

association of these two items to firms' credit ratings. The remainder of this study consists of background, the research issue, data collection, research design, results and conclusion.

BACKGROUND

Cash and Non-cash Equity Income

Among the unique features of the equity method is the determination of equity income by the investor and the treatment of cash dividends received from the investee. In order to address the research question posed in this study, it is necessary to construct a sample of firms reporting both cash and non-cash equity income from investments accounted for under the equity method.

Compustat data item *esub* provides the amount of equity income an investor reports in earnings for investments accounted for under the equity method. Equity income is equal to the investee reported earnings times the percentage of investee shares outstanding owned by the investor, falling between 20-50%. For example, if the investee reported \$100 million of earnings and the investor owned 30% of the investee's outstanding voting shares, then the equity income the investor includes in earnings would equal \$30 million. If the investor ownership of investee outstanding shares is below 20%, the investment would be accounted for as trading or available-for-sale securities and if ownership were above 50% of investee outstanding shares, the investment would be accounted for under the consolidation method.

Exhibit 1.

Cash and Non-cash Equity Income

Firms with total equity income greater than total cash equity income can be segmented into separate components of non-cash equity income and cash equity income.

Equity Income (<i>esub</i>)		Non-cash Equity Income (<i>esub</i> – (<i>esub</i> + <i>esubc</i>))
		Cash Equity Income, (<i>esub</i> + <i>esubc</i>).

Some investor firms that recognize equity income or equity loss (*esub*) may also receive cash dividends from investees related to the same equity method holdings. Other firms that report equity income or loss (*esub*) may not receive cash dividends if the investee firm did not pay

dividends. However, the accounting rules require that investor firms treat cash dividends received under the equity method as an increase in cash, but a reduction in the balance of the investment (an asset account) and not as dividend income as is the case with trading or available-for-sale investments. In those instances where the amount of equity income reported is in excess of cash dividends received, the equity income can be construed to consist of two components; 1) cash equity income represented by the amount of investee dividends received by the investor and 2) non-cash equity income representing the portion of equity income that is in excess of the cash dividends received. The bifurcation of equity income into cash and non-cash components, a cash receipt by the investor and a purely accrued amount of income recognized by the investor, provides two contrasting variables that facilitates the testing of cash versus accrual items as shown in Exhibit 1.

Compustat does not provide a single data item for cash equity income, i.e., investee dividends received by the investor. However, cash equity income can be constructed by combining two Compustat data items. *Esub*, previously mentioned, is the total amount of equity income or loss recognized by the investor without regard to any cash dividends received. Compustat provides the following definition of *esub*: “This item represents the parent company's portion of unremitted [i.e., accrued] earnings from an unconsolidated subsidiary (Compustat 2017).” The inclusion of the term “unremitted” indicates that this data item does not include cash received by the investor from the investee.

Compustat provides a separate data item, *esubc*, defined as: “This item represents the equity in the unremitted earnings of an unconsolidated subsidiary. Essentially, it is the equity in the earnings of an unconsolidated subsidiary less any dividends paid by the subsidiary (Compustat 2017).” *Esubc* is a statement of cash flow adjustment for cash flow from operating activities when the indirect method is used. The vast majority of publicly traded firms use the indirect method to report cash flow from operating activities. In an unrestricted sample of 2015 equity method firms reporting *esub*, 60.1% of the firms also reported *esubc*. One possible explanation for why only 60.1% of the firms report *esubc* is that some investee firms do not pay dividends, though nonetheless 20-50% of the investee's stock could be held by an investor who appropriately reports equity income, but receives no dividends. Also, while the majority of publicly traded firms use the indirect method to report cash flows from operating activities, the adjustment otherwise represented by *esubc* might be combined with “other adjustments” on the statement of cash flows, and thus a separate *esubc* amount is not reported by the investor.

The nature of *esubc* is that it represents the difference between total equity income (*esub*) and the amount of investee cash dividends received by the investor firm, consistent with its purpose as an adjustment item that helps reconcile accrual net income to cash flow from operating activities under the indirect method.

Investee cash dividends received can be constructed by combining *esub* and *esubc* as illustrated in Exhibit 2 which presents six combinations of *esub* and *esubc* that generate the amount of investee cash dividends. The authors contacted Capital IQ to confirm the nature of *esubc* and to confirm that the combination of *esub* and *esubc* does in fact equal the amount of investee cash dividends received by the investor firm.

