

# Source - Evidence that Market Participants Assess Recognized and Disclosed Items Similarly when Reliability is Not an Issue

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## EXCERPTS

Pg 3 With regard to the second factor, operating and capital leases are subject to the same disclosure requirements. The disclosures often appear side-by-side, and the same disclosures have been required for many years, so there is no question that investors are familiar with this information. Therefore, we can eliminate investor learning as a possible confounding effect.<sup>6</sup> In addition, lease disclosures are distinguished from certain other disclosures in that they are not subject to significant management judgment and estimation. The lessee's cash payments are contractually specified and the applicable interest rate (the interest rate implicit in the lease) is specified in SFAS 13 (for example, para. 5k). ***Imputing lease obligations from operating lease disclosures requires only a simple present value technique*** (Libby et al. 2006; Imhoff et al. 1991) ***that is taught in introductory accounting textbooks*** (e.g., Libby et al. 2011, 470-477; Stickney et al. 2010, 490-491).

Pg 4 Prior research that compares recognition with disclosure often evaluates items that require substantial judgment and estimation. In those settings, it may be difficult to disentangle the effects of incomplete processing of data by investors from the effects of measurement error (Bernard and Schipper 1994). Specifically, post-retirement benefit obligations require estimates of future compensation, employee turnover, mortality rates, and retirement ages (e.g., Davis-Friday et al. 1999); stock option values rely on estimates of volatility, interest rates, and dividend yields (e.g., Hodder et al. 2006). In contrast, all the cash flows in a lease are specified, and the valuation technique involves only simple discounting. **The lease disclosure setting offers the advantages of easily understandable, contractually specified disclosures that are readily analyzed using simple techniques.**

Pg 4 Because we use the same assumptions and techniques to impute operating lease obligations and capital lease obligations from disclosures, and because the footnote disclosures in both cases present the contractual cash flows specified in the lease

contracts, we believe it is reasonable to assume that conclusions about the reliability of capital lease disclosures as indicators of recognized amounts should apply similarly to the reliability of operating lease disclosures as indicators of as-if recognized amounts. Put another way, if capital lease obligations imputed from disclosures are reliable measures of recognized capital lease obligations, then we can have confidence that operating lease obligations imputed from disclosures are also reliable.

Pg 5 Our results contribute to research that compares recognition with disclosure by providing evidence that capital market participants use disclosed information and recognized information in similar ways when the disclosed information is reliable and easily processed. We believe these results have implications for the FASB's Disclosure Framework project, which seeks to establish criteria for determining what disclosures should be required.<sup>8</sup> As of August 2010,<sup>9</sup> the FASB was considering, as one criterion for establishing required disclosures, faithful representation of the phenomenon the information purports to represent—that is, reliability. We interpret our results as supporting the reliability criterion and as suggesting that the FASB and other standard-setters should expect that investors and creditors will process disclosed information when that information is sufficiently reliable, accessible, and interpretable. Nothing in our results rules out the possibility of financial statement user cognitive bias in more complex settings than the one we consider. However, we interpret our results as indicating that the FASB or any other accounting standard-setter should not be primarily concerned that investors and creditors will underweight or ignore altogether disclosed information that meets sufficiently high reliability, accessibility, and interpretability thresholds.<sup>10</sup>

Pg 8 Our analysis also provides evidence as to why recognized items are valued similar to disclosed items, pointing specifically to reliability and ease of processing as key conditions.

Pg 10 We evaluate the association between both as-if recognized and recognized<sup>19</sup> lease amounts and two measures of required return, a summary indicator of capital market participants' resource allocation decisions.<sup>20</sup> Our tests provide evidence on market participants' use of the information about leases in financial reports in setting the costs of debt and equity. Our main measure of the cost of debt is the spread on new debt issuances (yield-to-maturity less the treasury rate with similar maturity), obtained from SDC based on the first debt issued each year. Bond yields and other required data are available for a sample of 1,750 firm-year observations (709 unique firms; the large sample) with both capital leases and operating leases between 1980 and 2008.<sup>21</sup> For a subsample

(565 firm-year observations, 268 unique firms; the small sample), we hand-collect data on minimum capital lease payments from the footnotes of the financial statements for 1994–2008, where electronic 10-K statements are available via EDGAR. The sample determination is given in Panel A of Table 1. We measure the cost of equity using the standard deviation of realized returns (available for 31,048 Compustat firm years; the full sample) and several analyst-forecast-based measures (available for varying sample sizes, as explained in Section VI).

