial sector, thus providing evidence that comprehensive income is not very useful for explaining returns. In contrast, Chambers et al. (2005), using a significantly smaller sample over the post-SFAS No. 130 period, provides evidence that total other comprehensive income is value-relevant. More recently, Biddle and Choi (2006) also show that comprehensive income was incrementally value relevant even before the enforcement of SFAS No. 130. They attribute the failure of prior studies to identify the usefulness of comprehensive income to the use of a 'relative association' as opposed to an 'incremental association' test.[2]

Some other studies have examined whether the usefulness of comprehensive income depends upon how it is disclosed. Using an experimental approach, Hirst and Hopkins (1998) report that comprehensive income is useful for analysts only when it is reported as a separate statement but not useful when it is reported as part of the statement of changes in stockholders' equity. Another experimental study by Hunton et al. (2006) finds that more transparent format (i.e., single statement of comprehensive income) reduces the likelihood of managers engaging in earnings management. However, in contrast, Maines and McDaniel (2000), also using an experimental approach, report that comprehensive income is useful regardless of the format. Similar to this experimental evidence, Chambers et al. (2005), using archival data over the post-SFAS No. 130 period, provide evidence that the type of financial statement in which firms report comprehensive income and its components do not affect pricing.

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used in this study belongs to one of the four alternative interpretations of the definition of value relevance as defined in Francis and Schipper (1999).

[2] See Biddle et al. (1995) for a detailed discussion of the differences between these two approaches, particularly for assessing the usefulness of accounting numbers.

Studies using international data have also found mixed evidence in support of the usefulness of comprehensive income disclosures. O'Hanlon and Pope (1999) find "little evidence that U.K. dirty surplus accounting flows contain value relevant items." Cahan et al. (2000) also did not find any evidence of incremental value relevance for such disclosures for New Zealand firms. However, Kanagaretnam, Mathieu, and Shehata (2005), using Canadian data, provide evidence that reporting of comprehensive income and its components improve the usefulness of accounting information.

In summary, the evidence to date on the usefulness of comprehensive income has been mixed. In this paper, we revisit the usefulness of comprehensive income disclosures in view of its predictive value. We do so by examining whether comprehensive income can predict subsequent period realized net income and whether investors correctly price such information as reflected in subsequent stock prices. For this purpose, we use the 'two equations' approach proposed by Mishkin (1983) and used in prior accounting research including Burghstahler et al. (2002), Collins et al. (2003), and Hanlon (2005).

The results in the paper are consistent with the notion that components of other comprehensive income reported under SFAS No. 130 are informative of a firms' future performance. In particular, we find that other comprehensive income helps to improve the prediction of future one-year-ahead net income. We also find that while the market correctly impounds the implication of current period net income on next period net income, it does not reflect the implication of current period other comprehensive income for subsequent period net income. We provide evidence that it is possible to have a profitable investment strategy based on this mispricing of investors. Specifically, we show that a zero-investment strategy based on current period other comprehensive income yields an abnormal return of 5.4 percent over a one year period even after controlling for other correlated variables. However, the magnitude of the abnormal return decreased after the enactment of SFAS No. 130, suggesting that the SFAS No. 130 was effective in helping investors' correctly value the information in other comprehensive income.

In sum, our contributions in this paper are threefold. First, we extend the literature on the usefulness of comprehensive income. Most prior research has assessed usefulness using contemporaneous

association with stock prices. In contrast, we provide direct evidence on the usefulness of other comprehensive income disclosures by examining the incremental usefulness of current period other comprehensive income over and above current period net income in predicting subsequent period net income. This approach to assessing the usefulness of accounting disclosures by examining their predictive ability is a distinct departure from the approach used in most prior studies that examine the usefulness of comprehensive income disclosures by focusing on tests of contemporaneous value-relevance. In this sense, the paper also provides a new framework to assess the usefulness of comprehensive inocme in general.

Second, we contribute to the literature that investigates investors' assessments of the mispricing of earnings (e.g. Sloan 1996, Xie 2001). We examine whether the magnitude of other comprehensive income influences investors' expectations about the persistence of earnings. Our analysis is the first to provide evidence on the market's mispricing of comprehensive income disclosures. Following Sloan (1996) and Xie (2001), we use the Mishkin (1983) rational expectations framework (hereafter referred as the 'Mishkin test') to examine whether the earnings expectations embedded in stock prices accurately reflect the information in comprehensive income. Specifically, using the Mishkin test, we document that the market does not correctly infer the implications of current period comprehensive income for subsequent period stock returns.

Finally, to the best of our knowledge, no prior research has documented that there are one-year-ahead abnormal returns to an investment strategy based on the magnitude of current period comprehensive income. Given that the enactment of SFAS No. 130 clearly decreased the magnitude of abnormal return earned by the investment strategy, this study is the first to show the positive impact associated with reporting other comprehensive income items separately in a primary financial statement as mandated under SFAS No. 130. The approach used here to investigate the efficacy of a standard can thus be used to examine the effect of other new regulations and hence this study provides a broader contribution to accounting research.

This paper is organized as follows. The next section discusses the implications of other comprehensive income for future earnings. Section 3 describes the data, sample selection, and the measurement of variables used in the study. The empirical results are discussed in section 4. In section 5, we provide some additional tests that asses the robustness of our main results. Section 6 concludes the paper.

2. IMPLICATIONS OF COMPREHENSIVE INCOME FOR FUTURE EARNINGS

In general, income measurement follows an all-inclusive approach, suggesting that most items even irregular ones are recorded in income (Kieso, Weygandt, and Warfield 2007 p.133 Accounting Principles Board Opinion No. 9 and 20 and SFAS No. 5). Since exceptions to this general rule has evolved over time, certain items now bypass income and are reported directly under equity. According to Financial Accounting Standards Board's (FASB's) SFAS No. 130, comprehensive income is defined as "…the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners." (FASB concepts statement No. 6, para 70). These latter items are often referred to as "other comprehensive income" (OCI). The statement requires that several items that were previously reported as direct adjustments to equity (i.e., as dirty surplus) be reported as adjustments to net income to arrive at comprehensive income. Thus, comprehensive income includes net income and other transactions that affect shareholders' equity but are excluded from net income.[3] This classification scheme serves two primary purposes – (a) it purportedly reduces the variability in net income over time and (b) it provides information on an "as if" scenario in the sense of what might have been the impact on the income statement and hence on shareholder equity had a particular transaction passed through income.

[3] These excluded items include, among others, unrealized holding gains/losses on marketable securities, adjustments for pension liability, and foreign currency translation adjustments.

At the heart of the requirements under SFAS No. 130 is the debate over 'clean surplus' versus 'dirty surplus'.[4] The primary rationale in favor of clean surplus (or comprehensive income) is that it provides for a better measure of the underlying economic conditions and the strength of current earnings and hence should be a better predictor of future performance. Additionally, it should be noted that proponents of comprehensive income argue that comprehensive income as a measure of firm performance is consistent with accounting based valuation since the residual income model is derived using comprehensive income, thus suggesting that other comprehensive income is predictive of future performance (Biddle and Choi 2006). In particular, SFAS No. 130 states that one of the purposes of reporting comprehensive income is that information provided therein would assist "in assessing an enterprise's activities and the timing and magnitude of an enterprise's future cash flows." Moreover, unrecognized items although excluded from net income may be related to the core business activities and hence relevant for investors' decision making (Maines and McDaniel 2000).