Firms matching combination A in Exhibit 1 where positive *esub* exceeds *esubc* provide firms that can be used to compare cash equity income and non-cash equity income. Firms conforming to combination A are the firms that are used in this study. The remaining combinations, B through F, are possible outcomes, but do not lend themselves to providing

separate cash and non-cash equity income components and thus those firms represented by combinations B through F are not included in this study.

Exhibit 2
Constructing Cash Dividends Received from Investee
Under the Equity Method, *esub* + *esubc*

A single data item is not available in Compustat that provides the amount of cash dividends received from an investee firm by an investor firm under the equity method. Instead, investee cash dividends can be constructed for equity method firms by combining two Compustat data items, *esub* and *esubc*.

Combinations	a Equity in Earnings Unconsolidated Subsidiaries* <i>(esub per Compustat)</i>	b Equity in Net Loss (Earnings)* <i>(esubc per Compustat)</i>	c (a + b) Cash Equity Income** <i>(esub + esubc)</i>	d (a – c) Non-cash equity income
A	18	(12)	6	12
B	(18)	24	6	NA
C	18	7	25	NA
D	(18)	43	25	NA
E	18	(18)	0	18
F	(18)	18	0	(18)

Note that in Exhibit 2 investor firms do not appear to have received any investee dividends (column c shows zero) because the amount of *esubc* cancels out the amount of *esub* (combinations E and F). Thus, in the cash flows from operating activities indirect method, the *esubc* adjustment (column b) eliminates all *esub* reported in the investor's earnings because no investee dividends were received. Other investor firms will report negative equity income because the investee reported a loss for the year (combinations B and D). If such firms received investee cash dividends, they will not provide for positive equity income in excess of investee dividends received and will not be able to provide separate components of cash and non-cash equity income for inclusion in this study. Finally, in Exhibit 2 the outcome if investee dividends received exceed the amount of positive equity income reported by the investor firm is shown (combination C). While this circumstance maybe less frequent, its occurrence would also not provide for separate components of cash equity income and non-cash equity income as shown in Exhibit 1. So, firms conforming to combination A provide amounts for constructing cash and non-cash equity income components. Combinations B through F negate creating meaningful cash and non-cash equity income components.

Combination A in Exhibit 2 is also illustrated in Exhibit 1. Note that cash equity income is determined by combining *esub* + *esubc*, and non-cash equity income combines *esub* – (*esub* + *esubc*). These form the two variables of primary interest in this study. The remainder of this

study describes the sample selection, model development, discussion and presentation of results and conclusion.

CREDIT RELEVANCE RESEARCH

Credit relevance, i.e., the use of credit ratings as dependent variables, is an established research methodology used in prior studies.

Kaplan and Urwitz (1979) examined the market cost of debt for business units and privately-held companies by employing a stepwise ordered logit model to determine the variables that better explain credit ratings. They identified four variables that are the most significant in determining credit ratings: size, financial leverage, operating performance, and volatility.

Additional studies have also discovered that rating agencies use both public and private information when establishing credit ratings (Ziebart and Rieter 1992; Hand, Holthausen, and Leftwich 1992).

Ayers, LaPlant and McGuire (2010) investigated whether credit analysts use information from a different performance measure prepared in compliance with the Internal Revenue Code (IRC), in addition to financial statements prepared using generally accepted accounting principles (GAAP). Their findings provide evidence consistent with book–tax changes which signals negative information to credit rating agencies.

In performing an analysis of investment-grade issuers, Jorion, Shi, and Zhang (2009) provided evidence that apparent decreases in credit ratings over time can be explained primarily to changes in accounting quality. After controlling for changes in accounting quality, Jorion et al. (2009) found no evidence that agencies tightened credit standards when establishing ratings.

Chen, Martin, Mashruwala and Mashruwala (2015) tested whether credit ratings are affected by underfunded multiemployer pension plan obligations (MEPPs) both before and after the FASB's 2010 change in a relevant standard. The new standard required additional disclosure related to the underfunded MEPPS. Chen et al. (2015) found that before and after the passage of the accounting standard, there was a negative relationship between the underfunding and the firm's credit rating suggesting creditors perceive as a liability of the firm the underfunding of MEPP.

