



Information Content of Earnings and Earnings Components of Commercial Banks: Impact of SFAS No. 115

BIKKI JAGGI*

Department of Accounting and Information Systems, Faculty of Management, School of Business, Rutgers University, Piscataway, NJ 08854 Tel.: 732-445-3539, Fax: 732-445-3201 and City University of Hong Kong, Hong Kong
E-mail: Jaggi@Business.Rutgers.edu

RONALD ZHAO

Department of Accountancy, Faculty of Business, City University of Hong Kong

Abstract. SFAS No. 115 modified classification of debt and equity securities held by firms and also modified the reporting format for unrealised gains/losses on security transactions (URGL). This study investigates whether implementation of SFAS No. 115 improved information content of earnings and earnings components of commercial banks. Improvement in the information content is measured by comparing the association between equity returns and earnings and earnings components of the post-adoption period of SFAS No. 115 with the pre-adoption period.

The test results indicate that the association of equity returns with earnings components and aggregate earnings is significantly stronger in the post-adoption period compared to the pre-adoption period. The improvement is especially evident for the components of URGL and non-interest revenues. These results suggest that information provided by earnings components is considered more value relevant for investment decision after implementation of SFAS No. 115. Findings on non-interest revenues indicate that revenues from banking activities other than lending also play an important role in the commercial banks' profitability.

Key words: commercial banks, earnings components, security transaction, unrealized gains and losses

JEL Classification: G14, G21, M40

I. Introduction

An important objective of financial reporting is to provide information about an enterprise's performance measured by earnings and their components (FASB, 1973). The findings of earlier studies have indicated that the earnings components of industrial and commercial firms provide incremental information to aggregate earnings (e.g., Lipe, 1986). The findings based on industrial/commercial firms may not be relevant for financial institutions because the nature of their business activities differ. Furthermore, financial institutions operate in a

*Corresponding author.

regulatory environment, which will have a strong influence on the information content of earnings and their components. Therefore, an evaluation of information content of earnings and their components for commercial banks requires a study directly based on bank data.

Earlier studies on the earnings components of commercial banks focused on earnings before and after gains and losses on security transactions (STGL), which highlighted the importance of STGL (e.g., Barth et al., 1990; Moyer, 1990; Warfield and Linsmeier, 1992; Ahmed and Takeda, 1995). The findings of these studies, based on data prior to 1994 when SFAS No. 12 (1975) provided the guidelines for classification of securities and reporting of STGL, were mixed. Under SFAS No. 12, the income statement contained realized and unrealized gains/losses on security transactions only when the securities were classified as trading securities. Unrealized gains/losses on investment securities were not recognized in the income statement, instead the investment securities were reported in the balance sheet on cost basis. The Securities and Exchange Commission's AcSEC Statement on Position 90-11 required that market values of investment securities be reported parenthetically in the financial statements effective 1990. By using market and book values, the investors could have calculated holding (unrealized) gains/losses on investment securities, but there was no explicit disclosure of this information in the financial statements. Because management could decide the classification of securities into trading and investment securities at their discretion, the reporting practices of unrealized gains/losses on securities' transactions (URGL) differed across firms.

SFAS No. 12 was superseded by SFAS No. 115 in 1993, which reclassified securities and defined investment securities more stringently. The new standard requires that debt and equity securities be classified into trading, investment and held-for-sale securities. In addition to reporting realized and unrealized gains/losses on trading securities in the income statement, the standard requires that unrealized gains/losses (URGL) on "held-for-sale" securities be reported in the balance sheet as a special item and also be included in the comprehensive income. Because a significant portion of commercial banks' portfolios consists of debt and equity securities, SFAS No. 115 is expected to have a greater impact on commercial banks than industrial/commercial firms. It would be of interest to researchers, investors and professionals to know whether the new valuation and reporting framework improves information content of commercial banks' earnings and their components, particularly that of the URGL component. Edwards and Fishkin (1995) have lately emphasized the role of non-interest revenues in the banks' profitability. This study, therefore, also examines whether the earnings component of non-interest revenues has been considered important by investors for evaluating commercial banks' profitability for their investment decisions.

The study is based on the *Company Analysis* database issued by the *Financial Times*, which provides detailed data on realized and unrealized STGL contained in the financial statements of commercial banks. The test period consists of six years, including three years prior to (1991–1993) and three years after (1994–1996) the implementation of SFAS No. 115. Improvement in the information content of earnings and earnings components is examined by comparing the association of equity returns with earnings and earnings components for the post-adoption period of SFAS No. 115 with the pre-adoption period.

The test results show that the positive association between equity returns and aggregate earnings is statistically significant throughout the entire period. However, the association

between equity returns and URGL is statistically significant only after implementation of SFAS No. 115, suggesting that URGL provides incremental information after detailed disclosures were required under SFAS 115. Similarly, the association between equity returns and non-interest revenues is significantly positive only in the post-adoption period. These findings imply that information content of earnings and earnings components, especially that of URGL, improved significantly subsequent to the implementation of SFAS No. 115.

The remainder of the paper is organized as follows. Part II provides background for the study. Hypotheses on the association of equity returns with earnings and earnings components are developed in part III. Research methodology, sample selection and data collection procedures are described in part IV. Empirical results are discussed in part V and conclusion is contained in part VI.

II. Background of the study

A significant portion of commercial banks' income is derived from security transactions because their asset portfolios are heavily represented by debt and equity securities. This operating characteristic is evident from the mandatory requirement for commercial banks to report two income figures: income before securities transactions (IBST) and after securities transactions (NI) separately. The realized as well as unrealized STGL are expected to provide important information on banks' economic performance, especially because unrealized gains/losses may provide information on the banks' future profitability, which should be of value relevance for investment decisions.

