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EFFECTS OF LEASE CAPITALIZATION TECHNIQUES ON KEY MEASURES OF FINANCIAL PERFORMANCE

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ABSTRACT

This paper examines the effects of selected lease capitalization technique s for five representative companies from five different industries. Changes to financial statement elements (assets, liabilities, equity, and net income) and key performance measures (total debt to assets ratio (D/A), total debt-to-equity ratio (D/E), long-term debt-to-equity ratio (LTD /E), return on assets (ROA), and return on equity (ROE)) are compared and contrasted both among companies and by capitalization technique. The retail (pharmaceutical) firm in the sample is the most (least) affected by lease capitalization. In addition, the complexity and/or specificity of the lease capitalization model does not result in greater consensus among the methods. T his research informs the continuing harmonization efforts related to lease accounting being undertaken by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB).

INTRODUCTION

Historical Perspective

Differences between the accounting treatments for capital and operating leases have presented a dilemma to many in the financial community. The controversy over leases dates back to the days of the Committee on Accounting Procedure (CAP) in the 1930's. Chapter 14 of the final edition of the Accounting Research and Terminology Bulletins contained two and one-half pages on the subject of long-term leases (AICPA, 1961). Following the CAP, the Accounting Principles Board (A PB) issued five Opinions related to leases. Despite the issuance of such authoritative pronouncements Wyatt (1974) and Brown and Wyatt (1983) argued that a lease arrangement is a legal liability that should be capitalized instead of being disclosed only in a footnote. More recently, the FA SB has issued more than 26 Standards, Interpretations, and Technical Bulletins on the subject of leases.

Lease pronouncements in the U.S. have evolved from principles-based pronouncements (e.g., ARB No. 37) to rules-base d pronouncements (e.g., SFAS No. 13) resulting in the development of "bright-line rule s" to distinguish a capital lease from an operating lease. However, there is evidence that bright-line rules are easily manipulated such that the lessee can avoid capitalizing a lease arrangement that is substantially equivalent to financing the purchase of an asset (Dieter 1979). Additionally, the structuring of the terms of the lease arrangement can also result in what

should be a capital lease being treated as an operating lease and what should be an operating lease being treated as a capital lease (Coughlan 1980).

The bright-line rules have led to significant comparability issues. As Fanestock (1998) pointed out, the footnote disclosures for capital and operating leases are so different that it is virtually impossible to compare one firm that has capital leases on the balance sheet to another firm that has operating leases disclosed in the footnotes. Capital lease disclosures call for the gross amount of the payments discounted to the present value. Operating lease disclosures specify only the gross amount of the payments. Additionally, leases for real property and tangible personal property are co mingled in the disclosures. The difference in the disclosure requirements for capital and operating leases requires financial statement users to incorporate numerous assumptions when trying to constructively capitalize operating leases for analytical evaluation. This is an imperfect approach, at best, resulting in a host of measurement issues (Fahnestock 1998; Fahnestock a nd King 2001; Imhoff, Lipe and Wright 1991, 1993, 1997).

The controversy surrounding capital versus operating leases has led researchers to estimate the impact of non-capitalized operating leases on performance metrics. Using an anecdotal approach, Imhoff, Lip e and Wright (1991, 1993, 1997) found significant differences in specific performance metrics such as return on assets and debt to equity. Fahnestock and King (2001) used a sample of firms an d concluded that non-capitalized operating leases had a significant impact on some performance metrics but not on others. For example, the effect on the long-term debt to equity ratio was significant, but the impact on the total debt to equity ratio was not significant.

There is also evidence that lending practices are influenced by the lease accounting issue. This is likely the result of the differences in performance metrics. In some studies, lenders were sent an original financial statement along with a disguised financial statement with constructively capitalized operating leases. The results revealed that lenders were more likely t o make loans to the firms with operating leases than to the firms with capital leases (Hartman and Sami 1989; Wilkins and Zimmer 1983). This led Lewis and Schallheim (1992) to the conclusion that debt and leasing were not substitutes but were complements. In short, management h as three options with regard to financing assets: equity, debt, and operating leases.