In contrast, the primary rationale in favor of dirty surplus argues that by definition clean surplus introduces noise or measurement error in the true underlying operating performance of the firm, and hence inhibits the ability of users (investors and creditors) to accurately predict future performance. In addition, Kanagaretnam, Mathieu, and Shehata (2005), suggest that the use of fair value accounting in recognizing comprehensive income may result in a reduction in reliability, and hence it will be unclear whether and to what extent market participants would rely upon such disclosures. In summary, whether or not comprehensive income disclosures improve or inhibit the predictability of future performance is an empirical issue.

In this paper, our primary research question therefore stems from this underlying notion of the ability of comprehensive income to provide information on the *future net income*. Alternatively stated, our focus is on the predictive ability of comprehensive income. It is true that most of the items in OCI

[4] This distinction relates to whether all of the changes, except those arising from distributions to owners and investments by owners, should flow through the income statement (i.e., clean surplus) or whether some items be allowed to bypass the income statement and be directly reported in the balance sheet under the equity section (i.e., dirty surplus).

represent "mark-to-market" type of adjustments. Part of the reason they are in OCI rather than in NI is because of their "windfall" nature. The presumption is that they are non-recurrent, or at least future realizations of these types of earnings are not easily forecasted. However, the fundamental distinction we are making here is the ability of current period "comprehensive income" to predict subsequent period "net income." Even though the components of OCI themselves may not be recurrent and hence not easily forecasted, they are going to pass through the income statement when they are recognized and in this sense are leading indicators of future earnings. SFAS No. 130 requires that three different categories of other comprehensive income be reported separately: (i) Adjustment for unrealized holding gains/losses on available-for-sale marketable securities, (ii) Adjustments for minimum pension liability, and (iii) Adjustments for foreign currency translations. Managers have considerable discretion, both in the timing and magnitude of recognition of some of these components. Hence, like accruals, they are likely to affect income in future periods, when such unrecognized items are recognized. We therefore investigate the relation between comprehensive income and future earnings. Since, OCI consists of the above three types of adjustments, we discuss below how the individual components may potentially be associated with future earnings.

Following SFAS No. 115, firms are required to report unrealized gains and losses for available-for-sale marketable securities (SEC). This component of OCI subsequently passes through the income statement when these securities are sold then and reported as a part of net income. In this sense, current period SEC is indicative of future net income realizations. This suggests that the predictability of future net income would be improved by incorporating information contained in current period comprehensive income disclosures.[5]

Another component of OCI is adjustments for minimum pension liability (PEN). Pension accounting standards (SFAS No. 87) require that when additional pension liability exceeds the amount of

[5] Prior studies investigating the contemporaneous pricing of SEC have found mixed evidence. Barth (1994) and Nelson (1996) suggest that SEC is not priced by investors. In contrast, Ahmed and Takeda (1995) and Dhaliwal et al. (1999) report a positive pricing of SEC for banks and Biddle and Choi (2006) for manufacturing sector as well as service sector.

unrecognized prior service cost, the excess amount be reported as a direct reduction in OCI. Pension expense is determined by the return on pension assets and increased obligation during the period. If a company contributes an amount exactly equal to pension expense to the pension fund, the contribution increases the current value of pension assets, which in turn decreases minimum liability (=accumulated benefit obligation – fair value of pension assets). Thus, *ceteris paribus*, the minimum pension liability in excess of unrecognized prior service cost, PEN, decreases. If a firm chooses to contribute more (less) than the amount of pension expense, the excess (shortfall) of cash paid over and above (below) the pension expense is recorded as a Debit (Credit) to Prepaid (Accrued) Pension cost. Thus, contribution to Plan Assets by itself does not change the amount of pension expense on the income statement. The question that arises is what is the implication or information conveyed in current levels of PEN for subsequent period net income. There are two effects to consider here for firms with a non-zero PEN. First, increased (decreased) levels of contribution to Plan Assets in current period will lead to lower (higher) levels of pension expense in the subsequent period arising from "Actual Return on Plan Assets", thus increasing (decreasing) subsequent period net income. The opposite case is also possible. If PEN is not zero and companies are not able to fund more money to the pension fund rather than required amount to meet current period's pension expense, it means that the company's financial condition is relatively weak. In either of the above two cases, PEN as a component of OCI will have implications for the amounts that will be recognized as pension expense in subsequent periods and hence it is likely that current period PEN will be associated with subsequent period net income.[6]

Another component of OCI is the amount of unrecognized foreign currency translation gains/losses (FCT). This component of OCI primarily arises from changes in exchange rate between parent's and subsidiaries' currencies and the required reporting under SFAS No. 52 for consolidated positions. These arise from the fact that the foreign entity's books are maintained in its functional

[6] Prior studies examining the pricing of pension adjustments are limited. An exception is Biddle and Choi (2006), who report a positive association with contemporaneous stock prices, particularly for financial and manufacturing sectors. This positive association is consistent with the future persistence of this component of OCI.

currency and translation using the current rate method (current exchange rate) results in unrecognized translation gains and losses. Since these adjustments are accumulated on the balance sheet until liquidation, there is little managerial discretion over recognizing any unrecognized gains and losses. Thus translation exposure will usually not affect future cash flows until foreign cash flows are converted into US dollars and hence, may not have immediate short term direct cash flow effects. By the same token however, they can also represent investments in chronically weak currencies if the debit balance on FCT exhibits an increasing pattern over time. To this extent FCT can be informative about a firm's future cash flow. On the other hand, if exchange rate fluctuations are temporary, then these translation adjustments have the potential to reverse in the future. Thus, while FCT as a component of OCI may not have predictive ability arising from managerial discretion, it may still have predictive ability if exchange rates reflect systematic patterns about the underlying economic exposure in the country of foreign operations.[7]

The above discussion suggests that OCI and its components contain information about future realizations and hence are likely to be informative about a firms' future performance. In this paper, we therefore investigate the implications of current period OCI for future firm performance and examine three related research questions. First, we examine the association between current period OCI and subsequent period net income. Second, following prior tests of market inefficiency associated with accruals, we examine, if and if so to what extent does the market misprice the information in comprehensive income. Assuming market efficiency, we would expect that investors know the relationship between future net income and current period OCI. In such a case, we would expect that the market would correctly price other comprehensive income. However, as with accruals, if the implications of OCI for subsequent period income are not well understood by market participants, then the market is more likely to misprice the information in other comprehensive income. Finally, we examine the effect of

[7] The evidence to date on the contemporaneous pricing of FCT has been mixed. Soo and Soo (1994) show that FCT is valued by the market although the response coefficient is significantly smaller than that on reported net income. Louis (2003) provides evidence that FCT is priced negatively for firms in the manufacturing sector. In contrast, Pinto (2005) documents that foreign currency translation adjustment is value-relevant when variations in the source of exposure are taken into account.

the adoption of SFAS No. 130, if any, on market mispricing. SFAS No. 130, which became effective for fiscal years beginning after December 15, 1997, requires that firms report total comprehensive income and its components in a primary financial statement and that the OCI components be reported separately from each other (SFAS No. 130, para 13 and para 22). In the pre-SFAS No. 130 period, OCI items were mostly aggregated and reported in the balance sheet as adjustments to equity section. Thus, prior to the enactment of SFAS No. 130, it may have been more difficult for accounting users to understand the implications of OCI disclosures. However, since the enactment of SFAS No. 130, the users can clearly identify OCI and its components in the financial statements. Hence, we would expect that the magnitude of market's mispricing of OCI items, if any, would decrease after the adoption of SFAS No. 130 due to the improved disclosure of OCI information.