## Pg 15 and on VI. RESULTS

### Descriptive Statistics

Table 1, Panel B shows present descriptive statistics for the small sample (565 firm-year observations, 1994–2008), the large sample (1,750 firm-year observations, 1980–2008) and the full sample (31,048 firm-year observations, 1980–2008). Non-lease leverage is 0.317 (0.293) [0.245] on average for our small (large) [full] samples and leverage from capital leases is 0.013 (0.016) [0.021] on average, respectively. For the small (large) [full] samples, the average adjustment to leverage associated with the imputed obligations of operating leases is 0.064 (0.049) [0.069], and the average increase in leverage created by the new debt is 0.045 (0.046) for the small (large) samples, respectively; the full sample does not impose the restriction that firms must have issued debt. Standard deviations indicate substantial variation in these variables. Our proxy for cost of debt and our first proxy for cost of equity, Spread and Standard Deviation of Returns, have averages of 0.024 and 0.023, respectively for the small sample, and 0.020 and 0.022, respectively, for the large sample. The mean standard deviation of returns for the full sample is 0.037. The mean and median values of non-lease leverage, standard deviation of returns, and return on assets for the large and small samples are similar to the mean and medians reported in [Ge et al.'s \(2009\)](#) Moody's sample. Our sample exhibits some industry concentration, as shown in Table 2, Panel A, and relatively similar numbers of observations by year, as shown in Table 2, Panel B.<sup>28</sup> Correlations are presented in Table 3 for the large sample. Correlations for the small and full samples are similar (results not tabulated). The Spearman (Pearson) correlation between the costs of debt and equity, Spread and Standard Deviation of Returns is 0.55 (0.53). Consistent with theory, Spread is negatively correlated ( $-0.33$  Spearman,  $-0.37$  Pearson) with return on assets (ROA). The standard deviation of returns is positively correlated with the standard deviation of ROA (0.38 Spearman, 0.37 Pearson) and negatively correlated with the level of ROA ( $-0.30$  Spearman,  $-0.41$  Pearson). These

correlations are significant at the  $p < 0.01$  level.

#### Evidence on the Reliability of Imputed Lease Obligations

We estimate imputed capital lease obligations using hand-collected capital lease minimum payment disclosures for 565 firm-years (the small sample), discounted at the implied interest rate

$([\text{interest expense} \div \text{capitalized interest}] / \text{average debt})$ , and compare these imputed capital lease

obligations with recognized capital lease obligations. Equality of recognized and imputed amounts

provides evidence that imputed lease obligations are reliable.

Table 4, Panel A shows descriptive statistics for the imputed and recognized lease obligations.

The mean (median) Compustat-reported recognized lease obligation, DCLO, is \$226 million (\$46 million), respectively. The mean (median) imputed obligation for these leases is \$224 million (\$49

million), respectively. Observation-specific differences are  $\bar{d}_3$  (mean) and 0 (median), measured as

the firm-year difference between imputed liability and reported liability. The means and medians of

these differences are not different from zero at the 0.10 level ( $p$ -values are 0.19 and 0.60, respectively). Thus, the mean and median differences between recognized and imputed

obligations of capital leases in our sample are neither economically significant nor statistically significant.

We

also report the difference in the leverage effect, measured as firm-specific leverage from the imputed lease obligation minus leverage from the reported lease obligation. Neither the mean nor

the median test statistic for differences between capital lease leverage using DCLO and leverage using the imputed obligations is significant at the 0.10 level ( $p$ -values are 0.53 and 0.44,

respectively). The range of scaled estimation errors  $(\text{DCLO-imputed capital lease obligation}) / \text{total}$

liabilities] is  $-0.049$  to  $0.066$  (results not tabulated). Table 4, Panel B shows pairwise Spearman

and Pearson correlations between both imputed and reported lease obligations and their leverage

effects are 0.98 or higher and significant at the 0.01 level.