Findings of existing research have, however, provided conflicting evidence on the information content of STGL. Barth et al.'s (1990) findings suggest that the earnings before securities transactions (IBST) provides more value relevant information than the earnings including the securities transactions (NI). The findings of a study conducted by Moyer (1990) indicate that gains/losses on securities transactions (STGL) have no information content, but Warfield-Linsmeier's (1992) findings indicate that STGL has information content and its effect on average is negative on the equity returns. Ahmed and Takeda (1995) have argued that the effect of changes in STGL on the equity returns would be positive if the effect of other (off-balance sheet) net assets could be controlled. Barth (1994) evaluated fair value of investment securities and found that the explanatory power of investment securities beyond that provided by historical costs did not extend to STGL. The findings of these studies provide conflicting evidence with respect to the information content of STGL, which does not support the value relevance of URGL for investment decisions.

Prior to 1994, SFAS No. 12 provided the guidelines for valuation and reporting of security transactions. This standard provided management the discretion to classify securities either as trading or investment securities, which provided the basis for inclusion or exclusion of STGL in the reported earnings. The classification decision was probably influenced by managers' earnings-related goals, as supported by the findings of several studies. For example, Moyer (1990) argued that STGL could have been used to reduce regulatory costs when the banks' capital ratio fell below the regulatory minimum. Scholes et al. (1990) found

that STGL was used to offset the effect of loan loss provisions (PLL) on earnings, whereas Warfield and Linsmeier (1992) suggested that STGL was used to minimize taxes. As a result of earnings manipulation, investors might have interpreted STGL, in particular URGL, as an earnings management tool, and therefore they either did not react to information contained in it or reacted negatively.

SFAS No. 115 replaced SFAS No. 12 starting with the financial statements for 1994. The new standard refines the classification framework for securities and modifies the reporting format for both realized and unrealized STGL, which reduces the management's flexibility to some extent in reporting realized and unrealized gains/losses on securities' transactions. According to SFAS No. 115, securities are classified into three categories: held-to-maturity securities, trading securities, and securities available for sale. The "held-to-maturity" securities primarily include debt securities, which are to be held until maturity, and investment in such securities is measured by amortized costs. The "trading" securities, including both debt and equity securities, are primarily held for trading purposes. These securities are measured at fair value, and unrealized holding gains and losses on these securities are included in current period's earnings. The securities, which are neither classified as "held-to-maturity" nor "trading," are classified as securities available for sale. The measurement basis for such securities is also fair value. The unrealized gains and losses on such securities are, however, not included in the earnings statement. Instead they are shown, net of tax effect, in the stockholders' equity section as a separate item in the balance sheet.¹ Dividend and interest income on all categories of securities, including amortization of premiums and discounts on them, are included in the earnings of the current reporting period. SFAS No. 115 specifically required that shifting of securities among the three categories be kept to the minimum.

III. Earnings components, hypotheses and models

Information content of earnings and earnings components can be measured by their association with equity returns. Investors would react to information if it is value-relevant and this will be reflected in equity returns. We therefore develop hypotheses based on the association of equity returns with earnings and earnings components for the pre- and post-adoption periods of SFAS No. 115. First, we define the earnings components of commercial banks.

III.1. Earnings components of commercial banks

Though an aggregate earnings number serves as a comprehensive measure for a firm's earning ability, it may not provide sufficient information for investment decisions. Therefore, it has been argued that aggregate earnings should be decomposed into components for a better understanding of the earnings' role in the investment decisions (e.g., Wilson, 1987; Ohlson and Penman, 1991). Lipe's (1986) findings show that variations in the equity returns for industrial and commercial firms are better explained by the earnings components than by aggregate earnings. He found that each component provided information that was complementary to information provided by the aggregate earnings, and this information was lost when the components were aggregated into a single earnings number.

A number of studies have evaluated the information content of earnings components of commercial banks by focusing on IBST and STGL. Though STGL is an important component of commercial banks' earnings, there are a number of other components that are value relevant for investment decisions. For example, the Provision of Loan Losses (PLL) also provides incremental information and this has been the focus of attention of several researchers (e.g., Wahlen, 1994; Beaver and Engel, 1996; Bhat, 1996).

In this study, we first broadly decompose earnings of commercial banks into three major components: earnings before STGL (EBSTGL), realized STGL (RGL), and unrealized STGL (URGL), which is in line with previous studies. We further decompose the EBSTGL into sub-components based on revenue and expense categories, including interest revenues (INI), expenses associated with interest earnings (INE), non-interest (operating) revenues (OI), trading (operating) expenses (TE), provision for loan losses (PLL) and income taxes (IT). The sub-components of interest (INI) and non-interest (OI) sources will enable us to test the significance of non-interest revenues in the overall profitability of commercial banks. In addition, we also identify the component of Provision for Loan Losses (PLL), which has been extensively examined in the literature.

III.2. Hypotheses

(a) Impact of SFAS No. 115 on the information content of URGL. SFAS No. 12 required that realized as well as unrealized gains/losses on trading securities but only realized gains/losses on investment securities be included in the income statement. The standard however provided discretion to management to classify securities as trading or investment. As a result of this discretion, classification of securities differed across firms. Some firms classified certain types of securities as trading securities while others classified them as investment securities. Thus, URGL on similar securities could be included in the income statement by the firms that classified them as trading securities, but it was not recognized and not included in the income statement by firms that classified the securities as investment. Variations in the reporting of URGL by different firms might have reduced its value relevance for investment decisions.

SFAS No. 115 has refined the classification categories by creating a new category of "available-for-sale" securities. The reclassification of investment securities can be expected to reduce the management discretion in classifying securities and thus reduce the differences in reporting URGL across firms. It can be argued that reduced differences in URGL across firms would result in an improvement of information content of URGL as well as STGL and thus enhance their value relevance. The counter argument could be that refinement in the classification scheme may not have fully eliminated management discretion in classifying the securities and reporting of URGL. Thus, introduction of a new category of "available-for-sale" securities and inclusion of URGL on investment securities in the comprehensive income may not have been conducive to improving the information content of URGL.