3. SAMPLE SELECTION AND MEASUREMENT OF VARIABLES

3.1 Sample selection

Our initial sample comprises of all firm-year observations with non-zero OCI information that have necessary COMPUSTAT and CRSP data for the fiscal years of 1994-2003.[8] We start our sampling period from 1994 because the data required to calculate SEC are not available until 1994 in COMPUSTAT (Dhaliwal et al. 1999). Since we require one-year-ahead return data beginning with the fourth month after the end of fiscal year t, we use CRSP data up to year 2005. We remove all observations that don't have OCI amount because we focus on the difference between net income and comprehensive income. This approach to examining differences is guided by the evidence in Dhaliwal et al. (1999) and Biddle and Choi (2006) who document that net income and comprehensive income are highly correlated. The Pearson (Spearman) correlation between net income and comprehensive income for the sample used in this study is 0.9854 (0.9727) and is significant at the 1 percent level ($p<.001$), suggesting significant correlations even after removing observations with zero OCI. Because of this high correlation, focus on comprehensive income itself to examine the incremental usefulness of OCI items

[8] More specifically, we require that the sum of absolute value of individual OCI items is greater than $1,000.

may lead to erroneous conclusions. To mitigate this problem, this study eliminated observations that don't have any individual OCI amount.

We exclude firms from the financial service industry (SIC code 6000-6999) and utility industry (SIC code 4900-4949) because disclosure requirements and accounting rules are significantly different for these industries (Collins et al. 2003). Further, we delete the observations in the top or bottom 0.5 percentiles of the annual distribution of the OCI, current year net income, one-year-ahead net income (deflated by average total assets, respectively) or one-year-ahead size-adjusted return to avoid the undue influence of extreme observations. The final sample consists of 15,977 firm-year observations representing 3,716 firms.

3.2 Measurement of other comprehensive income

Following Dhaliwal et al. (1999) and Biddle and Choi (2006), we define comprehensive income as 'as-if SFAS No. 130 comprehensive income.' Under SFAS No. 130, the three items initially included in other comprehensive income (OCI) are the change in unrealized gains and losses on marketable securities (SEC), the change in the cumulative foreign currency adjustment (FCT), and the change in additional minimum pension liability in excess of unrecognized prior service costs (PEN). To provide evidence on comprehensive income as it is defined as SFAS No. 130, we compute as-if SFAS No. 130 comprehensive income as net income adjusted for these three dirty surplus items.[9] Thus, OCI, which represents the difference between net income and our definition of comprehensive income, is equal to the sum of the following three variables:

(i) Adjustment for unrealized holding gains (losses) on marketable securities (SEC) measured as the change of COMPUSTAT data item # 238.

[9] Subsequently, SFAS No. 133, *Accounting for Derivative Instruments and Hedging Activities,* required that unrealized gains and losses on derivatives be included in the definition of OCI. We exclude these items from our OCI measure due to following two reasons: First, currently COMPUSTAT doesn't provide the amounts of these items. Second, adding new items in the definition of OCI from the post-SFAS No. 133 period may introduce unnecessary noise. Thus, we confine our definition of OCI to the initial three items included in SFAS No. 130 consistently throughout the sample period.

(ii) Adjustment for foreign currency translation (FCT) measured as the change of COMPUSTAT data item #230.

(iii) Adjustment for pension liability (PEN) measured as the change in additional minimum pension liability in excess of unrecognized prior service costs (.65 times the change of COMPUSTAT data item #297 - #298, if less than zero).[10]

4. RESULTS

4.1 Preliminaries

The descriptive statistics of the 15,977 firm-year observations used in this study is reported in Table 1. Panel A of Table 1 reports the distribution of the variables. With respect to the results reported in Panel A, the following are apparent. On average, the net income (NI_t) and other comprehensive income (OCI_t) at year t is close to zero and standard deviation is relatively small, suggesting that these variables are smoothly distributed without much outliers. The mean of the OCI component (i.e., SEC_t, FCT_t, and PEN_t) is all small too and the distributions show that many of the values of these variables are zero, confirming the findings in prior studies (Biddle and Choi 2006). The mean values of the size-adjusted abnormal stock return in year t and t+1 (SAR_t and SAR_{t+1}) are both positive, but the median values are negative.[11] For example, the mean of SAR_t is 4.37 percent whereas the median is -6.79 percent. This difference is natural given that the minimum value of the return variables are -1 but the maximum values can be far greater than 1 (100 percent). The average market value of equity is $3.45 billion and that of book-to-market ratio is 0.6198. The remaining five variables ($LnMVE_t$, $LnBM_t$, ACC_t, $BETA_t$, EP_t) are those used as control variables in subsequent regression analyses. The mean value of accruals (ACC_t) is negative, suggesting that in our sample conservative accounting plays a role to decrease reported net

[10] Unlike SEC and FCT that have either positive or negative values, PEN can only have a negative value, i.e., only unrecognized losses but no unrecognized gains.

[11] *SAR* is the annual size-adjusted abnormal return, inclusive of dividends, calculated as the raw buy-and-hold return for the security minus the buy-and-hold return for the same size decile portfolio of firms. The return accumulation starts four months after the end of the fiscal year to allow financial information to be disseminated. If a security delists during a particular year, we include the CRSP delisting return in the buy-and-hold annual return, and the proceeds are reinvested in the CRSP size-matched decile for the remainder of the year. If a security delists due to

income. Finally, the mean value of beta ($BETA_t$) is close to 1 and earnings-price ratio (EP_t) is about -0.0257.

INSERT TABLE 1 ABOUT HERE

Panel B of Table 1 reports the Pearson correlation among the variables used in the regression analyses of the study. The correlation between current OCI (OCI_t) and future net income (NI_{t+1}) is positive (0.028) and significant at the one percent level, suggesting that the firms reporting higher *OCI* at current period are likely to report higher *NI* in the future period. Similarly, the future return (SAR_{t+1}) is also positively related to the current *OCI*, implying that higher *OCI* at current period is also related to higher future return. Among other variables, current net income (NI_t) is highly correlated with future net income (NI_{t+1}) with the coefficient of 0.711 ($p < 0.001$). Among other variables, there is a high correlation between ACC_t and NI_t (0.473), $LnMVE_t$ and $LnBM_t$ (-0.473), and EP_t and NI_t (0.419). Because of these high correlations, we repeat our estimation of regression equations both after inclusion and exclusion of these control variables.

4.2 Comprehensive income and future earnings

To examine the usefulness of OCI in predicting future net income, we examine the relationship between one-year-ahead net income (NI_{t+1}) and other comprehensive income in the current year (OCI_t). Specifically, we use the following equation:

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 OCI_t + \varepsilon_{t+1} \quad (1)$$

where *NI* is net income divided by average total assets and *OCI* is the other comprehensive income divided by average total assets. The subscript t or $t+1$ represents the time period (year).[12] If current year's net income is useful to predict one-year-ahead net income, we expect that ω_1 would be significantly different from zero with positive sign. In addition, if current year's other comprehensive income is

poor performance (delisting codes 500 and 520-584), we use delisting returns of -35 percent for NYSE/AMEX firms and -55 percent for NASDAQ firms as recommended by Shumway (1997).

[12] As in Sloan (1996) and Hanlon (2005), we scale variables by average total assets to allow for cross-sectional comparability. The average total asset is calculated by the arithmetic mean of the beginning and ending balance of total assets of the year.

incrementally useful over net income to predict one-year-ahead net income, the coefficient on *OCI* (ω_2) would be positive too. For this purpose, we use Equation (1) with 15,977 observations and perform pooled/cross-sectional regression analyses. The empirical results are reported in Panel A of Table 2. The first (second) row of Panel A reports the results with only NI_t (OCI_t) as an independent variable whereas the third row reports the results with full model including both NI_t and OCI_t as independent variables.