We interpret the results in Table 4 as demonstrating the reliability of imputed capital lease obligations using disclosed amounts and simple discounting techniques. Because we use the same

contractual cash flow disclosures and the same discounting techniques to obtain as-if recognized

operating lease obligations, we conclude that the operating lease disclosures are also reliable. That

is, the results in Table 4 cast serious doubt on, or even eliminate, reliability differences as a reason

why recognized and disclosed lease arrangements might differ in their associations with the costs of debt and equity.

Pg 19 Associations between Cost of Debt and Recognized and Disclosed Lease Obligations  
Table 5 presents results of estimating regression (1), relating debt spreads to recognized and disclosed lease obligations. Year and industry<sup>29</sup> fixed effects are included but not tabulated and t-statistics

are based on standard errors clustered by firm. Consistent with theory and prior research, results for the small sample (565 firm-year observations with sufficient data to impute lease obligations for capital leases) show that creditors positively weight non-lease leverage (0.022, p ,

0.01), and leverage associated with new debt (0.103, p , 0.01) in setting bond spreads. As expected, the required spread is negatively related to firm size and return on assets. The number of

covenants required by the new debt is not reliably related to the spread (p  $\frac{1}{4}$  0.19). Turning to our

main prediction, we find that obligations associated with as-if recognized operating leases and obligations imposed by recognized capital leases are both valued by creditors in establishing the cost of debt. Coefficients on these obligations are 0.072 (p , 0.05) and 0.044 (p , 0.01), for capital leases and operating leases, respectively. Using an F-test, we find the coefficient on capital

lease leverage is not statistically distinguishable from the coefficient on operating lease leverage at

conventional levels; p-values are 0.49 (OLS standard errors); 0.50 (bootstrap standard errors); and

0.55 (two-way clustered standard errors).<sup>30</sup> Although the two lease obligation coefficients estimated for the small sample are not reliably

different, the point estimates (0.072 and 0.044) appear to be different. We conjecture that this

difference could be due at least in part to sample size. Given this result, we apply the same analysis

to the large sample, which is approximately three times larger than the small sample. Relying on the

Table 4 results that imputed capital lease obligations are reliable estimates of reported capital lease

obligations, we use the Compustat reported lease liability to estimate leverage from recognized leases and imputed amounts to estimate leverage from disclosed leases in the large sample.<sup>31</sup>

Results from estimating Equation (1) with this sample are reported in columns 3 and 4 of Table 5.

Control variables have the expected negative signs, and Spread is decreasing in the number of covenants required by the new debt, as expected. The coefficients on the components of leverage

from recognized obligations and as-if recognized obligations are similar in magnitude (0.031 and 0.028, respectively) and are not statistically distinguishable in any of the three F-tests (p-values for

the F-test of differences exceed 0.84).<sup>32</sup> These results support the view that creditors do not appear

to price lease obligations differently based on recognition versus disclosure.

Our results are robust to three untabulated tests using different assumptions about the discount

rate. First, we discount operating lease payments at the average coupon rate in our sample, 8 percent. Untabulated coefficients on leverage from both capital and operating leases are positive ( $p < 0.01$ ) and the difference between the two coefficients is not significant at conventional levels ( $p$ -values exceed 0.31). Second, we determine the implicit rate in the capital leases in the small sample based on the recognized capital lease obligation and the disclosed future cash flows. Using this discount rate, which also averages 8 percent, to discount operating lease cash flows does not affect our main conclusions. Third, we repeat the large sample analysis using the weighted average cost of debt issued during the year and the sum of the loan amounts to calculate the new leverage adjustment. Untabulated coefficients on recognized and disclosed leases are 0.24 and 0.33, respectively; the difference is insignificant at the 0.60 level.