We test whether information content of URGL improved after implementation of SFAS No. 115 by comparing the association between URGL and equity returns for the

post-adoption period with the pre-adoption period, upon the following hypothesis:

H1. *Ceteris paribus, the association between equity returns and URGL for commercial banks is stronger in the post-adoption period than the pre-adoption period of SFAS No. 115.*

Rejection of the above hypothesis implies that the information content of URGL did not improve with implementation of SFAS No. 115.

(b) Impact of SFAS No. 115 on the association between equity returns and other earnings components. In addition to URGL, there are a number of other components in commercial banks' earnings, as previously discussed in this section. The existing research findings on industrial and commercial firms (Lipe, 1986) indicate that information provided by earnings components would be complementary to that provided by aggregate earnings because it would enable investors to evaluate contributions made by individual earnings components to the firms' overall profitability. Moreover, a change in URGL is expected to lead to changes in other earnings components because all earnings components are correlated. We therefore expect that an increase in the information content of URGL will have an effect on the relative information content of RGL and other earnings components.

Edwards and Mishkin (1995) have pointed out the role of non-interest earnings in the overall performance of financial institutions. Interest earnings are the result of interest-related activities, e.g., lending and borrowing activities, which are considered to be traditional business activities for financial intermediaries, and historically the interest spread is considered to be the primary source of commercial banks' profit. As a result of intensified competition triggered by deregulation of the financial markets, non-interest earnings, which are related to investment and service activities, have become an increasingly important source of income for commercial banks. Thus, the component of non-interest earnings is also expected to play a significant role in the commercial banks' profitability. The following hypothesis tests the information content of other earnings components before and after implementation of SFAS No. 115:

H2. *Ceteris paribus, the association of equity returns with earnings components is stronger for commercial banks in the post-adoption than the pre-adoption period of SFAS No. 115.*

Rejection of above hypothesis would implies that information content of earnings components did not improve with implementation of SFAS No. 115.

IV. Research methodology

The association between equity returns and aggregate earnings is first evaluated by regressing equity returns on earnings for the pre- and post-adoption periods separately.

$$R_{it} = \alpha + \beta_1 NI_{it} + \varepsilon_{it} \quad (1)$$

where:

R_{it} = Equity return of firm i for year t , calculated as the difference between share prices for years t and $t - 1$ plus dividends for year t , scaled by the closing share price of year $t - 1$,

NI_{it} = Aggregate earnings (net income) per share of firm i for year t , scaled by the closing share price of year $t - 1$,

ε_{it} = Disturbance term.

Next we conduct a test on pooled data for both periods by adding a period dummy and an interaction term between NI and period dummy.

$$R_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_t + \beta_3 NI_{it} * D_t + \varepsilon_{it} \quad (2)$$

Where,

D_t = Dummy variable for year t is 1, when data for the post-adoption period (1994–1996) are used; zero for pre-adoption period (1991–1993).

A positive coefficient estimate for the interaction term would indicate a significant increase in the value relevance of NI after implementation of SFAS No. 115.

IV.1. Regression models for evaluation of URGL

In order to evaluate information content of URGL, we decompose aggregate earnings into components of earnings before gains and losses on securities' transactions (EBSTGL), realized gains/losses on securities' transactions (RGL) and unrealized gains/losses on securities' transactions (URGL). First, the association of equity returns with EBSTGL, RGL and STGL is tested on the following model for the pre- and post-adoption periods separately:

$$R_{it} = \alpha + \beta_1 EBSTGL_{it} + \beta_2 RGL_{it} + \beta_3 URGL_{it} + \varepsilon_{it} \quad (3)$$

All independent variables are scaled by the closing share price of year $t - 1$. We expect URGL to be insignificant for the pre-adoption period of SFAS No. 115 and significant for the post-adoption period, and we expect EBSTGL and RGL to be significantly positive for both periods. We also expect the explanatory power of the model to be stronger for the post-adoption period compared to the pre-adoption period.

The impact of SFAS No. 115 on the EBSTGL, RGL and URGL is also evaluated by conducting a regression test on pooled data for both periods by adding a period dummy for pre- and post-adoption periods. The interaction term of the period dummy with EBSTGL, RGL and URGL will indicate whether there is a significant difference in their information content between the pre- and post-adoption periods.

$$R_{it} = \alpha + \beta_1 EBSTGL_{it} + \beta_2 RGL_{it} + \beta_3 URGL_{it} + \beta_4 D_t + \beta_5 EBSTGL_{it} * D_t + \beta_6 RGL_{it} * D_t + \beta_7 URGL_{it} * D_t + \varepsilon_{it} \quad (4)$$

We expect an insignificant coefficient estimate for URGL and a significant coefficient estimate for $URGL * D$, reflecting a significant change in the information content of URGL from pre- to post-adoption period of SFAS No. 115.