INSERT TABLE 2 ABOUT HERE

As can be seen in the first row of Panel A, the coefficient on NI_t is highly significant ($\omega_1 = 0.734$ with $\underline{t} = 127.78$), suggesting that current net income is strongly associated with future one-year-ahead net income. The explanatory power (adjusted R^2) of the model is very high and is about 49 percent. The second row shows that other comprehensive income (OCI_t) is also significantly associated with future one-year-ahead net income although the explanatory power of the model is not high (1.04%). In the third row of Panel A, Table 1, when both NI_t and OCI_t are included in the model, the coefficient (0.734) on NI_t is still very significant. In addition, the coefficient on OCI_t is 0.433 and is statistically significant at the one percent level, suggesting that other comprehensive income incrementally provide useful information to predict future net income over current net income. The explanatory power also increases to about 51 percent.

In Panel A, we report the F-test result on the equality of the coefficient for ω_1 and ω_2 ($\omega_1 = \omega_2$) in the fourth row. The F-value is 21.34 ($p < 0.001$), implying that the magnitude of the influence of NI_t (0.734) is statistically greater than that of OCI_t (0.433). Finally, the bottom row of Panel A reports the result of the comparison of the explanatory powers between the first regression model (0.4923) and the third regression model (0.5068). It reveals that the explanatory power of the full model (i.e., the third model) is statistically higher (Vuong $z = 3.17$ with $p = 0.0015$) than that of the first model, suggesting that OCI information helps to improve the prediction of future one-year-ahead net income.

We further examine if current year's other comprehensive income is incrementally useful over net income in predicting two-year-ahead or three-year-ahead net income by replacing the dependent variable NI_{t+1} by NI_{t+2} or NI_{t+3} in Equation (1). In untabulated results we find that the associations

between OCI_t and NI_{t+2} or NI_{t+3} are not significant, suggesting that the implication of OCI for long-term future earnings beyond t+1 is, however, not very strong. These results may impliy that the effect of recognizing OCI items in future years on net income is not significant in years after t+1.

Our discussion in section 2 suggests that *OCI* can be divided into its individual components: adjustment for unrealized holding gains/losses on available-for-sale securities (*SEC*), adjustment for foreign currency translation (*FCT*), and adjustment for pension liability (*PEN*). Hence, it is possible, that the results in Panel A of Table 2 are driven by only one or two of the components of OCI. To examine if these individual components are differentially associated with future net income, we estimate the following equation:

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 SEC_t + \omega_3 FCT_t + \omega_4 PEN_t + \varepsilon_{t+1} \quad (2)$$

The results of estimating the above Equation (2) are reported in Panel B of Table 2. The coefficient on NI_t is highly significant with the coefficient being 0.734. The coefficient on *SEC* (0.419) and *FCT* (0.466) are also significant at the 1 percent level, whereas that on *PEN* (-0.164) is not significant. The comparison of the coefficients on *SEC* and *FCT* reveals that they are not statistically different (F = 0.12) as reported in the third to the bottom row of Panel B, Table 2. However, both ω_2 and ω_3 are greater than the coefficient on *PEN*. These results suggest that only *SEC* and *FCT* are positively related to the future one-year-ahead net income. Finally, the bottom two rows of Panel B report the comparison of explanatory power between the models in Panel A and Equation (2). The test results show that the explanatory power of Equation (2) in Panel B is statistically higher (Vuong z statistic 1 = 3.31 with p = 0.0009) than that of the model reported in the first row in Panel A, but it is insignificantly higher (Vuong z statistic 2 = 1.37 with p = 0.1699) from that of the full model reported in the third row of Panel A.

In summary, all the results in Table 2 suggest that while other comprehensive income is incrementally useful in predicting one-year-ahead earnings over and above current period earnings. However, the predictive performance of OCI does not appear show any significant improvement when individual components of OCI are included in place of aggregate OCI.

4.3 Market mispricing of comprehensive income

Next, we examine if the capital market anticipates this relationship between other comprehensive income and net income in current year, and one-year-ahead net income. For this purpose, we investigate the expectation of one-year-ahead earnings embedded in stock prices using the so-called 'two-equation' Mishkin (1983) methodology. This methodology has been widely used to examine market mispricing in various accounting studies.[13] The Mishkin methodology tests for the null hypothesis that the market rationally anticipates and prices the implications of current net income and other comprehensive income with respect to future one-year-ahead earnings. Specifically, we jointly estimate the following two equations.

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 OCI_t + \varepsilon_{t+1} \quad (1)$$

$$SAR_{t+1} = \beta_0 + \beta_1 (NI_{t+1} - \omega_0 - \omega^*_1 NI_t - \omega^*_2 OCI_t) + v_{t+1} \quad (3)$$

SAR is size-adjusted abnormal stock return measured for 12 months period, and *NI* and *OCI* is net income and other comprehensive income, respectively.[14] Equation (1) is a forecasting equation that captures the usefulness of net income and other comprehensive income for predicting future one-year-ahead net income, whereas Equation (3) is a pricing equation that uses returns to infer the usefulness that investors implicitly assign to net income and other comprehensive income. Miskin's (1983) test calculates a likelihood ratio statistic to evaluate the null hypothesis that the market rationally prices net income and other comprehensive income. If the stock market correctly anticipates the implications of past earnings and other comprehensive income, the coefficients on NI_t (ω^*_1) and OCI_t (ω^*_2) in Equation (3) would be equal to the corresponding coefficients (i.e., ω_1 and ω_2) in equation (1), respectively. The regression results of estimating Equation (3) together with the results on relevant Mishkin (1983) tests are reported in Table 3.

INSERT TABLE 3 ABOUT HERE

[13] See for example, Sloan (1996), Xie (2001), Burgstahler et al. (2002), Collins et al. (2003), and Hanlon (2005) among others.

In Table 3, the reported value of coefficients on NI_t and OCI_t (ω_1 and ω_2) are taken from Equation (1) as reported in the Panel A, Table 2. In Table 3, the magnitude of ω_1 is 0.734 while that of ω^*_1 is 0.785. The results of the Mishkin test reported in the first to the bottom row show that these two coefficients are not statistically different (χ^2 = 1.20 with p = 0.2739). This result suggests that the market correctly impound the implication of NI_t on NI_{t+1}. In contrast, the magnitude of ω_2 is 0.433 while that of ω^*_2 is -0.363, and the two coefficients are statistically different at the one percent level (χ^2 = 12.98 with p = 0.0015), even though ω^*_2 itself is not significantly different from zero (t = -1.36). This result implies that the stock market does not reflect the implication of other comprehensive income at all.

Although not separately tabulated, we also perform tests with an expanded version of Equation (3) which replaces OCI_t with its components (i.e., SEC_t, FCT_t, and PEN_t). The result shows that only FCT_t is statistically significant (p < 0.001). That FCT as a component of OCI is significant relative to other components of OCI is not surprising since, for most firms FCT is the largest component of OCI (Dee 1999).[15]

4.4 Prediction of future returns

The results reported in Table 3 suggest that the market misprices other comprehensive income items. In order to supplement the results of the Mishkin test in Table 3, we perform a hedge portfolio test and regression analyses that control for factors that are related to future returns. To enable interpretation of the results more realistically, the returns used in the section must all be for the same time period and the accounting information used as independent variables must be available to the market at the time the return accumulation period begins.[16]

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[14] Specifically, the SAR_{t+1} is measured as the difference between a firm's buy-and-hold return measured for 12 months period beginning with the fourth month after the end of fiscal year t and the buy-and-hold return over the same 12 months on the market-capitalization based portfolio decile to which the firm belongs.