RESEARCH QUESTION

A basic tenant of financial reporting is that information presented on financial statements should be useful. One means of testing the usefulness of accounting information is to assess the association of selected accounting data to a firm's credit ratings as has been conducted in previous studies discussed earlier. Current accounting rules require the recognition of equity income in investor's earnings when the equity method is used. Instances in which an investor reports positive equity income in excess of investee cash dividends received provides an opportunity to construct non-cash equity income and cash equity income amounts. Since the non-cash equity income is not a receivable subsequently realizable in cash, the association of non-cash equity income and cash equity income, i.e., investee cash dividends received, can both be included in a regression equation to determine the association of each to credit ratings. Equity method requirements notwithstanding, cash received by the investor would seem to be more useful in the determination of credit ratings than an accrual (equity income) that does not represent a future cash flow. An expectation is that cash equity income (dividends) will have a positive and significant coefficient to credit ratings. In contrast, non-cash equity income, due to

its nature as an accrual item not subsequently realizable in cash, is expected to be insignificant, thus the sign of the coefficient would not be expected to be positive.

DATA AND METHODOLOGY

Sample

The sample used in this study consists of firms that report an amount of equity income (*esub*: Compustat data items in *italics*) other than zero in their annual earnings accounted for under the equity method. The time period under study is fiscal years 1996 through 2014. The latest fiscal year that could be used is 2014 due to the need to create a “lead” credit rating dependent variable that relied on the availability of data four months into the subsequent year, which for fiscal 2014 would require the use of 2015 data, explained later in greater detail.

Since this study uses S&P Domestic Long-Term Issuer Credit Rating (Compustat data item *spltrcm*), here in “credit ratings,” a base requirement is that only firms that report both equity income (*esub*) and credit ratings for fiscal years 1996 through 2014 could be included in the initial sample, which yielded 13,572 firm years. Data requirements further limited the size of the sample. Firms that did not report positive total assets (*at*) and positive total sales (*sale*) were eliminated. Further eliminations were made for the following data items that did not report amounts other than zero: long-term debt (*dltt*), earnings before income and taxes (*ebit*), equity income (*esub*), net equity in the earnings of an unconsolidated subsidiary less any dividends paid (*esubc*), income before discontinued operations and extraordinary items (*ib*), stockholders’ equity (*seq*) and interest expense (*xint*). These eliminations reduced the sample size to 9,606 firms.

Additional restrictions imposed on the sample were that firms be limited to those incorporated in the United States (*fic* = ‘USA’), that the company be publicly traded (*stko*=0) and that the firm report a closing stock price at fiscal yearend (*prcc_f*) greater than zero. These steps reduced the sample to 5,622 observations. During the course of the study the authors found that screening firms to limits a sample to publicly traded companies (*stko*=0) that a small subset of firms meeting this screen do not actually report a stock price at fiscal yearend. An inquiry to Capital IQ provided the explanation that a few firms where *stko*=0 may be “. . . Red Herrings not yet pricing, spin offs and other companies where data is not yet available.” Even the number of these firms may be a small portion of the sample the statistical results could still be impacted. So, the authors also included a requirement that a firm also report a stock price at fiscal yearend, i.e., *prcc_f* reports and amount greater than zero and is not a missing data point. These steps insure that the firms in this study are both listed on a public exchange and also have a publicly traded stock price.

Regulated firms which are (SIC codes in italics) financial (*6000-6499*), insurance and real estate (*6500-6999*) and utilities (*4900-4999*) were also eliminated dropping the sample size to 3,887. Discussed earlier, the design of this study required that positive equity income (*esub*) exceed investee dividends received (*esub* + *esubc*) as shown in combination A in Exhibit 2 and in Exhibit 1. Firms that represent combinations B through F were eliminated since they do not provide separate cash and non-cash equity components required for the tests conducted in this study. The retention of only firms meeting combination A provided 1,158 firms. Finally, firms that did not report a credit rating four months after fiscal year end, the purpose of which is discussed next, reduced the number of firms to 1,149, the sample size used in the study.

Table 1 shows that of the 1,149 observations in the sample there was a low of 38, 3.3% of the total (2001), to a high of 80, 7.0% of the total (2016). Forty-two percent of the observations

appeared in the first ten years of the study (1995-2004) while 58% appeared in the second ten years of the study (2005-2014).