We do not include credit ratings as a control variable in our main cost of debt analysis because credit rating is itself a (possibly noisy) proxy for our primary dependent variable, a matter of particular concern because we are interested in the relation between leverage and cost of debt. Further, we are interested in whether lenders impound leases into the cost of debt regardless of the behavior of credit-rating agencies. Taking the perspective that credit ratings are an ex ante measure of cost of debt (e.g., [Francis et al. 2005](#)), we repeat the analysis using credit ratings, available for 7,672 firms from our full sample. Untabulated results show that as-if recognized operating lease leverage and recognized capital lease leverage have similar associations with credit ratings; an  $F$ -test rejects equality of coefficients at the 0.30 level.

#### Associations between Standard Deviation of Returns and Recognized and Disclosed Lease Obligations

Table 6 presents results of estimating regression (2) relating the standard deviation of market-adjusted returns to recognized and disclosed lease obligations for the small sample (columns 1 and 2), the large sample (columns 3 and 4), and the full sample (columns 5 and 6). Results for the small and large samples show that the equity market attributes risk to the leverage created by new debt (small sample coefficient  $\frac{1}{4}$  0.078,  $p < 0.01$ ; large sample coefficient  $\frac{1}{4}$  0.034,  $p < 0.01$ ). The small sample coefficients on recognized capital lease leverage and as-if-recognized operating lease leverage are 0.047 ( $p < 0.05$ ) and 0.018 ( $p < 0.01$ ), respectively, indicating that investors incorporate both recognized and disclosed lease obligations in the cost of equity. For the large sample, the coefficients on recognized and disclosed lease leverage are 0.015 and 0.016, respectively; both coefficients are significant at  $p < 0.01$ . Using an  $F$ -test and three approaches to estimating standard errors (clustering by firm; bootstrap estimates; two-way clustering), no difference between coefficients on recognized and disclosed lease obligations reaches a significance level below 0.27 (0.85) for the small (large) sample, suggesting that equity market participants do

not distinguish between recognized and disclosed lease arrangements. As in our analyses of the cost of debt, coefficients on recognized and disclosed obligations appear more economically comparable in the large sample than in the small sample.

Results in columns 5 and 6 are based on the full sample of 31,048 Compustat firm-years with both operating and capital leases, eliminating the requirement of a new debt issuance per SDC. The coefficients on recognized capital lease leverage and as-if recognized operating lease leverage are 0.014 and 0.009, respectively; both coefficients are reliably positive ( $p < 0.01$ ). Using an F-test, the coefficients are statistically indistinguishable ( $p$ -values range between 0.27 and 0.30). While the coefficients appear different (0.014 and 0.009), the statistical inference that these coefficients are indistinguishable appears valid, and are not driven by a lack of power given the large sample size and consistent results across all three F-tests.<sup>33</sup>

Associations between Analyst-Forecast-Based Proxies for the Cost of Equity and Recognized and Disclosed Lease Obligations

While the standard deviation of returns has been used in other lease studies (e.g., [Imhoff et al. 1993](#); [Ely 1995](#); [Ge et al. 2009](#)), this measure is viewed as a noisy proxy for the cost of equity (e.g., [Dhaliwal et al. 2011](#)). We repeat the cost of equity analyses using proxies derived from analysts' earnings forecasts, following approaches in [Gode and Mohanram \(2003\)](#), [Easton \(2004\)](#), [Claus and Thomas \(2001\)](#), and [Gebhardt et al. \(2001\)](#). We refer to these estimates as r-OJN, r-MPEG, r-CT, and r-GLS, respectively. Following [Dhaliwal et al. \(2006, 2011\)](#) and [Hail and Luez \(2006\)](#), we average these proxies to obtain r-average.<sup>34</sup>