[15] In our sample (n=15,977), the number of firm-year observations with a non-zero *FCT* (n=12,516 or 78.3%) is much greater than that with a non-zero *SEC* (n=6,264 or 39.2%) or a non-zero *PEN* (n=1,364 or 8.5%). In addition, the magnitude of *FCT* is greater than that of *SEC* or *PEN* as the mean of absolute *FCT* (0.0074) in the non-zero *FCT* sample is higher than that of absolute *SEC* (0.0057) in the non-zero *SEC* sample or absolute *PEN* (0.0031) in the non-zero *PEN* sample.

[16] Hence, for purposes of tests in this section we restrict our sample to the December fiscal year-end observations (n = 10,019).

First, the hedge portfolio test examines if an OCI-based trading strategy yields significant future returns. To implement this test, we sort firms into deciles based on their rankings of other comprehensive income scaled by average total assets for that year. Firms with the most positive (negative) scaled *OCI* are grouped into decile 10 (1). To maintain sample size, we follow Collins et al. (2003) and combine the highest (lowest) two *OCI* deciles into the highest (lowest) trading portfolio, and combine deciles 3 through 8 to form the middle trading portfolio. This procedure results in three OCI-based trading portfolios.

Table 4, Panel A provides the results of the hedge-portfolio tests. In this panel, we report the mean (equally-weighted) size-adjusted abnormal returns in the subsequent years following the portfolio formation for the three trading portfolios and a hedge portfolio that is long (short) in the highest (lowest) *OCI* trading portfolio. Within the panel, we test the hedge returns against the null hypothesis of hedge returns zero. The future abnormal returns in years t+1, t+2, and t+3 for the hedge returns are 5.0 percent (t = 2.83), 3.8 percent (t = 0.16), and -3.1 percent (t = -1.10), respectively.[17] While insignificant abnormal hedge returns in years t+2 and t+3 are consistent with our previous finding that is no strong implication of *OCI* for long-term future earnings, the significant positive abnormal returns to the hedge portfolio in year t+1 are consistent with the market mispricing other comprehensive income items for the next year.

INSERT TABLE 4 ABOUT HERE

For the second method to supplement the findings in Table 3, we estimate the following equation to examine if future returns are associated with other comprehensive income even after controlling for other correlated variables.

$$SAR_{t+1} = \beta_0 + \beta_1 OCI_t^{dec} + \beta_2 LnMVE_t^{dec} + \beta_3 LnBM_t^{dec} + \beta_4 Beta_t^{dec} + \beta_5 ACC_t^{dec} + \beta_6 EP_t^{dec} + \varepsilon_{t+1} \quad (4)$$

In Equation (4), *SAR* is size-adjusted abnormal return and *OCI* is other comprehensive income. Following Collins et al. (2003) and Hanlon (2005), we include five control variables: natural logarithm of

the market value of equity at the end of fiscal year (*LnMVE*), natural logarithm of the book-to-market ratio at the end of fiscal year (*LnBM*), the market beta measured over 60 months period (*Beta*), accruals measured by difference between income before extraordinary items and operating cash flows (*ACC*), and earnings-to-price ratio at the end of fiscal year (*EP*). We estimate the above equations by an ordinary least squares (OLS) regression (Panel B) and by Fama and MacBeth (1973) cross-sectional regression (Panel C).

The superscript 'dec' in Equation (4) implies that these variables are converted into deciles. We rank the values of each independent variable in Equation (4) into deciles in each sample year and scale them to range from 0 to 1. This scaling permits the interpretation of the variables' respective coefficients as the return to a zero-investment portfolio with a long position in stocks of the firm-years with positive weights and a short position in the stocks of the firm-years with negative weights (Bernard and Thomas 1990, Frankel and Lee 1998). The long and short positions are closed after one year. The abnormal returns, represented by coefficient β_1, are comparable to abnormal returns to a zero-investment portfolio with long (short) positions in firms within the highest (lowest) deciles of *OCI*. The results of estimating OLS with Equation (5) above are reported in Table 4, Panel B. It can be seen from the panel, that Model 1 includes only *OCI* as an independent variable. We then add three Fama and French (1992) risk factors (*LnMVE*, *LnBM*, and *Beta*) in Model 2 and additional two control variables, *ACC* and *EP* are included in Model 3.

In Table 4, Panel B, the coefficients on *OCI* are positive and significant at one percent level in all the three specifications. For example, in Model 3 which include all five control variables, the coefficient on *OCI* is 0.054 (t = 3.00), which suggests that the zero-investment strategy based on the *OCI* can yield about 5.4 percent of abnormal return over one year period even after controlling for other correlated variables. The coefficients on the other control variables are all in the expected directions and

[17] When we calculate the hedge returns (t-statistics) based on the mean and standard errors of the 10 (9 or 8) year time series, the results in years t+1, t+2, and t+3 are 5.2 percent (t = 2.92), 2.9 percent (t = 0.24), and -1.4 percent (t =-0.84), respectively.

most of them are significant. These results suggest that our samples have similar characteristics with those used in prior studies.[18]

In Table 4, Panel C, we also perform Fama-MacBeth regression with Equation (5) to mitigate any potential foresight bias in the Mishkin analysis from pooling observations over years (Hanlon 2005). The results of Fama-MacBeth regression are also consistent with those in Table 4, Panel B. For example, the average coefficients on *OCI* over 10 yearly regressions is 0.057 (t = 2.58) in Model 3, which is very close to 0.054 in Model 3 of OLS results in Table 4, Panel B. Among 10 yearly regressions, 8 yearly regressions reveal positive signs for the coefficient on *OCI*, and 6 of the 8 are statistically significant.

In summary, the two supplemental test results clearly reveal that the market fails to anticipate the implications of other comprehensive income and thus it is possible to make a profitable investment strategy based on the mispricing of the market.

4.5 The impact of SFAS No. 130 on market mispricing

SFAS No. 130 became effective in December 1997, and our sample extends over the period 1994-2003. Prior to SFAS No. 130, OCI information was mostly reported as separate components of stockholders' equity on the balance sheet, but individual OCI items were not required to be disclosed separately. In contrast, SFAS No. 130 requires that firms report total comprehensive income and its components in a financial statement with the same prominence as other financial statements that constitute a full set of financial statements (SFAS No. 130, para 22).[19] Further, it requires the OCI components to be reported separately from each other believing that information about the individual components of comprehensive income is more important than aggregated comprehensive income (SFAS No. 130, para 13). Thus, the adoption of SFAS No. 130 may help investors to easily identify individual

[18] We repeat our analyses after replacing the dependent variable by size-adjusted returns for year t+2 or t+3. The results reveal insignificant abnormal returns from the zero-investment strategy. As such, the results for years t+2 and t+3 are not tabulated.

[19] SFAS No. 130 does not specify which format is required to present comprehensive income on a financial statement except that net income should be shown as a component of comprehensive income in that financial statement. Thus, as per SFAS 130, three alternative formats are allowed for presenting OCI and total comprehensive income: (1) below net income on the income statement, (2) on the separate statement of comprehensive income, or (3) on the statement of changes in stockholders' equity. Regardless of which format is used, accumulated OCI for

OCI items on the financial statements. We therefore investigate whether the market's mispricing of OCI is largely driven by the pre-SFAS No. 130 period or does it persist in the post-SFAS No. 130 period, and if so whether there is any change in the extent of market mispricing consequent to the adoption of SFAS No. 130.