TABLE 1
Companies Reporting Equity Income Included
in the Sample by Fiscal Years (1995 through 2014)

Fiscal Year	Companies	Percent
1995	47	4.1
1996	51	4.4
1997	48	4.2
1998	52	4.5
1999	41	3.6
2000	47	4.1
2001	38	3.3
2002	40	3.5
2003	53	4.6
2004	60	5.2
2005	69	6.0
2006	80	7.0
2007	63	5.5
2008	51	4.4
2009	52	4.5
2010	66	5.7
2011	70	6.1
2012	66	5.7
2013	77	6.7
2014	78	6.8
Total	1,149	100.0

The frequency distribution by industry is shown in table 2. The industries showing the largest frequency are durable manufacturers (228 observations, 19.8%), transportation (200 observations, 17.4%), services (124 observations, 10.8%), chemicals (120 observations, 10.4%) and food (104 observations, 9.1%). These five industries out of the 13 listed account for 67.5% of the total observations. Agriculture showed no observations and other industry showed only four observations (0.4%).

**Esub* is the equity income reported on the income statement of a corporation. *Esubc* is the cash dividend received from investees less the equity income reported included in investor earnings. The authors randomly checked several firm's financial statements to confirm this.

***esub* + *esubc* creates an estimate of the dividends received from an investee related to a significant influence investment usually associated with owning 20-50% ownership of the stock.

Compustat provides the data definitions shown in quotes below for *esub* and *esubc* (Compustat 2017):

- *esub* = “This item represents the parent company's portion of unremitted [i.e., accrued] earnings from an unconsolidated subsidiary.”
- *esubc* = “This item represents the equity in the unremitted earnings of an unconsolidated subsidiary. Essentially, it is the equity in the earnings of an unconsolidated subsidiary less any dividends paid by the subsidiary.”

Table 3 presents the frequency distribution by credit rating. The table shows the majority of the observations are clustered in the middle eleven credit classifications ranging from B to A+, accounting for 91.6% of the total observations. Credit ratings AA+, CCC-, CC, and C showed no observations. D showed only 1 observation.

Research Design

The model used in this study consists of credit ratings as the dependent variable, two independent variables of primary interest, non-cash equity income and cash equity income. In addition, other independent variables included as control variables are return on equity (less equity income), coverage ratio, leverage, log of total assets and fixed effects for industry. The variables are discussed below and are also summarized in Table 4.

$$\text{CreditRating}_{i,t+4} = \delta_0 + \delta_1 \mathbf{NonCashEqInc}_{i,t} + \delta_2 \mathbf{CashEqInc}_{i,t} + \delta_3 \text{ROAlessEI}_{i,t} + \delta_4 \text{CVRatio}_{i,t} + \delta_5 \text{Lev}_{i,t} + \delta_6 \text{LogAT}_{i,t} + \delta_7 \text{Industry Fixed Effects}_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable used in this study is the Standard and Poor's long term domestic credit rating (*splticrm*: Compustat data item in italics), herein “credit ratings.” Standard and Poor's letter grades are shown in Table 3. To facilitate using credit ratings in a regression model, the letter grades are converted to integers ranging from 1-22, with 1 being the lowest credit rating for letter grade D and 22 for the highest letter grade AAA. Previous studies have converted credit ratings from letter grades to quantitative values (Ayers, 2016).

Since the model will be testing the association of independent variables to credit ratings, a proper research design is to match the independent variables at fiscal year end to the credit rating several months hence, since credit ratings are likely adjusted to reflect the fiscal year-end financial statements some months after the fiscal yearend. For example, a firm that has a 12/31 fiscal year end will report its annual financial statements in March and the likelihood is that the credit rating agency would make an adjustment to its credit ratings in the month of April, four months after fiscal year end.

The two independent variables of primary interest are non-cash equity income (NonCashEqInc) and cash equity income (CashEqInc), both in bold in the equation. NonCashEqInc equals *esub* – (*esub* + *esubc*). CashEqInc consists of *esub* + *esubc*, also explained earlier and in Exhibits 1 and 2. The primary purpose of the tests in this study is to determine if NonCashEqInc and CashEqInc are significantly associated with credit ratings, and if there is any apparent difference in the extent of that association. Both NonCashEqInc and CashEqInc are deflated by total assets.

