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International Accounting Standards Board

INFORMATION FOR OBSERVERS

Board Meeting: **22 March 2007, London**

Project: **Leases**

Subject: **Academic Research on Lease Accounting (Agenda paper 12D)**

Purpose of this memo

1. This memo reviews and summarizes the academic research on lease accounting and discusses potential implications for the lease accounting project. The academic research has focused primarily on lessee accounting issues with less than a handful of studies examining lessor accounting issues. As a result, this memo offers significantly more insights into lessee accounting than lessor accounting.

2. Prior academic research has focused on the following four questions:
   a. To what extent would recognition of off-balance sheet leases affect financial statements, and which industries would be most affected?
   b. What is the relationship between leases and other forms of financing, including debt and equity? How do leases in conjunction with debt affect equity risk?
   c. How is lease accounting information perceived or used by investors, creditors, and other financial statement users?

d. What was the impact of Statement 13 on market assessments of risk and profitability and the use of leases relative to other types of financing?

3. In the following sections, the staff reviews each of these questions and the research that addresses them. The staff also indicates the extent to which the research has implications for the lease accounting project.

The impact of capitalizing leases

4. A substantial amount of research has examined the extent to which capitalization of off-balance sheet leases would impact financial statements. Ashton (1985)[1] focused on a sample of 23 UK firms that voluntarily capitalized finance leases prior to the issuance of SSAP-21. In this study, Ashton calculated EBIT, EPS, ROE, return on capital employed, profit margin, asset turnover, interest coverage, and gearing (debt divided by capital employed) with and without the recognized finance leases. In a statistical test of the change in each measure that resulted from the capitalization of finance leases, Ashton found that only gearing was significantly different, with a 20 percent increase in this number. This result seems to suggest that capitalization of finance leases did not affect performance measures, but did affect balance sheet measures such as gearing. However, because the firms in this sample voluntarily chose to capitalize, there is the chance that they did so *because* capitalization had no impact on performance measures. As a result, the conclusion of this study that pertains to performance measures may not generalize to other firms.

5. Ashton conducted an additional analysis that helps describe the impact of lease capitalization. For each of the measures examined (i.e., EBIT, EPS, etc.), Ashton ranked the firms relative to each other, first with and then without the recognized leases. He then computed the correlation between the two rankings for each measure. He found that the rank correlations for each measure were highly positive, suggesting that the relative standing of the firms in this study on any given measure did not change significantly when finance leases were capitalized. This suggests the possibility that capitalization of all non-cancelable leases may

[1] Ashton, R. K. (1985). Accounting for finance leases: a field test. *Accounting and Business Research* 15 (59): 233-238.

not affect the relative standing of firms within their own industries, although fairly dramatic differences across industry may still arise.

6. While Ashton focused on capitalization of finance leases, more recent studies have focused on the impact operating leases would have if capitalized. Imhoff et al. (1991)[2] selected seven U.S. firms where the ratio of operating lease cash flows to total assets was relatively high and seven additional firms (matched on size and industry) where this ratio was relatively low. Assuming (a) a constant borrowing rate, (b) a constant useful life, and (c) leased assets equal to 70 percent of the capitalized operating lease amount, the authors found that constructive capitalization of operating leases decreased return on assets by 34 percent for high-lease firms, but only 10 percent for low-lease firms. In addition, debt-to-equity increased by 191 percent for high-lease firms, but only 47 percent for low-lease firms. (The authors found even more extreme differences when they estimated the present value of operating leases using a heuristic approach in which the first year's minimum lease payment is simply multiplied by some factor—8 in this study.)

7. Imhoff et al. (1993)[3] extended this earlier work by specifically examining the airline and grocery industries. Based on a sample of 29 airlines and 51 grocers with data available from 1984 to 1990, the authors found that total debt would increase by a median $195 million for each airline and $57 million for each grocer if operating leases were capitalized. These amounts equaled approximately 40 percent of the median recognized liabilities at the time for both industries, again underscoring the impact capitalization of operating leases would have on the balance sheets of firms, and potentially entire industries.