IV.2. Regression model for evaluation of other earnings components

In order to investigate contributions made by different earnings components to equity returns, we examine association of equity returns with the following components: interest revenues (INI), interest associated expenses (INE), non-interest (operating) revenues (OI), operating (trading) expenses (TE), provisions for loan losses (PLL), realized and unrealised gains/losses on security transactions (RGL and URGL), and income taxes (IT):

$$R_{it} = \alpha + \beta_1 INI_{it} + \beta_2 INE_{it} + \beta_3 OI_{it} + \beta_4 TE_{it} + \beta_5 PPL_{it} + \beta_6 RGL_{it} + \beta_7 URGL_{it} + \beta_8 IT_{it} + \varepsilon_{it} \quad (5)$$

where:

INI_{it} = Interest revenues per share of firm i for year t , scaled by the closing share price of year $t - 1$,

INE_{it} = Interest associated expenses per share of firm i for year t , scaled by the closing share price of year $t - 1$,

OI_{it} = Non-interest revenues per share for firm i for year t , scaled by the closing share price of year $t - 1$,

TE_{it} = Trading expenses per share of firm i for year t , scaled by the closing share price of year $t - 1$,

PLL_{it} = Provision for loan losses per share for firm i for year t , scaled by the closing share price of year $t - 1$,

IT_{it} = Income taxes per share of firm i for year t , scaled by the closing share price of year $t - 1$.

We conduct analyses on pre- and post-adoption periods of SFAS No. 115 separately and expect that coefficient estimates for both periods will be positive for INI, OI, and RGL and negative for INE, TE, and IT. However, we expect all coefficients (especially that of OI) to be more significant for the post-adoption period compared to the pre-adoption period. The sign of the PLL coefficient can take either direction (Wahlen, 1994; Beaver and Engle, 1996; Bhat, 1996). We also expect the model for the post-adoption period is expected to have a greater R -squared value than the pre-adoption period of SFAS No. 115.

IV.3. Sample selection and data collection

Test data are derived from the *Company Analysis*, a *Financial Times* database. This database is used because it contains all relevant items needed for the analyses, such as realized and

unrealized STGL.² The database contains a total of 429 US commercial banks (FTSE SIC 81). The study covers a six-year period including three years before and three years after the implementation of SFAS No. 115. Since SFAS No. 115 became effective with the annual reports for fiscal year 1994, the period from 1991 to 1993 is treated as the pre-adoption period and that from 1994 to 1996 as the post-adoption period. In order to conduct comparative analysis for the pre- and post-adoption periods of SFAS No. 115, the sample includes only those banks that also provided information on realized and unrealized STGL before implementation of SFAS 115. As a result of this screening process, the test sample consisted of 66 US commercial banks, which were covered by the *Company Analysis* database and met the criteria of this study. Because of missing values, the final sample consisted of 150 firm-year observations for each period.

The variables and their FTSE notations (in parentheses) are briefly explained as follows. The variable of equity returns is computed as the first difference of closing share prices (mkt.shpc) plus the reported net dividend per share (dpsn) for the year divided by closing share price (mkt.shpc) of previous year. Aggregate earnings is net earnings per share (eps). Realized and unrealized gains and losses are each reported under two categories in the database, one as an income statement item and the other as a balance sheet item. The income statement item “asset gains” (asg.rl) and the balance sheet item “realized gains” (eq.r.rl) are combined to obtain the variable of realized gains/losses. Likewise, the income statement item of unrealized gains (asg.ur) and the balance sheet item of investment appreciation (eq.r.iap) are combined to arrive at the value of unrealized gains/losses. EBSTGL is aggregate earnings adjusted for RGL and URGL. Interest revenues and interest expenses are based on data items under symbols (ini) and (ine), respectively. Similarly, non-interest revenues and expenses are given under symbols (oi) and (te) in the database, respectively. The provision for loan losses is shown as banking provision (tel.pv.bnk). Income taxes is denoted as (tx) in the database.

V. Test results

V.1. Descriptive statistics

Descriptive statistics on all variables for the pre- and post-adoption periods of SFAS No. 115 are given in Table 1. The table also contains the results of paired *t*-tests on the differences between the means of variables for the two periods.

While the mean of equity returns (*R*) is significantly higher for the pre-adoption period compared to the post-adoption period, there is no significant difference between the means of aggregate earnings (*NI*) for the two periods. The absence of significant difference may have been due to smoothed earnings stream, which might have been motivated to reduce the bankruptcy risk of commercial banks (e.g., Elliott et al., 1991; Griffin et al., 1991; Beatty et al., 1993; Collins et al., 1993; and Liu et al., 1997). A reduced bankruptcy risk is considered desirable because it could lead to a lower cost of capital (Trueman et al., 1988) to meet the regulatory requirements.³

Table 1. Descriptive statistics

| Variable | Pre-SFAS No. 115 | | Post SFAS No. 115 | | Paired <i>t</i> -Test | |
|----------|------------------|----------|-------------------|----------|-----------------------|---------------------|
| | Mean | Std. Dev | Mean | Std. Dev | Difference | <i>t</i> -Statistic |
| <i>R</i> | 0.245 | 0.400 | 0.167 | 0.298 | −0.078 | −2.22** |
| INI | 0.710 | 1.121 | 0.314 | 0.333 | −0.396 | −3.36*** |
| INE | −0.385 | 0.672 | −0.169 | 0.227 | 0.216 | 3.45*** |
| OI | 0.264 | 0.344 | 0.161 | 0.180 | −0.103 | −3.63*** |
| TE | −0.954 | 1.158 | −0.636 | 0.815 | 0.318 | 3.67*** |
| PLL | −0.109 | 0.177 | −0.022 | 0.041 | 0.087 | 4.26*** |
| EBSTGL | 0.061 | 0.152 | 0.074 | 0.106 | 0.013 | 1.59 |
| RGL | 0.009 | 0.042 | 0.002 | 0.019 | −0.007 | −2.25** |
| URGL | 0.009 | 0.033 | 0.021 | 0.104 | 0.012 | 0.61 |
| IT | −0.041 | 0.044 | −0.049 | 0.029 | −0.008 | −4.45*** |
| NI | 0.079 | 0.141 | 0.098 | 0.064 | 0.019 | 1.49 |

**Significant at the 0.05 level.

***Significant at the 0.01 level.

R = Equity return of firm *i* for year *t*, calculated as the difference between share prices for periods *t* and *t* − 1 plus dividends for period *t*, scaled by the closing share price of year *t* − 1

INI = Interest revenue per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

INE = Interest expenses per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

OI = Non-interest revenue per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

TE = Trading expenses per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

PLL = Provision for loan losses per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

EBSTGL = Earnings before gains/losses on security transactions per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

RGL = Realized gains/losses on security transactions per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

URGL = Unrealized gains/losses on security transactions per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

IT = Income taxes per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

NI = Net income per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

The components of interest and non-interest revenues as well as associated expenses differ significantly between the two periods. The differences in interest revenues and expenses are largely determined by the changes in the market interest rates, and therefore, are beyond the bank management's control. It may also be difficult for the bank management to control non-interest (operating) revenues and expenses. Therefore, STGL and PLL are more likely to be used as the earnings management tools.