Given that SFAS No. 130 does not change the economic substance of OCI but only changes the format of the disclosure, it is possible that the market's behavior may not alter even after the enforcement of SFAS No. 130. However, previous findings in experimental studies suggest that the format of OCI disclosure does matter in investors' decision-making (Hirst and Hopkins 1998) and in managers' earnings management behavior (Hunton et al. 2006). Thus, it is an interesting empirical question as to whether or not the markets' mispricing changes from pre-SFAS No. 130 period to post-SFAS No. 130 period. To the extent that investors, particularly naïve investors, pay less attention to the information of OCI mainly due to its less transparent disclosure and/or its aggregate disclosure in the pre-SFAS No. 130 period, we expect that the improved disclosure on OCI by the adoption of SFAS No. 130 would alleviate the market's inability to assess the predictability of OCI, and that mispricing in the post-SFAS No. 130 period would be smaller than in the pre-SFAS 130 period.

To investigate this, we partition our sample data into two sub-periods: the pre-SFAS No. 130 period (1994-1997) and the post-SFAS No. 130 period (1998-2003). We have 6,085 (3,674 for return test) pre-period observations and 9,892 (6,345 for return test) post-period observations. When we estimate the Equation (1) separately for the two sub-periods, the coefficient on OCI_t is 0.415 (t = 5.95) in the pre-SFAS No. 130 period, and it is 0.431 (t = 5.50) in the post-SFAS No. 130 period. The difference in the coefficient was not significant, indicating that there was no significant change in the predictive ability of OCI, from the pre- to the post-SFAS No. 130 period. This suggests that the predictive ability of comprehensive income is not only robust to the form of disclosure but also robust to different time periods over our sample period.

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the reporting period should be presented on the balance sheet as a component of stockholders' equity, separate from additional paid-in capital and retained earnings.

However, when we examine the prediction of subsequent stock prices, we find that the results of the Mishkin test are slightly different in the pre-SFAS No. 130 period compared to those in the post-SFAS No. 130 period.[20] Similarly, the abnormal returns (the coefficient on *OCI* decile) are much higher in the pre-period (7.4% vs. 4.1%). To further investigate this, we use the following two equations.

$$NI_{t+1} = \omega_0 + \omega_1 POSTP_t + \omega_2 NI_t + \omega_3 OCI_t + \omega_4 OCI_t*POSTP_t + \varepsilon_{t+1} \quad (5)$$

$$SAR_{t+1} = \beta_0 + \beta_1 (NI_{t+1} - \omega_0 - \omega^*_1 POSTP_t - \omega^*_2 NI_t - \omega^*_3 OCI_t - \omega^*_4 OCI_t*POSTP_t) + v_{t+1} \quad (6)$$

where *POSTP* represents the post-SFAS No. 130 period and has a value of 1 if the observation is from December 1998 to 2003 and 0 otherwise. Thus, if the association between the current year OCI and one-year-ahead net income doesn't change in the post-SFAS No. 130 period, the coefficient on $OCI_t*POSTP_t$ (ω_4) in Equation (5) will be insignificant. In addition, if investors assign similar persistence weights to OCIs in the pre- and post- SFAS No. 130 periods, the coefficient on $OCI_t*POSTP_t$ (ω^*_4) in Equation (6) will not be significant. The empirical results from estimating equations (5) and (6) are reported in Table 5.

INSERT TABLE 5 ABOUT HERE

In Equation (5) in Table 5, the coefficient on OCI_t (ω_3) is significantly positive whereas that on $OCI_t*POSTP_t$ (ω_4) is not significantly different from zero. It implies that the current OCI is associated with future net income by the same magnitude, regardless of the time period. However, in Equation (6), the coefficients on OCI_t (ω^*_3) and $OCI_t*POSTP_t$ (ω^*_4) is both significant. The positive and significant coefficient on ω^*_4 implies that the magnitude of the mispricing of OCI in the post-SFAS 130 period significantly decreases. This finding supports our previous conjecture that the magnitude of mispricing will decrease after the adoption of SFAS No. 130. It implies that more transparent reporting of OCI and its components in a primary financial statement in the post-SFAS No. 130 period enables investors to better assess the implications of OCI than in the pre-SFAS No. 130 period.

[20] When we perform the Mishkin test (as in Table 3) separately for the two sub-periods, ω_2 is 0.415 (0.431) in the pre-SFAS No. 130 period (in the post-SFAS No. 130 period) while ω^*_2 is -0.514 (0.009) in the pre-SFAS No. 130 period (in the post-SFAS No. 130 period). Further, the likelihood ratio statistic on $\omega_2 = \omega^*_2$ in the pre-SFAS No. 130 period (χ^2 = 15.09 with p = 0.0001) is more significant than in the post-SFAS No. 130 period (χ^2 = 4.19 with p = 0.0407).

The Mishikin test results are reported in the bottom two rows of Table 5. The second to bottom row report that ω_3 is significantly different from ω^*_3 (p = 0.0001) and the bottom row show that $\omega_3 + \omega_4$ is also significantly different from $\omega^*_3 + \omega^*_4$ (p = 0.0463). It suggests that even though the magnitude of the mispricing decreases in the post-SFAS No. 130 period, significant mispricing still continues to exist.

5. ADDITIONAL TESTS

In this section we report results from some additional tests that were conducted to assess the robustness of our main findings.

5.1 Control for the magnitude of earnings

Our current specification in equation (4) uses the decile ranking of OCI without reference to the magnitude of net income. To the extent the magnitude of net income determines the decile ranking of OCI, we may have the econometric problem of a correlated omitted variable. Hence, we control for current period net income in our multivariate analyses. To investigate whether the market's mispricing is conditional upon the magnitude of earnings, we re-estimate the results in Table 4, after partitioning the sample data into quintiles of net income. We replicate the Fama-MacBeth regression reported in Table 4, Panel B for High NI, Low NI and middle NI sample observations after creating quintile distributions based on the magnitude of NI in each sample year and test whether the coefficients on OCI_t^{dec} are different across different quintiles of net income. In untabulated results we find that the abnormal returns from OCI are mainly observed for middle three NI quintiles. The abnormal return from OCI is not significant for the highest or lowest NI quintile. These results indicate that the market is more likely to misprice OCI when net income is neither very large nor very small.

5.2 Influence of profit vs. loss firms

Prior studies show that the presence of loss observations in cross-sectional samples dampens earnings response coefficient and earnings-returns relation (Hayn 1995). We therefore divide our sample observations into profit and loss reporting firms (based on net income) and re-examine abnormal returns, as in the Table 4, Panel B, separately for these two groups. The results show that abnormal returns are significant for both profit firms (4.8%, t = 2.71) and loss firms (6.1%, t = 1.71).

5.3 Validity of the Mishkin Test

Recently, Kraft et al. (2007) argue that the OLS mispricing test is asymptotically equivalent to the Mishkin test and encourage researchers to use OLS instead because: 1) OLS is well understood by most researchers, 2) it is less cumbersome to estimate, 3) it limits potential survivorship bias arising out of the requirement for future earnings data, and 4) that econometric problems such as cross-sectional dependence in the error terms and omitted variables can be better controlled. Following Kraft et al. (2007), we replace Equation (3) by the following equation and estimate it using OLS:

$$SAR_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 OCI_t + \varepsilon_{t+1} \quad (7)$$

When estimating the coefficients' standard errors, we use a White (1980) method to correct for heteroskedasticity and a clustering procedure that accounts for serial dependence across years for a given firm. The empirical results from estimating the above equation shows that while the coefficient on NI_t is not significant (-0.0551 with t = -1.26), the coefficient on OCI_t is significantly different from zero (0.4685 with t = 2.77). Hence, following Kraft et al. (2007, page 16 and 29), we can reject the null of rational pricing (i.e., market efficiency) with respect to the *OCI* i.e., the market doesn't fully reflect the implication of OCI_t in the current year stock price, and thus OCI_t is priced in the year t+1.