8. Bettie et al. (1998)[4] extended this line of research by (a) using a larger sample size of firms, (b) examining multiple industries, and (c) allowing for firm-specific measures of borrowing rates and asset-useful lives. Based on a random sample of 232 UK firms, the authors found that the estimated present value of operating

[2] Imhoff, E., R. Lipe, and D. Wright. (1991). Operating leases: Impact of constructive capitalization. *Accounting Horizons* 5 (1): 51–63.
[3] Imhoff, E., R. Lipe, and D. Wright. (1993). The effects of recognition versus disclosure on shareholder risk and executive compensation. *Journal of Accounting, Auditing, and Finance* 8 (4): 335-368.
[4] Beattie, V., A. Goodacre, and S. J. Thomson. (1998). The impact of constructive operating lease capitalization on key accounting ratios. *Accounting and Business Research* 28 (4): 233-254.

leases amounted to 39 percent of total debt, on average. The unrecorded asset associated with operating leases amounted to 6 percent of total assets. The authors examined nine different performance and balance sheet ratios and found that six of the nine ratios (including profit margin, return on assets, asset turnover, and three measures of gearing) were significantly affected by capitalization of operating leases. These effects were most pronounced for the service industry and least pronounced for the mineral extraction industry.

9. In contrast to Ashton (1985), the authors also found that a ranking of firms for each ratio, first with and then without recognition of operating leases, changed markedly for gearing ratios. This result held across all firms, but also within the service industry on its own. This is largely due to the varying levels of operating lease usage among service industry firms, which include hotels, retailers, media agencies, and vehicle distributors. The results of this study thus seem to confirm prior findings that capitalization of operating leases would dramatically impact the balance sheet, but it also suggests that a number of performance ratios might be affected, and a firm's relative standing even within an industry may change dramatically when operating leases are capitalized. Given the larger sample size in this study, its findings are likely more reliable than earlier studies that indicated no shifts in the relative standing of firms after operating leases were capitalized.

10. Similar results have been reported for firms listed on the New Zealand Stock Exchange, where a 23 percent increase in total liabilities and a 9 percent increase in total assets resulted from constructive capitalization of operating leases.[5] A sample of German firms also corroborated these results, documenting an 8 percent increase in debt-to-equity ratios and a 4 four percent increase in total assets when operating leases were capitalized. These effects were most pronounced for retail and fashion firms wherein debt-to-equity ratios increased by 58 percent and non-current assets to total assets increased by 32 percent.[6] Finally, a study focused on UK retail firms (wherein 98 percent of the leases related to land and building usage) documented a significant impact on multiple performance metrics as well as gearing ratios. Once again, a correlation of the rankings of these firms with and

[5] Bennett, B., and M. Bradbury. (2003). Capitalizing non-cancelable operating leases. *Journal of International Financial Management and Accounting* 14 (2): 101-114.
[6] Fülbier, R., J. Silva, and M. Pferdehirt. (2006). Impact of lease capitalization on financial ratios of listed German companies. Working paper, WHU – Otto Beisheim School of Management.

without capitalization of operating leases was low for gearing measures, suggesting that the relative firm ranking for gearing measures, even within an industry, would change significantly if operating leases were capitalized.[7]

11. In summary, the academic research that examines how capitalization of leases would impact financial statements suggests the following conclusions:

    a. Balance sheet measures such as gearing or leverage ratios would be significantly increased by capitalization of operating leases.

    b. Performance measures such as profit margin, return on assets, and asset turnover also would be affected by capitalization of operating leases, although not as dramatically as balance sheet measures.

    c. The impact on balance sheet and performance measures would be most pronounced for service industry firms, such as airlines, hotels, retailers, media agencies, and vehicle distributors.

    d. Capitalization of operating leases would likely alter the relative standing of firms within and across industries for gearing and other debt-related ratios. In contrast, capitalization of operating leases is not as likely to alter the relative standing of firms for performance measures, within or across industries.

    e. These results hold across multiple jurisdictions throughout the world, including Germany, New Zealand, the UK, and the United States.