Table 7 presents results of estimating regression (2) with the risk premium from the implied cost of capital estimates as the dependent variable. These results show that the coefficient on Lev\_from\_CL is not statistically significant at conventional levels for two of the cost of equity proxies, r-OJN and r-GLS. The coefficient on Opl\_Lev is significant at the 0.10 level or better in every specification. The coefficient on Lev\_from\_CL is not statistically different from the coefficient on Opl\_Lev at conventional levels in any specification of the Ftest;  $p$ -values range from 0.27 to 0.94. Consistent with the analysis in Table 6, these results do not support the view that the equity market distinguishes between recognized and disclosed lease obligations.<sup>35</sup>

Alternative Measure of Capital Lease Assets

To test the validity of the assumption that the lease asset is equal to the lease liability, we collect data from Form 10-K for 332 firm-year observations (from the small sample of 565 firm-year observations) with sufficient information to calculate the capital lease asset net of depreciation. The mean ratio of the capital lease asset to the capital lease liability for this sample is 1.23, indicating that the lease asset on average exceeds the lease liability ( $p < 0.11$ ); the median ratio (0.90) indicates assets are smaller than obligations ( $p < 0.02$ ); results not tabulated. Although [Imhoff et al. \(1991\)](#) base their discussion of the lease asset to liability ratio on assumptions about constructive capitalization (whereas we use actual data), the median but not the mean results are

consistent with their suggestion that the asset is typically less than the liability.<sup>36</sup> The mean difference between the leverage adjustment assuming the lease asset equals the lease liability and the leverage adjustment using actual lease asset and liability values is significant at the 0.27 level; the median difference is significant at the 0.01 level (results not tabulated). This analysis supports that, on average, our assumption of equal asset and liability amounts, but there are statistically reliable differences based on tests of medians. Based on these findings, we re-estimate the results reported in Tables 5 and 6 for the large sample of 1,750 firm-year observations using the assumption that both the recognized and disclosed lease asset values are 90 percent of their respective lease obligations.<sup>37</sup> Results, reported in Table 8, indicate that both lease leverage coefficients are reliably positive in both the cost of debt and the cost of equity estimations ( $p < 0.01$ ). As was the case in previous large sample estimations, the magnitudes of coefficients are similar; F-tests for equality of coefficients show no statistical differences between the coefficients on recognized and disclosed lease obligations at the 0.91 level or better.<sup>38</sup>

#### Analysis Conditioned on Cross-Sectional Differences in Disclosure Reliability

We expect that less-reliable imputed values of operating lease obligations are less strongly related to costs of debt and equity. We identify cross-sectional variation in reliability by analyzing the portion of total operating lease payments in the “thereafter” portion. In earlier analyses, we treated this amount as an annuity, based on the year five payment. This assumption is more likely to affect imputed values and induce measurement error when the thereafter portion is a larger portion of the imputed value. We re-run our main tests with the addition of an interaction between operating lease leverage and a low-reliability measure equal to the ratio of the undiscounted operating lease cash flows from the thereafter portion to the total undiscounted operating lease cash flows.<sup>39</sup> Larger values of this ratio indicate lower reliability. Results in Table 9 are consistent with our previous results. No F-test rejects the statistical equivalence of coefficients on recognized and disclosed lease values at conventional levels (p-values range between 0.48 and 0.70) when we do not consider the effect of low reliability. The results also show that the coefficient on the interaction between operating lease leverage and the low-reliability measure is negative and significant at the 0.05 level or better (based on a one-tailed test) for all four samples.<sup>40</sup> This result is consistent with investors placing less weight on less reliable imputed lease values.<sup>36</sup> In the cost of debt analyses using the small and large samples, we reject the equality of

coefficients on recognized lease obligations and relatively low reliability imputed operating lease obligations at the 0.05 level or better when standard errors are clustered by firm and year; results based on OLS estimation and bootstrap estimation are similar for the small sample and weaker (rejection at the 0.11 and 0.13 level, respectively) for the large sample.<sup>41</sup> We reject the equality of coefficients at the 0.01 level in the full sample cost of equity analysis (using standard deviation of returns as the cost of equity proxy) and at the 0.06 level or better in the cost of equity analysis using r-average as the cost of equity proxy. Viewed in the context of our earlier analyses, these results suggest that investors process disclosures differently from recognized amounts when the disclosures are less reliable.