Overview of Accounting for Leases

When accounting for a capital lease under current U.S. GAAP, a lessee generally reports both a leased asset and a related lease liability for the present value of the payments to be made over the lease term. The liability is amortized as paid, and the leased asset is depreciated. Thus, lease payments are separated into interest expense and principal repayment portions; and both interest expense and depreciation expense are reported on the income statement.

When accounting for operating leases, neither a leased asset nor a lease liability are reported on the balance sheet. In stead, annual lease payments are accounted for as rent expense. This lease accounting treatment is considered appropriate when the lease fails to meet one of

four bright-line criteria set forth by FASB to determine when a lease should be capitalized (ASC 840-10-25-1). These criteria are as follows: 1) the lease contains a transfer of ownership at the end of the lease term, 2) the leas e contains a bargain purchase option (BPO), 3) t he lease term is equal to 75% or more of the asset's remaining useful life, or 4) the present value of the minimum lease payments is equal to 90% o r more of the asset's fair market value (note: criteria 3 and 4 are not applicable to assets leased in the last 25% of their total economic lives).

A common criticism of these criteria is that lessees can intentionally fail these tests to achieve operating lease treatment, and this assertion is corroborated by the fact that the vast majority of long-term corporate leases are classified as operating leases rather than capital leases. However, companies are require d to disclose operating lease payments for each of the next five years along with the total for all operating lease payments to be made after year five. Although no technique will provide an exact answer, these disclosures and a few assumptions make it possible to approximate the effects of capitalizing operating leases. However, there is diminishing marginal return in terms of "accuracy" as the complexity of the methods increases.

PURPOSE OF THE STUDY

Although the theoretical question of the "right way" to account for leases is of great importance, the purpose of this paper is to examine the practical considerations regarding the capitalization of virtually all leases as proposed by the FASB and the International Accounting Standards Board (IASB) (IASB 2010). The requirement that nearly all leases be treated as capital leases could result in disruption of common measures of financial performance. Potential violations of loan covenants as a result of these changes are also of concern. To address these issues, this paper empirically determines the effect of the selected constructive capitalization techniques on financial statement elements and financial ratios.

METHODOLOGY AND RES ULTS

The lease capitalization techniques used in this paper were selected from accounting literature, textbooks, and practice and were applied to the financial statements of five companies (Macy's, ExxonMobil, JPMorgan Chase, Caterpillar, and Pfizer,) representing a broad spectrum of industries expected to be more (Macy's, retail) or less (JPMorgan Chase, ban king) susceptible to changes resulting from the capitalization of operating leases. Changes to financial statements were measured with respect to total assets, total liabilities, total equity, and net income. In addition, changes to the following key performance ratios were also measured: debt to asset ratio (D/A), debt to equity ratio (D/E), long-term debt to equity ratio (LTD/E), return on assets (ROA), and return on equity (RO E). Each of the lease capitalization techniques selected is discussed in detail below, and the results of applying the techniques to each company are presented at the end of this section.

Lease Capitalization Techniques

The purpose of lease capitalization techniques is to adjust the financial statements to

show what would have resulted if operating leases had been accounted for as capital leases. The key assumptions related to lease capitalization are the timing and amount of lease payments, the rate used to discount these future lease payments, the past and future depreciation related to the leased asset, and the tax rate face d by the company (tax effects are ignored by some methods). Depreciation that is assumed to have been taken in prior years will reduce the book value of the leased asset and thus reduce the amount by which long-lived assets should be increased at the time that the constructive capitalization occurs. Depreciation anticipated in future years will reduce future net income. Each of these assumptions is handled in different way s by different lease capitalization techniques.

The work of Imhoff, Lipe, and Wright (ILW) is often viewed as the seminal contribution in the area of operating lease capitalization. This paper includes three versions o f the ILW techniques from 1991, 1993, and 1997, along with modified versions of the 199 1 and 1997 methods. ILW's 1991 technique (ILW-91) recast the financial statements of Mc Donald's corporation, and their assumptions have been applied statically in contemporary studies. ILW assumed that operating lease payments beyond year five were expected to continue at the same level as the fifth year's payment until the future payable amount was exhausted, and they determined the discount rate applied to these lease payments should be 10%. The leased asset, itself, was computed as 70% of the present value of the lease payments (due to prior years' depreciation on the asset); and the asset depreciation was assumed to continue for another 15 years. Although the effects on the income statement were largely ignored, a tax rate of 40% was also assumed. While this study applied this method as originally proposed, this method was also applied in a modified form allowing the asset life to match the number of lease payments remaining (instead of using a static 15-year remaining life). The revised ILW-9 1 method is referred to as ILW-91*.