12. The staff thinks these findings do not suggest any conceptual rationale on which to base a new lease accounting standard. Instead, these findings merely describe the likely impact capitalization of all non-cancelable leases would have on financial statements within and across industries and jurisdictions. To the degree the Boards consider a single lease model in which all leases are capitalized, these findings suggest what the likely impact on financial statements would be.

The similarity between operating leases and debt

13. A number of studies examine the similarities between operating leases and debt in order to understand the debt-like qualities of lease arrangements. For example, numerous studies have documented a positive relationship between debt levels

[7] Goodacre, A. (2003). Operating lease finance in the UK retail sector. *International Review of Retail, Distribution and Consumer Research* 13(1): 99-125.

and a firm's equity risk. If a similar relationship between leases and equity risk exists, then one might conclude that leases behave similarly to debt. If so, one might argue that leases and debt merit similar accounting treatment. This section reviews the academic research that examines this potential similarity between debt and leases.

14. Before continuing, it is important to define equity risk as it has been used in this literature. *Equity risk* is the uncertainty surrounding the return or profitability of an investment in a firm's equity. Equity risk is often represented by measures such as the variability in the returns of a firm's stock, with greater variability suggesting a riskier security. Equity risk has also been represented by the degree to which a firm's stock return covaries (i.e., moves together) with the market return, with more extreme covariations (i.e., those greater than 1 or less than -1) suggesting a riskier security than the market as a whole. This latter measure is referred to as Beta.

15. Finance theory has long held that the level of debt (often referred to as finance risk or leverage) is positively associated with equity risk. Without getting too technical, the rationale for this relationship is that for every dollar (or other currency) of fixed-price financing used to obtain productive assets, there are relatively fewer equity investment dollars over which to spread the firm's residual earnings. This results in a greater expected variance in earnings per dollar of equity invested. In effect, holding constant the total productive assets of a firm, the higher the leverage, the greater will be the potential variation in earnings available to equity holders. As the earnings available to equity holders becomes more uncertain, the variation in stock price (i.e., equity risk) also increases—a relationship documented by Beaver et al. (1970).[8]

16. Thus, prior research clearly suggests that the level of debt is positively associated with equity risk. Given that relationship, researchers have wondered whether the amount of leases also is associated with equity risk. Again, without getting too technical, these researchers posit that lease arrangements are a form of fixed-price financing used to obtain productive assets. Holding constant the total productive assets of a firm, the higher the amount of leases, the greater will be the potential

[8] Beaver, W., P. Kettler, and M. Scholes. (1970). The association between market determined and accounting determined risk measures. *The Accounting Review* 45 (4): 654-682.

variation in earnings available to equity holders. In essence, these researchers posit that leases are no different than debt financing, and as a result, they should also lead to higher levels of equity risk.

17. Bowman (1980)[9] was the first to examine this relationship. Using 92 U.S. listed firms that had disclosed capital leases under ASR 147, Bowman first documented the previously identified positive relationship between debt and equity risk (measured as the covariation between firm returns and market returns). Next, he added to the analysis a variable representing the present value of disclosed capital leases. After controlling for the positive correlation between leverage and capital leases (which he interpreted to mean that firms with higher levels of debt often had to turn to lease financing), he found that equity risk was indeed positively associated with the present value of capital leases. This result suggests that capital leases behave similarly to debt in their effect on equity risk.

18. Imhoff et al. (1993)[10] extended this research by examining whether operating leases might also be associated with equity risk. Using a sample of 29 airline and 51 grocery firms listed in the United States, the authors first confirmed that the reported level of debt was associated with equity risk (measured as the standard deviation in stock returns). Having replicated this basic result, the authors then added a variable for the present value of operating leases and found that it further explained the variation in equity risk. Interestingly, the magnitudes of the effects on equity risk were similar for both debt and operating leases. This result suggests again that leases (in this case, operating leases) behave like debt in their effect on equity risk.