6. SUMMARY AND CONCLUSION

Using data during the sample period 1994 to 2003, this paper provides evidence on the predictive value of comprehensive income disclosures. Specifically, the paper examines the ability of current period comprehensive income to predict subsequent period net income and whether stock prices correctly reflect such implications for future earnings. Our results provide several new and additional results that complement the existing literature that has examined the value relevance of comprehensive income disclosures. Our evidence suggests that comprehensive income can predict subsequent period net income, over and above current period income. However, we also document that the performance of the future earnings prediction model does not show any significant improvement when individual components of OCI are included in place of the aggregate OCI amount. Second, our results imply that the stock market does not reflect the implication of other comprehensive income suggesting that the market misprices the

information content of OCI. More importantly, we find that because of market mispricing and failure to anticipate the implications of other comprehensive income, a hedge portfolio based on the magnitude of OCI yields a profitable investment strategy. In particular, we show that a zero-investment strategy based on current period 'other comprehensive income' yields an abnormal return of 5.4 percent over a one year period even after controlling for other correlated variables. However, the magnitude of the abnormal return decreased after the enactment of SFAS No. 130, suggesting that the SFAS No. 130 was effective in helping investors' correct valuation of the information on other comprehensive income. This latter result is an important contribution since it adds credence to the efficacy of SFAS No. 130 and provides a meaningful approach to asses the efficacy of other such regulatory interventions. Overall our results provide support for the ability of other comprehensive income to predict subsequent period income and stock prices.

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Table 1
Sample statistics

Panel A: Distribution of variables (n = 15,977)

Variables	Mean	Std. Dev.	5%	25%	50%	75%	95%
NI_{t+1}	-0.0053	0.1707	-0.3561	-0.0235	0.0373	0.0810	0.1587
NI_t	0.0001	0.1653	-0.3427	-0.0180	0.0400	0.0834	0.1614
OCI_t	-0.0001	0.0146	-0.0199	-0.0036	-0.0002	0.0028	0.0215
SEC_t	0.0002	0.0085	-0.0041	0	0	0	0.0052
FCT_t	0.0001	0.0117	-0.0156	-0.0021	0	0.0013	0.0171
PEN_t	-0.0003	0.0024	-0.0005	0	0	0	0
SAR_{t+1}	0.0086	0.5505	-0.6501	-0.3259	-0.0788	0.2015	0.9743
SAR_t	0.0437	0.7378	-0.6446	-0.3176	-0.0679	0.2116	1.0477
MVE_t	3453	16730	14	80	337	1344	12254
$LnMVE_t$	5.8633	2.0626	2.6267	4.3906	5.8210	7.2032	9.4136
BM_t	0.6198	0.5900	0.1074	0.2760	0.4703	0.7696	1.6090
$LnBM_t$	-0.8044	0.8460	-2.2313	-1.2874	-0.7545	-0.2619	0.4756
ACC_t	-0.0580	0.1062	-0.0955	-0.0955	-0.0488	-0.0088	0.0849
$BETA_t$	1.1520	0.8666	0.0812	0.5820	0.9920	1.5578	2.8059
EP_t	-0.0257	0.4016	-0.3595	-0.0145	0.0365	0.0649	0.1223

Definition of Variables:

NI_t = net income (COMPUSTAT #172) in year t scaled by average total assets (calculated as the arithmetic mean of total assets at the beginning and end of the fiscal year t;

OCI_t = (SEC + FCT + PEN) in year t scaled by average total assets;

SEC_t = Unrealized holding gain (loss) of marketable securities in year t scaled by average total assets;

FCT_t = change of foreign currency translation adjustments in year t scaled by average total assets;

PEN_t = the unrecognized minimum pension liability in year t scaled by average total assets;

SAR_t = the size-adjusted abnormal stock return, measured as the difference between a firm's buy-and-hold return over 12 months beginning with the fourth month after the end of fiscal year t and the buy-and-hold return over the same 12 months on the market-capitalization-based portfolio decile to which the stock belongs;

MVE_t = the market-value of common equity at the end of the fiscal year t (in millions);

$LnMVE_t$ = the natural log of the market-value of common equity at the end of the fiscal year t (in millions);

BM_t = the ratio of book value of common equity to the market value of common equity at the end of the fiscal year t;

$LnBM_t$ = the natural log of the ratio of book value of common equity to the market value of common equity at the end of the fiscal year t;

ACC_t = accruals measured as the difference between income before extraordinary items (COMPUSTAT #18) and operating cash flows (COMPUSTAT #308) in year t scaled by average total assets;

$BETA_t$ = the CAPM beta estimated from a regression of raw monthly returns on the CRSP value-weighted monthly return index over a period of 60-months ending three months after the fiscal year t;

EP_t = earnings per share divided by stock price at the end of the fiscal year t.

Table 1 (continued)
Sample statistics

Panel B: Pearson correlations (n = 15,977)

Variables	NI_{t+1}	NI_t	SAR_{t+1}	$LnMVE_t$	$LnBM_t$	ACC_t	$BETA_t$	EP_t
OCI_t	0.028***	-0.012	0.023***	0.012	0.010	-0.012	0.016*	0.008
NI_{t+1}		0.711***	0.156***	0.277***	-0.052***	0.180***	-0.261***	0.280***
NI_t			-0.017**	-0.014*	-0.014*	0.473***	-0.299***	0.419***
SAR_{t+1}				-0.024***	0.069***	-0.067***	0.019***	-0.054**
$LnMVE_t$					-0.473***	0.020**	0.008	0.162***
$LnBM_t$						0.015*	-0.145***	-0.084***
ACC_t							-0.144***	0.315***
$BETA_t$								-0.144***

*, **, and *** denote that the correlation is significantly different from zero at 10, 5, and 1 percent level (two-tailed test), respectively. See Table 1, Panel A for the definitions of variables.

Table 2
OLS regressions of future net income on the current year net income and other comprehensive income (n=15,977)

Panel A: Association between one-year-ahead net income and OCI in total

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \varepsilon_{t+1}$$
$$NI_{t+1} = \omega_0 + \omega_1 OCI_t + \varepsilon_{t+1}$$
$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 OCI_t + \varepsilon_{t+1}$$

Variables	*Intercept*	NI_t	OCI_t	Adj. R^2
Estimate	-0.005***	0.734***		0.4923
(t-stat)	(-5.61)	(127.78)		
Estimate	-0.005***		0.332***	0.0104
(t-stat)	(-5.60)		(5.59)	
Estimate	-0.005***	0.734***	0.433***	0.5068
(t-stat)	(-5.60)	(128.02)	(6.66)	
F-test of $\omega_1 = \omega_2$: 21.34 (p<0.0001)				
Vuong z statistic : 3.17 (p=0.0015)				

Panel B: Association between one-year-ahead net income and individual OCI items

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 SEC_t + \omega_3 FCT_t + \omega_4 PEN_t + \varepsilon_{t+1}$$

Variables	*Intercept*	NI_t	SEC_t	FCT_t	PEN_t	Adj. R^2
Estimate	-0.005***	0.734***	0.419***	0.466***	-0.164	0.5069
(t-stat)	(-5.73)	(127.92)	(3.74)	(5.76)	(-0.42)	
F-test of $\omega_2 = \omega_3$: 0.12 (p=0.7327)						
F-test of $\omega_2 = \omega_4$: 4.15 (p=0.0416)						
Vuong z statistic 1: 3.31 (p=0.0009)						
Vuong z statistic 2: 1.37 (p=0.1699)						

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with two-tailed tests.
See Table 1, Panel A for the definitions of variables.