The control variables used in this study include ROAlessEI, which is return on assets less equity income since equity income is separately tested as one of the variables of primary interest just discussed. ROAlessEI is constructed as income before discontinued operations and extraordinary items (*ib*) less equity income (*esub*) divided by total assets (*at*), (*ib* – *esub*) / *at*. Return on assets is generally considered to be a measure of the operations of a firm, thus the

higher the return on assets the higher the expected credit rating. Accordingly, the sign of the coefficient for ROAlessEI is expected to be positive.

TABLE 4
Definition of Regression Dependent and Independent Variables
Compustat Data Items in (*italics*)

Variable	Definition
<u>DEPENDENT VARIABLE:</u>	
CreditRating	Standard & Poor's Domestic Long-term Issuer Credit Rating (<i>splticrm</i>), converted from letter grades to numerical equivalents. To provide sufficient time for a firm's credit rating to reflect the financial reporting of the most recent fiscal year-end, it is measured four months after the date of each observation's fiscal year end.
<u>INDEPENDENT VARIABLES:</u>	
NonCashEqInc	Non-cash Equity Income is (<i>esub</i>) less CashEqInc, (<i>esub</i> + <i>esubc</i>). Deflated by total assets.
CashEqInc	Cash Equity Income is the cash dividend received from the investee determined by combining (<i>esub</i>) and (<i>esubc</i>). <i>Esubc</i> is an adjustment to the operating activities section of the statement of cash flows under the indirect method that adjusts the reported accrual amount of (<i>esub</i>) so that the cash dividend received is reflected in cash flow from operating activities. Deflated by total assets.
ROAlessEI	Return on Assets Less Equity Income is income before discontinued operations and extraordinary items (<i>ib</i>) less equity income (<i>esub</i>) divided by total assets (<i>at</i>).
CVRatio	Interest Coverage Ratio is earnings before interest and taxes (<i>ebit</i>) divided by interest expense (<i>xint</i>).
Lev	Leverage Ratio is long-term debt (<i>dltt</i>) divided by total assets (<i>at</i>).
LogAT	Natural log of total assets (<i>at</i>).

CVRatio is an interest coverage ratio deflated by total assets. It consists of earnings before income and taxes (*ebit*) divided by total interest expense (*xint*). It is also expected to be positively associated with credit ratings. Lev represents a firm's leverage which is long-term debt (*dltt*) divided by total assets (*at*). Since the greater the leverage the more risk a firm assumes, the sign for the coefficient of Lev is expected to be negative. The last control variable

is for firm size, LogAT, the log of each firm's total assets. The more assets a firm has, the higher should be its credit ratings, all other things being equal. Thus, the coefficient for LogAT should be positive. In addition to the independent variables, the regression results will include the fixed effects for the fiscal years. The results are discussed next.

TABLE 5
Descriptive Statistics of Independent Variables
in Sample for Fiscal Years 1995-2014
n = 1,149

Variable	Mean	25th Percentile	Median	75th Percentile
CreditRatings	13.672	11.000	14.000	6.000
NonCashEqInc	0.004	0.001	0.002	0.005
CashEqInc	0.007	0.001	0.003	0.008
ROAlessEI	0.040	0.014	0.041	0.070
CVRatio	8.310	2.252	4.479	8.407
Lev	0.285	0.161	0.249	0.365
LogAT	8.801	7.771	8.576	9.714

RESULTS

Table 5 shows the descriptive statistics of the sample. Since the means can be affected by outliers, the median and the 25th and 75th percentiles provide a more useful description of the sample. Credit ratings show a mean of 13.672 and a median of 14.000 with the 25th and 75th percentile at 11.000 and 16.000 respectively. The descriptive statistics for the credit ratings reflect the clustering of observations among the middle ratings as shown in Table 3. LogAT shows the largest median and percentiles (median 8.576, 25th percentile 7.771 and 75th percentile 9.714). CVRatio, coverage ratio, typically presumed to be positively associated with credit ratings, shows the next highest amounts (median 4.479, 25th percentile 2.252 and 75th percentile 8.407). Note the median is less than the mean of 8.310 likely due to a large positive outlier. NonCashEqInc, non-cash equity income, and CashEqInc, cash equity income, show descriptive amounts in low absolute values extended to three decimal places reflecting the relative size of equity income related amounts compared to total assets.