19. Ely (1995)[11] also examined the lease and equity risk relationship, finding a similar result wherein debt and operating leases were positively associated with equity risk.[12] Interestingly, Ely also examined the effect of the contingent fee portion of

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[9] Bowman, R.G. (1980). The debt equivalence of leases: An empirical investigation. *The Accounting Review* 55 (2): 237–253.

[10] Imhoff, E., R. Lipe, and D. Wright. (1993). The effects of recognition versus disclosure on shareholder risk and executive compensation. *Journal of Accounting, Auditing, and Finance* 8 (4): 335-368.

[11] Ely, K. M. (1995). Operating lease accounting and the market's assessment of equity risk. *Journal of Accounting Research* 33 (2): 397–415.

[12] Ely's model was slightly more complicated than this sentence suggests. In the model, asset risk (i.e., the uncertainty surrounding the revenue stream generated by a productive asset) is allowed to interact

operating lease payments, which were excluded from the minimum lease payments for present value calculations. Ely found that the contingent fee payments were not associated with equity risk, which is not surprising given that these payments do not represent a fixed-price financing arrangement. Instead, contingent fee payments are a form of participation by the lessor in the residual earnings of the lessee. Thus, Ely's results confirm the relationship between operating leases and equity risk, but also suggest that contingent lease payments do not behave similar to debt in that they are not fixed-price financing.

20. Beattie et al. (2000)[13] extended Ely's research by examining 156 UK firms and using a more refined measure of capitalized operating leases that relied on firm-specific discount rates and asset-useful lives. The authors also used two different measures of equity risk—an ex ante and a contemporaneous measurement of the standard deviation in stock returns. The authors found that the present value of operating leases was positively associated with both measures of equity risk. This result again confirmed that the amount of operating leases is positively associated with equity risk, in much the same way that debt is associated with equity risk.

21. One final study examined the direct relationship between debt and leases without considering their relationship to equity risk. In this study, Bettie et al. (2000)[14] examined whether leases were a substitute for or a complement of debt financing. In a sample of approximately 200 UK listed industrial and commercial firms from 1990-1994, the authors regressed a ratio of leases to total assets (including finance and operating leases) onto a debt ratio and control variables for the PE ratio, liquidity, size, tax rate, profitability, and total asset growth. The authors wanted to learn (among other things) whether leases consumed debt capacity, which would suggest that leases substituted for and largely behaved like debt. Their results indicated that every £1 of leasing displaced approximately £0.23 of non-lease debt, on average. This effect was largely driven by the operating leases in the analysis. This result provides another indication that leases (operating leases in particular) behave much like debt, although the result also suggests that operating

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with debt and operating leases. For our purposes, the conclusion stated in this sentence captures the basic implication.

[13] Beattie, V., A. Goodacre, and S. J. Thomson. (2000). Recognition versus disclosure: An investigation of the impact on equity risk using UK operating lease disclosures. *Journal of Business Finance and Accounting* 27 (9 & 10): 1185-1224.

[14] Beattie, V., A. Goodacre, and S. J. Thomson. (2000). Operating leases and the assessment of lease-debt substitutability. *Journal of Banking and Finance* 24: 427-470.

leases are not exactly like debt in that lessors retain a number of risks not retained by lenders. As a result, leases do not perfectly substitute for or displace debt capacity.

22. In summary, the academic research that examines the similarity between debt and leases by studying their relationship to equity risk and with each other concludes the following:

    a. Disclosed capital leases under ASR 147 are positively associated with equity risk, after controlling for debt levels (which also are associated with equity risk).

    b. The present value of operating leases (calculated using a typical present value approach or a factor approach) also is positively associated with equity risk, after controlling for debt levels.

    c. Amounts paid under contingent fee lease arrangements are not associated with equity risk, suggesting that the contingent fee component of lease payments does not behave like debt in its effect on equity risk.

    d. The results relating operating leases to equity risk hold in at least two jurisdictions, the United States and the UK.

    e. Leases (operating leases in particular) appear to be partial substitutes for debt financing, with leases partially consuming debt capacity.