The significant difference in RGL and URGL between the two periods may have been due to differences in the securities' classification triggered by the adoption of SFAS No. 115 (Hodder et al., 2001). The significant change in RGL is associated with the change in URGL between the two periods. While RGL is reduced from 0.009 to 0.002, URGL increased from 0.009 to 0.021 in the post-adoption period. PLL also differs significantly between the two periods, and this may be due to earnings management to offset the changes in other earnings components (Wahlen, 1994; Beaver and Angel, 1996; Baht, 1996).

V.2. Association between equity returns and NI

The regression results of Model 1 for pre- and post-adoption periods of SFAS No. 115 are presented in Panel A of Table 2.

The results indicate that the NI coefficients are statistically significant for both periods, but the magnitude of coefficients is greater for the post-adoption period compared to the pre-adoption period (1.881 versus 0.700), suggesting that the equity returns are significantly associated with NI. It is also noteworthy that the explanatory power of the regression model

Table 2. Regression results on the association between equity returns and earnings

Panel A

$$\text{Model 1: } R_{it} = \alpha + \beta_1 \text{NI}_{it} + \varepsilon_{it}$$

| Variable | Pre-adoption Period of SFAS 115 | | | Post-adoption Period of SFAS 115 | | |
|----------------------------|---------------------------------|------------|---------------------|----------------------------------|------------|---------------------|
| | Coefficient | Std. Error | <i>t</i> -Statistic | Coefficient | Std. Error | <i>t</i> -Statistic |
| Intercept | −0.022 | 0.048 | −0.46 | −0.218 | 0.040 | −5.41*** |
| NI | 0.700 | 0.193 | 3.61*** | 1.881 | 0.275 | 6.82*** |
| <i>N</i> | 150 | | | 150 | | |
| Adj. <i>R</i> ² | 0.277 | | | 0.443 | | |
| <i>F</i> Value | 26.785 | | | 44.774 | | |
| Prob. > <i>F</i> | 0.0001 | | | 0.0001 | | |

Panel B

$$\text{Model 2: } R_{it} = \alpha + \beta_1 \text{NI}_{it} + \beta_2 D_t + \beta_3 \text{NI}_{it} * D_t + \varepsilon_{it}$$

| Variable | Coefficient | Std. Error | <i>t</i> -Statistic |
|----------------------------|-------------|------------|---------------------|
| Intercept | 0.203 | 0.031 | 6.570*** |
| NI | 0.653 | 0.191 | 3.416*** |
| <i>D</i> | −0.220 | 0.057 | −3.890*** |
| NI * <i>D</i> | 1.228 | 0.447 | 2.745*** |
| <i>N</i> | 300 | | |
| Adj. <i>R</i> ² | 0.104 | | |
| <i>F</i> Value | 12.907 | | |
| Prob. > <i>F</i> | 0.0001 | | |

***Significant at the 0.01 level.

R_{it} = Equity return of firm *i* for year *t*, calculated as the difference between share prices for years *t* and *t* − 1 plus dividends for year *t*, scaled by the closing share price of year *t* − 1

NI_{it} = Aggregate earnings (net income) per share of firm *i* for year *t*, scaled by the closing share price of year *t* − 1

D_t = Dummy variable for year *t* is 1, when data for the post-adoption period (1994–1996) are used; zero for pre-adoption period (1991–1993)

$\text{NI}_{it} * D_t$ = Interaction variable between NI and *D*

β_1, \dots, β_3 = Coefficients

ε_{it} = Error term

for the post adoption period is significantly higher compared to the pre-adoption period, as indicated by the R -squared values (0.443 versus 0.277).

The regression results of Model 2 on pooled data for pre- and post-adoption periods are contained in Panel B of Table 2. The results show that the coefficient for NI is positive and statistically significant, and the coefficient for the interaction term ($NI * D$) is positive and statistically significant (Recall, D is equal to 1 for the post-adoption period). The results of the model based on pooled data are thus consistent with the results of separate tests on the association between equity returns and NI for the pre- and post-adoption periods.

V.3. Regression results on the association of URGL with equity returns

The test results on the association of equity returns with EBSTGL, STGL, URGL for the pre- and post-adoption periods of SFAS No. 115 are presented in Panel A of Table 3.

The results of Model 3 indicate that the coefficient estimate of URGL is negative and statistically insignificant for the pre-adoption period, suggesting that the information content for URGL was insignificant prior to SFAS No. 115. The URGL coefficient is positive and significant at the 0.01 level for the post-adoption period, suggesting that URGL contained significant relevant information for investment decisions after adoption of SFAS No. 115. These results thus suggest that SFAS No. 115 had a positive effect on the information content of URGL.

The results of the model on pooled data (Model 4) are contained in Panel B of Table 3. The results show that the interaction term ($URGL * D$) is positive and significant, suggesting that there is a strong positive association between the equity returns and URGL for the post-adoption period (Recall, D is equal to 1 for the post-adoption period). It is noteworthy that the RGL coefficient is positive for the pre-adoption as well as post-adoption period and also for pooled data, but the coefficient for the interaction term between RGL and D in the pooled data is negative and insignificant, and the RGL coefficient for the post-adoption period is relatively smaller. This suggests that there is no incremental information content in RGL after adoption of SFAS No. 115.