The main results of this study are presented in Table 6. For the 1,149 observations in the sample, the regression model produced an adjusted R² 62.63. The intercept is positive and significant ($\alpha_1 = 7.5112$, $t = 14.67$, $p < 0.0001$). The control variables are all significant and show the expected sign. ROAlessEI, return on assets less equity income, is positive ($\alpha_1 = 13.3599$, $t = 12.67$, $p > 0.0001$) as is CVRatio, the interest coverage ratio, ($\alpha_1 = 0.0328$, $t = 6.38$, $p < 0.0001$) and LogAT, natural log of total assets, ($\alpha_1 = 1.0309$, $t = 22.52$, $p < 0.0001$). As expected leverage, Lev, is negative ($\alpha_1 = -4.4970$, $t = -11.70$, $p < 0.0001$). The expected sign and significance of the control variables supports the validity of the model.

TABLE 6
Results of Regression for Non-cash Equity Income and Cash Equity Income
Fiscal Years 1996 - 2015

$$\text{CreditRating}_{i,t+4} = \delta_0 + \delta_1 \text{NonCashEqInc}_{i,t} + \delta_2 \text{CashEqInc}_{i,t} + \delta_3 \text{ROAlessEI}_{i,t} + \delta_4 \text{CVRatio}_{i,t} + \delta_5 \text{Lev}_{i,t} + \delta_6 \text{LogAT}_{i,t} + \varepsilon_{i,t}$$

Independent Variables	Predicted Sign	1996 - 2015 Coefficient (t-value)
Intercept	Positive	7.5112 ** 14.67
NonCashEqInc	Positive	-10.4836 -1.18
CashEqInc	Positive	21.3532 * 3.22
ROAlessEI	Positive	13.3599 ** 12.67
CVRatio	Positive	0.0328 ** 6.38
Lev	Negative	-4.4970 ** -11.7
LogAT	Positive	1.0309 ** 22.52
Total number of		1,149
Adjusted R²		62.63

* Statistical significance at $p < 0.01$.

** Statistical significance at $p < 0.0001$.

Fixed effects was estimated for the fiscal years of the study. 1996 through 1998 were not significant. Years 1999 and 2000 were significant ($p < .05$) and 2001 is significant ($p < .01$). 2002 through 2014 are significant are significant at $p < .0001$. Recall that for fixed effects one year is dropped from the fixed effects, i.e., 1995. The signs of the coefficients were negative for all years. The p-value declined each year: 1999(0.0194), 2000(0.0110) and 2001 (0.0052). For 2002 through 2014 the p-value was 0.001. Variable definitions are shown in Table 4.

Of most importance is that the two independent variables of primary interest, non-cash equity income and cash equity income, show distinctly different results reflecting their respective accrual and cash characteristics. NonCashEqInc (non-cash equity income) is negative and not significant ($\alpha_1 = -10.4836$, $t = -1.18$, ns) while the CashEqInc (cash equity income) is positive, the expected sign, and is also significant ($\alpha_1 = 21.3532$, $t = 3.22$, $p < 0.01$). What the results for the two primary variables indicates is that the receipt of cash dividends from an investee, CashEqInc, is positive and significantly associated with credit ratings, while the portion of equity

income in excess of investee dividends received, i.e., non-cash equity income, is not significantly associated with credit ratings and thus does not contribute to the improvement of a firm's credit ratings.

These results raise the question as to whether current accounting for equity method investments is providing useful information by investor firms reporting equity income in excess of dividends received from investees. It also suggests that the dividends received are significantly associated with credit ratings and thus may provide more useful information than equity income, which is a conceptual amount not related to a future cash flow.

CONCLUSION

This study investigated the association of equity income reported in the income statement by an investor to the credit ratings. Equity income is split between cash equity income, the portion of equity income received in the form of cash dividends, and non-cash equity income, the portion of equity income that is not a current or future cash inflow, but simply an accrual of investment income. Using a regression model with credit ratings as the dependent variable, cash equity income was significant and positive suggesting that the cash inflow of dividends from the investment provided information to credit analysts. Non-cash equity income, however, was not significant in the regression model suggesting that the accrual part of equity income from the investment is not used in establishing credit ratings.

A limitation of this study is that the research design does not allow for the meaningful measurement of the association of non-cash equity losses to credit ratings. An area of future research would be to design a study that could attempt address this issue.

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