23. The staff thinks these findings suggest that leases (excluding contingent fee arrangements) are quite like debt in their relationship to equity risk, which would support the idea that leases should be accounted for similarly to debt. However, the staff also thinks these findings suggest that leases are not equivalent to debt. As a result, the staff thinks the accounting treatment for leases should convey the debt-like qualities of lease arrangements while still differentiating them from debt itself.

How lease accounting information is used

24. Academic research on lease accounting also has examined how lease accounting information is perceived and used (or could be used) in practice. In particular, this research has examined how lease accounting information affects lending, credit, and security analysis. This research also has examined the degree to which users

and preparers have different perceptions about operating leases. This section describes both of these research areas.

Lending, credit, and security analysis

25. Wilkins and Zimmer (1983)[15] was one of the earliest studies to consider how decisions are affected by lease accounting information. Specifically, they wanted to understand how lease usage affected loan approval decisions. The authors asked 52 Singapore bank loan officers from 35 international banks to review 4 loan applications in a realistic and detailed setting. Participants were told that the applicants' existing financing came either from a term loan, recognized capital leases, or footnoted leases (presumed to be operating leases). Participants were asked to assess each applicant's ability to repay a loan and to indicate the maximum amount he/she would lend to each applicant. The results indicated no effect for the type of financing. That is, assessments of ability to pay and the amount of loan approved did not vary across the three financing types. This result suggests that lending officers perceive term loans, recognized capitalized leases, and footnoted leases to be similar when making lending decisions.

26. A later study by Hartman and Sami (1989)[16] called this result into question. These authors argued that the design in Wilkins and Zimmer (1983) focused participants' attention *away* from financing type (i.e., term loan, capital lease, or operating lease) and instead onto the amount of leverage and loan size, both of which varied in the four applicant cases. This relative lack of attention on financing type could easily explain the prior result. Consequently, the conclusion that lending officers failed to distinguish between term loans, capital leases, and operating leases was likely inaccurate.

27. Based on this criticism, Hartman and Sami conducted their own study. In a random sample of 500 bankers selected from the membership listing of Robert Morris Associates (later renamed the Risk Management Association), the authors asked participants to determine the interest rate they would charge and the credit rating they would assign to a loan applicant. Participants saw identical

[15] Wilkins, T., and I. Zimmer. (1983). The effects of alternative methods of accounting for leases - An experimental study. *Abacus* 19 (1): 64-75.
[16] Hartman, B.P., and H. Sami (1989). The impact of accounting treatment of leasing contracts on user decision making: a field experiment. *Advances in Accounting* 7:23-35.

information, with the following exception: Participants learned that the applicant had either (a) no leases, (b) moderate or substantial amounts of capital leases, or (c) moderate or substantial amounts of operating leases. Based on the 90 usable responses, the results indicated that participants charged a lower interest rate and assigned a higher credit rating to applicants that had no leases or only operating leases than to those who had capital leases. (Whether lease usage was moderate or substantial didn't seem to make a difference.) This result suggests that lending officers may treat the usage of capital leases and operating leases differently when making lending decisions. Unless there is a fundamental economic difference between these two types of leases that justifies the different accounting treatments, this result suggests that lenders are misled by the accounting.

28. Some may argue that the prior two studies no longer generalize today because business has become much more familiar with leases and lease accounting information than it was 20 years ago. In fact, guidance throughout Standard & Poor's *Corporate Ratings Criteria* (2002)[17] suggests that credit analysts typically adjust leverage and other debt analyses for the amount of operating leases. So, it is possible that today's credit analysts are not misled by the capital and operating lease distinction (again assuming that there is no fundamental economic difference between capital and operating leases that would merit the different reporting treatments that exist today).