Table 3
Nonlinear generalized least squares estimation (the Mishkin test) of the relation between size-adjusted abnormal returns and the information contained in other comprehensive income for future earnings (n=15,977)

$$NI_{t+1} = \omega_0 + \omega_1 NI_t + \omega_2 OCI_t + \varepsilon_{t+1}$$
$$SAR_{t+1} = \beta_0 + \beta_1 (NI_{t+1} - \omega_0 - \omega^*_1 NI_t - \omega^*_2 OCI_t) + v_{t+1}$$

Parameters	Predicted sign	Estimates	Asymptotic Std. Error
ω_0	?	-0.005***	0.001
ω_1	+	0.734***	0.006
ω^*_1	+	0.785***	0.024
ω_2	+	0.433***	0.065
ω^*_2	+	-0.363*	0.267
β_0	?	0.009**	0.004
β_1	+	1.091***	0.035
Test of market efficiency:		$\omega_1 = \omega^*_1$	$\omega_2 = \omega^*_2$
Likelihood ratio statistics:		1.20	12.98
Marginal significance level:		(p=0.2739)	(p=0.0015)

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with two-tailed tests.
See Table 1, Panel A for the definitions of variables.

Table 4
OCI and future size-adjusted abnormal returns

Panel A: Future size-adjusted returns for portfolios based on annual deciles of scaled OCI

OCI Deciles	SAR_{t+1}		SAR_{t+2}		SAR_{t+3}	
	Mean	t-stat	Mean	t-stat	Mean	t-stat
1-2	-0.0076	-0.63	0.0384	2.20**	0.0523	2.90***
3-8	0.0125	1.75*	0.0429	3.97***	0.0461	3.72***
9-10	0.0424	3.28***	0.0422	2.52**	0.0212	0.98
Hedge Return	0.0500	2.83***	0.0038	0.16	-0.0311	-1.10
n	10,019		8,223		6,571	

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with a two-tailed test for the time-series of annual portfolio size-adjusted returns. Portfolio deciles are formed annually based on the ranking of OCI scaled by average total assets. The hedge portfolio is formed by taking a long position in the highest two deciles and a short position in the lowest two deciles. The sample includes December year-end firm-years only.

Panel B: OLS regression results for the relation between future size-adjusted returns and OCI decile rankings after controlling for Fama-French risk factors and EP and accrual anomalies.

$$SAR_{t+1} = \beta_0 + \beta_1 OCI_t^{dec} + \beta_2 LnMVE_t^{dec} + \beta_3 LnBM_t^{dec} + \beta_4 Beta_t^{dec} + \beta_5 ACC_t^{dec} + \beta_4 EP_t^{dec} + \varepsilon_{t+1}$$

Variables	Predicted sign	Model 1	Model 2	Model 3
Intercept	?	-0.014 (-1.40)	-0.061*** (-2.64)	-0.013 (-0.47)
OCI_t^{dec}	+	0.058*** (3.22)	0.056*** (3.12)	0.054*** (3.00)
$LnMVE_t^{dec}$	-		-0.030 (-1.57)	-0.038* (-1.95)
$LnBM_t^{dec}$	+		0.081*** (4.05)	0.077*** (3.78)
$Beta_t^{dec}$	+		0.045** (2.48)	0.047** (2.54)
ACC_t^{dec}	-			-0.112*** (-5.79)
EP_t^{dec}	+			0.027 (1.38)
Adj. R^2		0.0011	0.0046	0.0083

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with two-tailed tests. All t-statistics in parentheses are adjusted for serial correlation using the clustering procedure. The sample includes December year-end firm-years only (n=10,019). See Table 1, Panel A for the definitions of variables.

Table 4 (continued)

Panel C: Fama-MacBeth regression results for the relation between future size-adjusted returns and OCI decile rankings after controlling for Fama-French risk factors and EP and accrual anomalies.

$$SAR_{t+1} = \beta_0 + \beta_1 OCI_t^{dec} + \beta_2 LnMVE_t^{dec} + \beta_3 LnBM_t^{dec} + \beta_4 Beta_t^{dec} + \beta_5 ACC_t^{dec} + \beta_4 EP_t^{dec} + \varepsilon_{t+1}$$

Variables	Pred. sign	Model 1		Model 2		Model 3	
		Mean over the years (n=10)	Number of years +/-	Mean over the years (n=10)	Number of years +/-	Mean over the years (n=10)	Number of years +/-
Intercept	?	-0.014 (-0.38)	3/7	-0.041 (-1.17)	4/6	0.072 (0.16)	6/4
OCI_t^{dec}	+	0.054** (2.67)	8/2	0.061** (2.61)	8/2	0.057** (2.58)	8/2
$LnMVE_t^{dec}$	-			-0.041 (-0.44)	4/6	-0.049 (-0.64)	3/7
$LnBM_t^{dec}$	+			0.052** (2.73)	8/2	0.047* (2.25)	7/3
$Beta_t^{dec}$	+			0.036* (2.13)	7/3	0.040 (1.71)	7/3
ACC_t^{dec}	-					-0.104*** (-8.17)	0/10
EP_t^{dec}	+					0.019 (0.24)	6/4
Avg. adj. R^2		0.0083		0.0684		0.0848	

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with two-tailed tests.
All t-statistics in parentheses are computed as the ratio of the mean of the annual coefficients to the standard error calculated from the distribution of annual coefficients. Avg. adj. R^2 is the mean of the adjusted R^2 in the annual regressions. The sample includes December year-end firm-years only (n=10,019). See Table 1, Panel A for the definitions of variables.

Table 5
Assessing the impact of SFAS No. 130: Comparison of the Mishkin test between Pre-SFAS No. 130 period and Post-SFAS No. 130 period (n=15,977)

$$NI_{t+1} = \omega_0 + \omega_1 POSTP_t + \omega_2 NI_t + \omega_3 OCI_t + \omega_4 OCI_t*POSTP_t + \varepsilon_{t+1}$$

$$SAR_{t+1} = \beta_0 + \beta_1 (NI_{t+1} - \omega_0 - \omega^*_1 POSTP_t - \omega^*_2 NI_t - \omega^*_3 OCI_t - \omega^*_4 OCI_t*POSTP_t) + v_{t+1}$$

Parameters	**Estimates**	**Asymptotic Standard Error**
ω_3	0.405***	0.001
ω_4	0.039	0.146
$\omega_3 + \omega_4$	0.444	
β_1	1.091***	0.001
ω^*_3	-0.494**	0.313
ω^*_4	0.543*	0.299
$\omega^*_3 + \omega^*_4$	0.049	
Test of market efficiency:		
$\omega_3 = \omega^*_3$	LR stat. = 14.83 (p=0.0001)	
$\omega_3 + \omega_4 = \omega^*_3 + \omega^*_4$	LR stat. = 3.97 (p=0.0463)	

*, **, *** denotes statistical significance at 10%, 5%, and 1%, respectively, with two-tailed tests. $POSTP_t$ is a dummy variable which has a value of 1 if the observation is from 1998 to 2003, and 0 otherwise. See Table 1, Panel A for the definitions of other variables.