The above results thus indicate that there is a significant improvement in the information content of URGL in the post-adoption period compared to the pre-adoption period of SFAS No. 115, which implies that URGL provided more value relevant information after implementation of SFAS No. 115. These results support Hypothesis 1.

V.4. Regression results on other earnings components

As mentioned earlier, coefficients for EBSTGL and RGL are positive for the pre- and post-adoption periods (Panel A, Table 3), and the coefficient for EBSTGL is higher whereas the coefficient for RGL is lower for the post-adoption period compared to the pre-adoption period. The results of regression tests on pooled data (Panel B, Table 3) show that the interaction term of EBSTGL with D is positive and significant, whereas the interaction term of RGL with D is negative and insignificant. These results suggest that the information

Table 3. Regression results on the association between equity returns and STGL

Panel A

$$\text{Model 3: } R_{it} = \alpha + \beta_1 \text{EBSTGL}_{it} + \beta_2 \text{RGL}_{it} + \beta_3 \text{URGL}_{it} + \varepsilon_{it}$$

| Variable | Pre-adoption Period of SFAS 115 | | | Post-adoption Period of SFAS 115 | | |
|----------------------------|---------------------------------|------------|---------------------|----------------------------------|------------|---------------------|
| | Coefficient | Std. Error | <i>t</i> -Statistic | Coefficient | Std. Error | <i>t</i> -Statistic |
| Intercept | 0.182 | 0.036 | 5.080*** | −0.016 | 0.040 | −0.393 |
| EBSTGL | 0.812 | 0.218 | 3.721*** | 1.862 | 0.362 | 5.148*** |
| RGL | 3.162 | 0.787 | 4.018*** | 2.527 | 1.156 | 2.186** |
| URGL | −0.666 | 0.912 | −0.730 | 1.818 | 0.365 | 4.977*** |
| <i>N</i> | 150 | | | 150 | | |
| Adj. <i>R</i> ² | 0.114 | | | 0.150 | | |
| <i>F</i> Value | 7.361 | | | 10.365 | | |
| Prob. > <i>F</i> | 0.0001 | | | 0.0001 | | |

Panel B

$$\text{Model 4: } R_{it} = \alpha + \beta_1 \text{EBSTGL}_{it} + \beta_2 \text{RGL}_{it} + \beta_3 \text{URGL}_{it} + \beta_4 D + \beta_5 \text{EBSTGL}_{it} * D_t + \beta_6 \text{RGL}_{it} * D_t + \beta_7 \text{URGL}_{it} * D_t + \varepsilon_{it}$$

| <i>N</i> = 313 | <i>F</i> Value = 8.132 | Prob. > <i>F</i> = 0.0001 | Adj. <i>R</i> ² = 0.139 |
|----------------------------|------------------------|---------------------------|------------------------------------|
| Variable | Coefficient | Std. Error | <i>t</i> -Statistic |
| Intercept | 0.182 | 0.032 | 5.772*** |
| EBSTGL | 0.812 | 0.192 | 4.227*** |
| RGL | 3.162 | 0.693 | 4.565*** |
| URGL | −0.666 | 0.803 | −0.829 |
| <i>D</i> | −0.198 | 0.057 | −3.492*** |
| EBSTGL * <i>D</i> | 1.050 | 0.464 | 2.260** |
| RGL * <i>D</i> | −0.636 | 1.518 | −0.419 |
| URGL * <i>D</i> | 2.484 | 0.910 | 2.732*** |
| <i>N</i> | 300 | | |
| Adj. <i>R</i> ² | 0.139 | | |
| <i>F</i> Value | 8.132 | | |
| Prob. > <i>F</i> | 0.0001 | | |

**Significant at the 0.05 level.

***Significant at the 0.01 level.

EBSTGL_{*it*} = Earnings before gains/losses on securities' transactions for firm *i*, period *t*

RGL_{*it*} = Realized gains/losses on securities' transactions for firm *i*, period *t*

URGL_{*it*} = Unrealized gains/losses on securities' transactions for firm *i*, period *t*

*D*_{*t*} = Dummy variable for year *t* is 1, when data for the post-adoption period (1994–1996) are used; zero for pre-adoption period (1991–1993)

EBSTGL_{*it*} * *D*_{*t*} = Interaction term between EBSTGL and *D*

RGL_{*it*} * *D*_{*t*} = Interaction term between RGL and *D*

URGL_{*it*} * *D*_{*t*} = Interaction term between URGL and *D*

β_1, \dots, β_7 = Coefficients

ε_{it} = Error term

content of EBSTGL improved but that of RGL did not improve after implementation of SFAS No. 115.

In order to have a better insight into the association between equity returns and earnings components, we regress equity returns on different earnings components. The results are presented in Table 4.