The 1993 ILW method (ILW-93) was not so much a new technique as it was an explanation of a commonly-used practitioner heuristic along with a comparison to (and further explanation of) the 1991 method. Thus, ILW-93 as applied in this paper does no t represent ILW's work as much as it represents the application of a practitioner's rule-of-thumb. As presented, ILW-93 estimated the operating lease related increase to a company's assets and liabilities as eight times the annual operating lease related rent expense. Income statement effects were estimated by reclassifying one-third of the rent expense as interest expense. Although this would have no effect on net income, is would affect intermediate subtotals such as operating income and earnings before interest and tax (EBIT).

In their 1997 method (IL W-97), ILW operational zed several suggestions made in their previous papers. The discount rate was allowed to vary among firms based on each firm's capital lease rate or the average r ate the company paid for interest-bearing debt. The remaining years of asset depreciation were also allowed to vary to match the estimated length of future lease payments. ILW-97 also estimated the effects of deferred taxes, allowing lease capitalization to affect net income. For comparative purposes, the computation of deferred taxes was also applied to all other methods in this study. Other assumptions that remained static included the asset capitalization value (although it was increased from 70% to 7 5% of the lease

liability) and the tax rate (40%). In addition to applying this method as propose d, this method was also applied in a modified form which allowed the asset capitalization value to vary among companies based on the estimated years of depreciation taken in previous years. This estimate was determined by subtracting the estimated years of depreciation remaining from the estimated total life for similar long-lived assets owned (not leased) by the company. The revised ILW-97 method is referred to as ILW-97 *.

In 2001, Fahnestock and King (FK-01) presented a technique that makes several unique contributions to lease capitalization. FK-01 is similar to the ILW-97 methodology in that it uses firm-specific discount rates and matches asset depreciation to the length of future lease payments; however, the FK-01 method uses firm-specific marginal tax rates for the computation of deferred income tax. Two other unique contributions of the FK-01 method are the technique for constructive capitalization and the splitting of the liability adjustment into current on noncurrent portions. The FK-01 method constructively capitalizes the leased as set at 100% of the present value of the lease payments as of the beginning (instead of the end) o f the fiscal year and then calculates the asset and liability values forward to determine the year end values. Thus, the leased asset is depreciated and the lease liability is amortized based upon beg inning-of-the-year amounts. These estimated ending values are then compared to the originally reported amounts to determine the necessary asset and liability adjustments. The separation of the lease liability into current and long-term portions is accomplished by deducting the computed interest expense from the stated lease payment for the year which equals the principal reduction portion of the payment. This distinction permits the computation of changes related to long-term debt (i.e., LTD/E) in addition to changes related to total debt (i.e., D/A and D/E). This splitting technique was applied to all other methods for the purpose of computing and comparing the long-term debt to equity ratio across all firms.

The final technique was s elected from the 2009 edition of Financial Statement Analysis and Valuation by Easton, McAnally, Fairfield, Zhang, Halsey (EMFZH-09), and it bears some similarity to the FK-01 method. EMFZH-09 allowed for firm-specific discount rates and matched asset depreciation to the length of future lease payments. Although the asset capitalization value was set at 10 0% of the lease liability adjustment, this computation was determined as of the end of the year (unlike FK-01 which determined these adjustments as of the beginning of the year). Net income was adjusted by adding back rent expense and deducting both depreciation expense and interest expense, but these adjustments were computed based on the following year's numbers. Depreciation was also computed using estimated actual years of life remaining as opposed to rounding up (or down) to the nearest whole year. Although the EMFZH-09 method ignores deferred tax effects, a static tax rate of 37.5% was applied to determine the tax effects of changes to net income. These income statement effects were used to adjust both total assets (in addition to the 100% of liability adjustment above) an d total equity before ratios were calculated. Since this technique was presented for use by practitioners, the method is more concerned with computing ratios based on the estimated effects of lease capitalization than it is with the effects of deferred taxes or with constructing a fully-articulating balance sheet.