29. However, research suggests there are still other users of financial reports who fail to distinguish between capital and operating leases. For example, Breton and Taffler (1995)[18] conducted a study with 63 UK stockbroker analysts in which not one of the analysts adjusted amounts or ratios for operating leases. However, there is a more fundamental reason why stockbroker analysts may not adjust for operating leases. As explained by the authors, analysts have strong incentives to forecast reported earnings, which would naturally treat operating leases as operating leases. Moreover, if firms are "window dressing," the analyst will likely be trying to forecast window-dressed earnings. So, although stockbroker analysts

[17] Standard & Poor's. (2002). *Corporate Ratings Criteria*. New York, NY: Standard & Poor's. Available at http://www.standardpoor.com.
[18] Breton, G., and R. Taffler. (1995). Creative accounting and investment analyst response. *Accounting and Business Research* 25 (98): 81-92.

may seem to be misled by the capital-operating lease reporting difference, it is likely because they don't have much incentive to adjust for that difference.

User and preparer perceptions about lease accounting information

30. A couple of studies have examined how users and preparers perceive lease accounting information in financial reports. Gopalakrishnan and Parkash (1996)[19] report the results of a survey sent to CFOs of all Fortune 500 firms (borrowers), 400 chief credit officers of banks (lenders), and to private placement department heads of 100 insurance firms (lenders). Respondents indicated on a scale from 0 (never) to 100 (always) the extent to which they believed certain balance sheet items were liabilities. In general, lenders believed all items (e.g., capital leases, deferred tax liabilities, pension obligations, operating leases, etc.) to be more like liabilities than did borrowers. In relation to leases, borrowers rated capital leases at 90.7 while lenders rated them at 95.2, an insignificant difference clearly indicating that borrowers and lenders believe capital leases are essentially liabilities. In contrast, borrowers rated operating leases at 23.8 while lenders rated them at 45.2, a statistically significant difference. More revealing perhaps, 64 percent of borrowers rated operating leases at 0 while only 15 percent of lenders rated them at 0. On the opposite extreme, only 12 percent of borrowers rated operating leases at 100 while 37.5 percent of lenders did. These results suggest that borrowers and lenders hold very distinct views on whether operating leases are actually liabilities.

31. A more recent study further analyzes the distinct views of preparers and users. Beattie et al. (2006)[20] surveyed 415 finance directors of UK firms that were included in the UK quoted industrials (preparers), 400 financial analysts from a London-based associate members list (users), and 72 fund managers listed in *CA Magazine* (users). Respondents were asked to indicate the extent to which they agreed with a number of statements regarding lease information. The key findings of this study were as follows:

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[19] Gopalakrishnan, V., and M. Parkash (1996). The debt-equivalency of recognized vs. disclosed obligations: an examination of borrower and lender perceptions. *Research in Accounting Regulation* 10: 63-77.

[20] Beattie, V., A. Goodacre, and S. J. Thomson. (2006). International lease-accounting reform and economic consequences: The views of U.K. users and preparers. The *International Journal of Accounting* 41 (1): 75-103.

a. Both users and preparers agreed that recording all material leases on the balance sheet would improve users' ability to compare firms, with users agreeing significantly more than preparers.

b. Users agreed that capitalizing all material leases (following a G4+1 approach) would lead users to increase their estimates of risks involved in providing finance to lessees. Preparers were neutral on this question, neither agreeing or disagreeing.

c. Both users and preparers agreed that lessee firms may need to renegotiate their borrowing covenants and that some lessees would experience a reduction in credit rating, with preparers agreeing with this statement significantly more than users

d. Both users and preparers agreed that the current lease standards were incomplete, inconsistent, open to manipulation, lacked uniformity and clarity, and did not portray the substance of the transactions.

e. Both users and preparers were equally supportive of a single-lease-model approach for any new standard.

f. Users agreed that any new lease accounting standard should apply generally to all types of properties as well as intangibles. Preparers were neutral on this point.

g. Users favored materiality as the threshold, not an arbitrary short time limit. Preparers were neutral on this point, neither agreeing or disagreeing on average.

h. Both users and preparers felt that negotiation of shorter lease terms with renewal options would still allow firms to keep leases off book based on the G4+1 reports.