The coefficient for the operating expenses is the only significant coefficient at the conventional level for the pre-adoption period. The importance of operating expenses has been emphasized because they are considered necessary to maintain the banks' operations at a given level, and their examination provides information as to how efficiently the banks process loans (Preece and Millineaux, 1994) and utilize the resources (Wheelock and Wilson, 1995). Evanoff and Israilevich (1991) have, however, argued that the efficiency analysis

Table 4. Regression results on the association between equity returns and earnings components

| Model 5: $R_{it} = \alpha + \beta_1 \text{INI}_{it} + \beta_2 \text{INE}_{it} + \beta_3 \text{OI}_{it} + \beta_4 \text{TE}_{it} + \beta_5 \text{PLL}_{it} + \beta_6 \text{RGL}_{it} + \beta_7 \text{URGL}_{it} + \beta_8 \text{IT}_{it} + \varepsilon_{it}$ | | | | | | |
|---|---------------------------------|------------|---------------------|----------------------------------|------------|---------------------|
| Variable | Pre-Adoption Period of SFAS 115 | | | Post-Adoption Period of SFAS 115 | | |
| | Coefficient | Std. Error | <i>t</i> -Statistic | Coefficient | Std. Error | <i>t</i> -Statistic |
| Intercept | -0.102 | 0.600 | 1.70 | -0.235 | 0.043 | -5.44*** |
| INI | 0.195 | 0.137 | 1.42 | 0.424 | 0.081 | 5.25*** |
| INE | 0.147 | 0.201 | 0.73 | 0.153 | 0.121 | 1.34 |
| OI | 0.196 | 0.133 | 1.47 | 0.390 | 0.133 | 2.94*** |
| TE | -0.060 | 0.026 | -2.49*** | -0.048 | 0.023 | -2.04** |
| PLL | 0.500 | 0.369 | 1.35 | 0.032 | 0.525 | 0.06 |
| RGL | 0.748 | 0.652 | 1.14 | 0.052 | 0.958 | 0.05 |
| URGL | 0.434 | 0.826 | 0.52 | 0.429 | 0.176 | 2.43*** |
| IT | 0.000 | 0.000 | -1.13 | 0.000 | 0.000 | 0.73 |
| <i>N</i> | 150 | | | 150 | | |
| Adj. R^2 | 0.336 | | | 0.459 | | |
| <i>F</i> Value | 32.490 | | | 46.392 | | |
| Prob. > <i>F</i> | 0.0001 | | | 0.0001 | | |

**Significant at the 0.05 level.

***Significant at the 0.01 level.

INI_{it} = Interest revenues per share of firm *i* for year *t*, scaled by the closing share price of year *t* - 1

INE_{it} = Interest associated expenses per share of firm *i* for year *t*, scaled by the closing share price of year *t* - 1

OI_{it} = Non-interest revenues per share for firm *i* for year *t*, scaled by the closing share price of year *t* - 1

TE_{it} = Trading expenses per share of firm *i* for year *t*, scaled by the closing share price of year *t* - 1

PLL_{it} = Provision for loan losses per share for firm *i* for year *t*, scaled by the closing share price of year *t* - 1

RGL_{it} = Realized gains/losses on securities' transactions for firm *i*, period *t*

URGL_{it} = Unrealized gains/losses on securities' transactions for firm *i*, period *t*

IT_{it} = Income Tax for firm *i*, period *t*

β_1, \dots, β_7 = Coefficients

ε_{it} = Error term

of the banking operations also requires consideration of different sources of revenues in addition to expenses.

A comparison of revenue components for the pre- and post-adoption periods shows that the coefficients for both INI and OI are higher and statistically significant for the post-adoption period compared to the pre-adoption period. The coefficient for TE is in the expected direction for the pre- as well as for the post-adoption period and is statistically significant for both periods. Though the coefficient of INE is not in the expected direction for both periods, but it is insignificant for both periods.

The results for the post-adoption period thus show that the coefficient estimates for INI and OI improved during the post-adoption period and became statistically significant. The significantly positive coefficient for the non-interest revenues component (OI) supports the expectation that non-interest revenues play an important role in the banks' profitability (Edwards and Mishkin, 1995). These results are interpreted to provide support to Hypothesis 2 that the association between equity returns and earnings components is stronger in the post-adoption period than the pre-adoption period. These findings also provide additional support to Hypothesis 1 that the association between equity returns and URGL is strong in the post-adoption period.

A comparison of the explanatory power of the aggregate earnings model (Model 1) with the earnings decomposition model (Model 5) provides additional insight into the dynamic relationship between the information content of aggregate earnings and earnings components. In the pre-adoption period, the earnings decomposition model (Model 5) had a higher *R*-squared value (0.336) compared to that of the aggregate earnings model (Model 1) (0.277), suggesting that the earnings components had a higher explanatory power for the pre-adoption period. There was however no significant difference in the *R*-squared values of decomposition and aggregate earnings models for the post-adoption period (0.459 and 0.443 respectively), suggesting that the explanatory power of the two models did not differ significantly for the post-adoption period.

The above findings can be interpreted to imply that the lower explanatory power of the aggregate earnings model compared to the decomposition model during the pre-adoption period was caused by the confounding effect of earnings components, which reduced the information content of aggregate earnings. After implementation of SFAS No. 115, there might have been less noise and less confounding effect of earnings components on the aggregate earnings, which improved the explanatory power of the model.

V.5. Sensitivity tests

We conducted alternative tests on data for one year and five years before and after the implementation of SFAS No. 115 respectively, and the results of these alternative tests, not reported here, are qualitatively similar to those reported in this paper.

An analysis of variance inflation factor (VIF) indicated that the VIF value did not exceed 3 for any independent variables in all five regression models. Therefore, no significant multicollinearity existed among the earnings components. A general White's test was performed to examine distribution of the error terms of OLS regressions. The results indicated that heteroskedasticity did not constitute a significant threat to the validity of our findings.

VI. Conclusion

This study has investigated whether SFAS No. 115 improved information content of unrealised gains/losses on security transactions (URGL), as well as that of aggregate earnings and other earnings components of commercial banks. Earnings have been decomposed from two perspectives. First, they have been decomposed to focus on the components of realized and unrealized gains and losses on security transactions (STGL), and second to highlight the importance of different revenue sources for the commercial banks' profitability.

The test results suggest that the modified framework of security classification and URGL reporting under SFAS No. 115 improved the information content of URGL and also that of aggregate earnings. The result on non-interest revenues also reveal that this component plays an important role in the overall profitability in the unregulated competitive environment.