#### Analysis of a Sample not Restricted to Have Both Operating and Capital Leases

Thus far we have analyzed firms with both operating and capital leases, because our interest is in the similarity or difference in the association between costs of debt and equity and leverage effects of operating and capital leases. Table 10 reports results of removing this restriction and reestimating regression (2) for two cost of equity measures. Estimations reported in columns 1 and 3 do not include an indicator for firms without capital leases, similar to the specification used by [Dhaliwal et al. \(2011\)](#). F-tests of equality of coefficients on operating and capital lease leverage, with no control for firms without capital leases, reject equality at p-values between 0.09 and 0.12 [between 0.03 and 0.06] in regressions that use r-average [standard deviation of returns] as the cost of equity. However, results that control for firms without capital leases support the same inferences as our previous analyses: no F-test rejects the equality of lease leverage coefficients at better than the 0.24 level. We conclude from this analysis that differences between our results and those in [Dhaliwal et al. \(2011\)](#) are due primarily to their regression specification that does not control for firms without capital leases.

#### VII. CONCLUSION

We analyze whether and why capital market participants treat recognized and disclosed lease amounts differently in setting the costs of debt and equity. Comparing the association between proxies for the costs of debt and equity and recognized lease obligations (capital leases) versus as-if

recognized lease obligations derived from required operating lease disclosures, we find evidence that recognized information and disclosed information is processed similarly when the disclosed information is salient, reliable, and easily processed.

Relative to other research settings used to investigate whether capital market participants process recognized and disclosed financial reporting information differently, we believe our setting

offers several advantages. First, operating and capital lease arrangements are currently distinguished

for accounting purposes, but the arrangements are economically similar. As pointed out in the basis

for conclusions of the joint IASB-FASB exposure draft for lease accounting (FASB 2010a), leases

embody a right-of-use asset and an obligation to make payments that qualify as a liability; differences in contractual terms of lease arrangements would affect measurement, not recognition.

***Second, the same disclosures are provided for operating and capital leases and have been for many***

***years. Third, measuring lease obligations requires little judgment or estimation since the cash flows***

***are contractually specified and the discount rate can be readily calculated from financial statement***

***information. Fourth, no learning effect is likely because lease accounting requirements are stable***

***over our sample period*** (1980–2008). By analyzing firms with both operating leases and capital

leases we are able to compare recognition and disclosure using the same firm in the same time period, avoiding certain research design concerns that arise in cross-sectional comparisons of disclosure and recognition treatments and in time-series analyses of the effects of changing from

disclosure to recognition.

We provide evidence that simple present value techniques applied to audited footnote disclosures of minimum lease payments yield reliable, as-if recognized, estimates of lease obligations and that both recognized lease obligations and lease obligations imputed from disclosures are positively associated with the cost of debt proxied by spread on new debt issuances

and the cost of equity proxied by standard deviation of equity returns and by several analyst-forecast-based measures. Additional tests show that the associations between costs of debt

and equity and recognized amounts versus as-if recognized amounts are statistically distinguishable

only when the as-if recognized values are imputed from less-reliable disclosures.

Our results suggest that recognized and disclosed amounts are not treated differently by capital market participants in a setting in which the disclosed amounts are reliable and the disclosed information is readily identifiable and easily processed. In contrast, prior studies (e.g., Ahmed et al.

2006; Davis-Friday et al. 1999) find valuation differences between recognized and disclosed values

for derivatives and post-retirement benefits. We attribute the difference between our results and the

results found in other studies to a combination of reliability and ease-of-use effects; that is, investors

and creditors appear to use recognized and disclosed information similarly when there are few or no

difficulties in identifying and processing the information and the information itself is reliable.<sup>42</sup>

Put

another way, readily useable and reliable disclosures are effective in communicating

decision-useful information to investors and creditors. Under this interpretation, our findings may be of interest to the FASB in its Disclosure Framework project, which seeks to establish criteria for setting standards for required disclosures that will make those disclosures more effective.