Company Selection

This study uses the 2009 financial statements of Macy's, ExxonMobil, Caterpillar, Pfizer, and JPMorgan Chase. These companies were chosen to represent five industries expected to exhibit the effects of operating lease capitalization to varying degrees. Macy's represents the retail sector which makes extensive use of operating leases. ExxonMobil, an oil and gas conglomerate, uses both operating and capital leases to supply its physical asset needs. Caterpillar, a heavy equipment manufacturer, is in a unique position as both a lessee and a lessor: not only using leases to supply its manufacturing needs, but also financing the sales of its equipment through both operating and capital leases. Pfizer, a pharmaceuticals manufacturer, uses leases very little. Finally, J PMorgan Chase represents the finance/banking industry which often self-finances its physical assets and makes little use of external lease arrangements. Thus, one would expect the effects of capitalizing operating leases to have the most (least) significant effects on the financial statements and key performance measures of Macy's (JPMorgan Chase) with ExxonMobil, Caterpillar, an d Pfizer experiencing varying degrees of change between these two extremes.

Financial Statement and Ratio Effects

Application of the seven lease capitalization techniques to the financial statements of the five selected companies generally aligned with expectations. The changes across all seven methods were averaged to approximate a consensus effect on the financial statements (total assets, total liabilities, total equity, and net income) and financial ratios (D/A, D /E, LTD/E, ROA, and ROE). Changes to assets, liabilities, D/A, D/E, and LTD/E were expected to be positive, and changes to equity, net income, ROA, and ROE were expected to be negative. Comparisons across these nine financial performance measures were identified a s "large" in terms of the direction of the expected changes (i.e., the largest positive change or the largest negative change, respectively). These results are discussed below and presented by company in Tables 1 through 5 (Appendix). The tables include blank cells for techniques that did not provide computations related to a particular measure of interest.

Overall, Macy's (Table 1, Appendix) had the largest average percentage change on all measures except for D/A for which it had the second largest average percentage change. Somewhat surprisingly, ExxonMobil (Table 2, Appendix) also showed a large percentage change on several measures ranking firs t on D/A, second on four measures (asset, liabilities, D/E and LTD/E), and third on the remaining four measures (equity, net income, ROA, an d ROE). JPMorgan Chase (Table 3, Appendix) ranked second on four measures (equity, net income, ROA, and ROE), third on one measure (LTD/E), fourth on one measure (D/E), and last on three measures (assets, liabilities, and D/A). Caterpillar (Table 4, Appendix) had the third largest average percentage change on three measures (assets, liabilities, and D/E), the fourth largest average percentage change on three measures (equity, D/A, and LTD/E), and the smallest average percentage change on three measures (net income, ROA, and ROE). Interestingly, the ROE and Net Income for Caterpillar increased as a result of operating lease capitalization; this was opposite from both the expected result and the behavior of the other companies in the

sample. Finally, lease capitalization had the smallest overall effect on Pfizer (Table 5, Appendix): ranking third on one measure (D/A), fourth on five measures (assets, liabilities, net income, ROA, and ROE), and last on the remaining three measures (equity, D/E, and LTD/E). In summary, lease capitalization had the largest effect on Macy's (retail industry), as expected. JPMorgan Chase (banking industry), which was expected to exhibit the smallest degree of change, actually had the third largest degree of change. ExxonMobil (oil and gas conglomerate) and Caterpillar (heavy equipment manufacturing) ranked second and fourth, respectively; and Pfizer (pharmaceutical industry) showed the smallest degree of change among the five companies.

Comparison of Lease Capitalization Techniques

To compare the lease capitalization techniques, themselves, the average change across all five companies on each performance measure was calculated for each method. These results are shown in Table 6 (Appendix) with the highest and lowest average changes shade d. The grand mean and standard deviation for all changes are also presented. To measure the sensitivity of the grand mean and standard deviation to outliers, the grand mean and standard deviation were computed a second time after omitting the highest and lowest percentage change s.