32. Perhaps the most significant takeaway from these studies is that users and preparers often hold very distinct views regarding lease accounting. As a result, the Boards should continue making every effort to be informed regarding users' thoughts and preferences, which have historically been more difficult to gather than those of preparers and auditors.

33. To summarize this section, the academic research that examines how lease accounting information is used and perceived in practice suggests the following conclusions:

    a. Lending officers are willing to lend at lower rates and assign higher credit ratings to firms that use more operating leases than capital leases, suggesting that either lenders perceive capital leases and operating leases to be economically different or lenders are misled by the accounting.

    b. At least one credit rating firm consistently adjusts its debt and leverage analyses to recognize the present value of operating leases, suggesting that it considers operating leases to be equivalent to debt.

    c. Stockbroker analysts do not appear to capitalize operating leases when performing stock valuation or forecasting.

    d. Users and preparers often hold quite distinct views on how to account for leases. However, they both seem to agree on some important issues as well.

34. The staff thinks the finding that lending officers treat operating-lease loan applicants different from capital-lease loan applicants is inconclusive. On the one hand, the finding seems to suggest that firms can mislead lenders by crafting their leases to be off balance sheet—an explanation that would support a single lease model in which all leases are capitalized. However, an equally plausible explanation for this finding is that lenders believe off-balance sheet leases are somehow economically less risky than capital leases, or that firms that craft their leases as operating leases are more economically astute and less of an equity risk. Such an explanation provides little support for changing the current lease accounting standards. At most, this latter explanation suggests that lending officers perceive an economic difference between off-balance sheet leases and debt which *should* be reflected in financial statements. Given the conflicting interpretations of this finding, that staff sees no conclusive implications for the lease accounting project.

35. The staff thinks the last three findings simply highlight the different ways in which users rely on lease accounting information. Stockbrokers and other similar valuation analysts seem less concerned than credit analysts with the balance sheet impact that a single lease model would have. As a consequence, stockbrokers and

other similar valuation analysts are unlikely to be affected significantly by a change in lease accounting standards. In contrast, the staff thinks credit analysts would benefit significantly from a single lease model in which all leases are capitalized because such an approach would provide more refined calculations of the off-balance sheet leases based on contract level inputs (e.g., discount rates, lease term) rather than the crude firm-wide discount rate and average lease life analysts must currently use to estimate these amounts. In summary, the staff thinks these findings suggest a single lease model would not affect valuation type analysts and could greatly benefit credit type analysts.

The impact of Statement 13

36. The last major area of research reviewed in this memo examines the impact that Statement 13 had on lessees. This research indicates the extent to which the concerns and fears surrounding the earlier standard actually played out in reality. Such an understanding may help the Boards keep in perspective the concerns and fears surrounding current deliberations.

Impact on equity risk

37. Many critics of Statement 13 had argued that the market's assessment of a firm's risk would increase if unrecognized finance leases were capitalized. Martin et al. (1979)[21] examined this issue by comparing the stock return variance (a measure of equity risk as described in paragraph 14) before and after adoption of Statement 13 for 17 U.S. firms that had significant new capitalizations of leases under Statement 13. The hypothesis of equal variances before and after Statement 13 could not be rejected, suggesting that equity risk did not change when previously unrecognized leases were capitalized. The degree to which the firms' stock returns covaried with the market return (i.e., Beta) also did not change after adoption of Statement 13. Together, these results suggest that any new standard requiring the capitalization of operating leases would likely have no effect on the market's perception of a firm's equity risk.

[21] Martin, J., P. Anderson, and A. Keown, Jr. (1979). Lease capitalization and stock price stability: Implications for accounting. *Journal of Accounting, Auditing & Finance* 2 (2): 151-163.