Considering the virtual abolition of the Glass-Steagall Act (1933) and the current wave of mergers between commercial and investment banks, the need for reliable and relevant accounting information on securities trading activities by financial institutions has never been so critical as it is today. SFAS No. 115 is an important step toward improving the value relevance of earnings and earnings components in bank financial reporting.

Notes

1. In comparison with AeSEC SOP 90-11, the balance sheet disclosure under SFAS No. 115 includes the unrealised gains/losses of a new category of available-for-sale securities.
2. Several of the required data items are not available in Compustat.
3. The US regulatory agencies use a CAMEL (capital adequacy, asset quality, management, earnings stability and liquidity) scheme to evaluate the financial well-being of commercial banks.

References

- Ahmed, A. S. and C. Takeda, "Stock Market Valuation of Gains and Losses on Commercial Banks' Investment Securities: An Empirical Analysis." *Journal of Accounting and Economics* 20, 207–225, (1995).
- Banking Act of 1933 (Glass-Steagall Act).
- Barth, M. E., W. H. Beaver and W. A. Wolfson, "Components of Earnings and the Structure of Bank Share Prices." *Financial Analysts Journal*, May/June, 53–60, (1990).
- Barth, M. E., "Fair Value Accounting: Evidence from Investment Securities and the Market Valuation of Banks." *Accounting Review*, July, 1–25, (1994).
- Beatty, A., S. Chamberlain and J. Magliolo, *Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital and Earnings*. Working paper, University of Pennsylvania, 1993.
- Beaver, W. and E. Engel, "Discretionary Behavior with Respect to Allowances for Loan Losses and Behavior of Security Price." *Journal of Accounting and Economics* 19, 117–206, (1996).
- Bhat, V. N., "Banks and Income Smoothing: An Empirical Analysis." *Applied Financial Economics* 6, 505–510, (1996).
- Collins, J., D. Shakelford and J. Wahlen, *The Coordination of Regulatory Capital, Earnings and Taxes for Banks*. Working paper, University of North Carolina at Chapel Hill, 1993.
- Edwards, F. R. and F. S. Mishkin, "The Decline of Traditional Banking: Implication for Financial Stability and Regulatory Policy." *Economic Policy Review*, July, 27–45, (1995).

- Elliott, J., J. D. Hanna and W. Shaw, "The Evaluation by the Financial Markets to Changes in Bank Loan Loss Reserve Levels." *Accounting Review* 66, 847–861, (1990).
- Evanoff, D. D. and P. R. Israilevich, "Productive Efficiency in Banking." *Federal Bank of Chicago Economic Perspective*, 11–32, (1991).
- Financial Accounting Standard Board, *Statement of Financial Accounting Concepts No. 1: Objectives of Financial Reporting by Business Enterprises*, Norwalk, CT, 1973.
- Financial Accounting Standard Board, *Statement of Financial Accounting Standard No. 12: Accounting for Certain Marketable Securities*, Norwalk, CT, 1975.
- Financial Accounting Standard Board, *Statement of Financial Accounting Standards No. 115: Accounting for Certain Investments in Debt and Equity Securities*, Norwalk, CT, 1993.
- Griffin, P. and S. Wallach, "Latin American Lending by Major U.S. Banks: The Effects of Disclosures about Nonaccrual Loans and Loan Loss Provisions." *Accounting Review* 66, 831–847, (1991).
- Hodder, L., M. Kohlbeck and M. L. McAnally, *Accounting Choices and Risk Management: SFAS 115 and U.S. Bank Holding Companies*. Working paper, University of Texas at Austin, 2001.
- Lipe, R. C., "The Information Contained in the Components of Earnings." *Journal of Accounting Research* 24, Supplement, 37–68, (1986).
- Liu, C., S. Ryan and J. Wahlen, "Differential Valuation Implications of Loan Losses Provisions across Banks and Financial Quarters." *Accounting Review* 72, 133–146, (1997).
- Moyer, S., "Capital Adequacy Ratio Regulations and Accounting Choices in Commercial Banks." *Journal of Accounting and Economics* 13, 123–154, (1990).
- Ohlson, J. A. and S. H. Penman, *Diaggregated Accounting Data as Explanatory Variables for Returns*. Working paper, Columbia University, 1991.
- Preece, D. C. and D. J. Millineaux, "Monitoring by Financial Intermediaries: Banks vs. Nonbanks." *Journal of Financial Service Review* 4, 191–200, (1994).
- Scholes, M. S., G. P. Wilson and M. A. Wolfson, "Tax Planning, Regulatory Capital Planning, and Financial Reporting Strategy for Commercial Banks." *Review of Financial Studies* 3, 625–650, (1990).
- Trueman, B., S. Titman and P. Newman, "An Explanation for Accounting Income Smoothing: Discussion." *Journal of Accounting Research* 26, 127–143, (1988).
- Wahlen, J. M., "The Nature of Information in Commercial Bank Loan Loss Disclosure." *Accounting Review* 69(3), 455–478, (1994).
- Warfield, T. D. and T. J. Linsmeier, "Tax Planning, Earnings Management, and the Differential Information Content of Bank Earnings Components." *Accounting Review* 67(3), 546–562, (1992).
- Wheelock, D. C. and P. W. Wilson, "Explaining Bank Failures: Deposit Insurance, Regulation and Efficiency." *Review of Economics and Statistics*, 689–700, (1995).
- Wilson, G. P., "The Incremental Information Content of the Accrual and Funds Components of Earnings after Controlling for Earnings." *Accounting Review*, April, 293–322, (1987).

Copyright of Review of Quantitative Finance & Accounting is the property of Springer Science & Business Media B.V.. The copyright in an individual article may be maintained by the author in certain cases. Content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.