Comparing the financial statement changes, the largest (smallest) increase to assets was produced by the ILW-93 (ILW-9 7*) method, and the largest (smallest) increase to liabilities was produced by the ILW-93 (ILW-9 1) method. For equity, ILW-97* reduced equity by the largest amount; and while both the FK-0 1 and EMFZH-09 methods increased equity, the FK-01 increased equity by the greater of these two methods. Changes to net income w ere of different signs with two methods (FK-01 and EMFZH-09) increasing and two methods (ILW-97 and ILW-97*) decreasing net income. The remaining three methods did not adjust net income).

With respect to ratio changes, D/A increased the most (least) under the I LW-93 (FK-01) method. D/E and LTD/E were each increased the most (least) by the ILW-97* (FK-01) method. Since net income was decreased by two methods and increased by two other methods, the resulting ROA and ROE calculations also decreased and increased accordingly with ILW-97* producing the largest decreases for ROA and ROE, and FK-01 producing the largest increases for ROA and ROE. FK-01 was t he only method to increase ROA, and one of only two methods (the other being EMFZH-09) to increase ROE.

In summary, ILW-97* an d FK-01 each accounted for seven extreme values across the nine financial measures. ILW-9 7* produced one lowest value (assets) and six highest values (equity, net income, D/E, LTD/E , ROA, and ROE). All seven of the extreme values produced by FK-01 were either the lowest computed changes or (for measures with both positive and negative changes) were the changes most contrary to expectations (equity, net income, D/ A, D/E, LTD/E, ROA, and ROE). ILW-93 accounted for the other three extreme highest values (assets, liabilities, and D/A), and ILW-9 1 accounted for the remaining lowest value (liabilities). Considering these methods, ILW -97* introduced the determination of a deferred tax liability as a remainder from other calculation s. This would have provided a cumulative effect of equity

rather than an annual effect. The FK-01 method recast the income statement using the actual rent expense and the estimated interest expense and depreciation expense that would have been reported within the given year without respect to cumulative adjustments. This difference in focus and procedure most likely accounts for the generally inverse relationship between these two methods. Considering the average changes across all methods, the grand mean and the revised grand mean (excluding the highest and lowest value) exhibit a fairly consistent relationship. After the extreme values were removed, al l performance measures moved closer to zero with the exception of equity which moved slightly farther away from zero. As would be expected, the standard deviation also moved closer to zero for all financial measures (with the exception of LTD/E) when extreme values were removed.

IMPLICATIONS, LIMITATI ONS, AND FUTURE RESEARCH

This paper empirically examined and compared the effects of various lease capitalization techniques on financial statement elements and key performance measures for five major U.S. corporations. While in some cases the divergence among the methods is extreme, this is not surprising given the number of assumptions and estimates that must be made to constructively capitalize operating leases. Interestingly, two of the most detailed methods, ILW -97* and FK-01, produced nearly opposite effects on the financial statements and ratios. This indicates that the complexity or specificity of the method, alone, does not necessarily produce more accurate or more consistent lease capitalization results. These findings provide feedback to the FASB, the IASB, and other interested stake holders not only about the effects of capitalizing operating leases in general, but also about the results of using various techniques to capitalize those leases.

The study is limited by the fact that the methods were applied as described by their respective authors, and that the assumptions used by the authors may or may not agree with a contemporary understanding of accounting theory and/or the applications of such theory. For example, the practitioner-oriented approaches are not careful to define and restate current year transactions within the current y ear. These methods inherently recognize that constructive capitalization approximates financial statement effects, and they are correspondingly general in their computation of financial statement adjustments. Another example is the inclusion of deferred tax liabilities when tax depreciation is only implicitly included via the u se of each company's average tax rate. A strictly reconstructive approach would require an approximation of the cumulative differences between financial and tax depreciation methods. While it may be agreed that the assumptions required to approximate these differences could vary widely with little difference in the final value s, adjusting the deferred tax liability as the residual amount from other calculations, rather than computing it independently, is a limitation of certain methods.

Regardless of the assumptions used, lease capitalization techniques are inherently estimates of the various performance measures that they seek to compute; and this will continue to be true so long as companies are not required (or do not choose) to disclose the actual parameters that must currently b e estimated to constructively capitalize operating leases. While more complex methods give a greater sense of confidence in the estimates produced, they do not necessarily provide estimates that are more "accurate" than the estimates produced by less complex methods. Thus, a point of diminishing marginal "accuracy" may be reached with

respect to complexity.

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