38. Finnerty et al. (1980)[22] and Murray (1982)[23] found similar results when examining large U.S. firms for which the capitalized present value of lease commitments under Statement 13 was a significant portion of total debt. When comparing these firms to a set of control firms matched on size, industry, systematic risk, and a few other variables that differed across the two studies, the authors found that the degree to which a firm's stock returns covaried with the market return (i.e., Beta) did not change significantly after the adoption of Statement 13. These two papers again suggest that any new standard requiring the capitalization of operating leases would likely have no effect on the market's perception of a firm's equity risk.

39. A comprehensive study conducted by Abdel-khalik (1981)[24] also found that Statement 13 had no impact on equity risk. This study focused specifically on the airline, fast food, and retail industries with a total sample of over 200 firms. Without getting into the details, this study found that multiple measures of equity risk as well as the risk reflected in bond premiums and returns were all unaffected by the adoption of Statement 13. This suggests that lessees' concerns that the market would penalize them inappropriately if they capitalized finance leases was ultimately unfounded.

40. The Abdel-khalik (1981) study provided one notable exception to this rather robust finding. In a survey questionnaire responded to by 98 CFOs of lessee firms, 85 CFOs of non-lessee firms, 134 bank loan officers, 112 auditors, 61 bond analysts, and 90 stock analysts, the authors asked respondents to compare two nearly identical firms that differed only in their use of capital or operating leases. Almost universally, the respondent groups preferred (on average) the firm that reported only operating leases, indicating that this firm was more profitable, had better debt-paying ability, and had more predictive cash flows than the capitalized lease firm. This result suggests that even though the market-level assessments of equity risk may not have changed after adoption of Statement 13, side-by-side comparisons of firms would still put capital-lease lessees at a disadvantage

[22] Finnerty, J. E., R. N. Fitzsimmons, and T. W. Oliver. (1980). Lease capitalization and systematic risk. *The Accounting Review* 55 (4): 631–639.
[23] Murray, D. (1982). The irrelevance of lease capitalization. *Journal of Accounting, Auditing & Finance* 5 (2): 154–159.
[24] Abdel-khalik, A. R. (1981). *The Economic Effects on Lessees of FASB Statement No. 13, Accounting for Leases.* FASB: Stamford, CT.

relative to operating-lease lessees. The author suggests this may have resulted because users of financial statements, "…more so than preparers or auditors, are favorably influenced in their evaluation of a company if it avoids capitalizing its leases" (p. 108).

Impact on capital structure

41. Although these earlier studies suggested that Statement 13 had no impact on equity risk assessments, other studies did document an impact on capital structure. Imhoff and Thomas (1988)[25] examined how Statement 13 affected firms' choice of financing options. Based on lease note disclosures of approximately 150 firms prior to Statement 13, the authors estimated the amount of leases that would have been capitalized if firms had not changed their capital structure. Relative to this estimate, the authors documented a sharp decline in capital leases after adoption of Statement 13, with a substantial amount of this decline being replaced by operating leases. The authors explained that this result "…suggests that renegotiation of lease contracts is a low-cost alternative, relative to other responses that potentially mitigate the financial statement effects of the standard" (p. 305). Similar low-cost efforts are likely to occur in response to any new lease accounting standard, although what those efforts would be depends on the standard itself.

42. Imhoff and Thomas (1988) also documented an increased use of non-lease financing as well as a decrease in the use of debt relative to equity. These results suggest that lessees employed various capital structure changes—in addition to renegotiating lease contracts—to mitigate the impact of the new standard on overall leverage. This result echoed initial (albeit inconclusive) findings in Abdel-khalik (1981). And more recently, this result was replicated in Australia by Godfrey and Warren (1995),[26] who documented similar capital structure changes in response to the issuance of AAS 17. All together, these studies suggest that a considerable effort was undertaken by lessees to mitigate the impact of Statement 13 (and similar standards in other jurisdictions), both by trying to renegotiate lease

[25] Imhoff, E., and J. K. Thomas. (1988). Economic consequences of accounting standards: The lease disclosure rule change. *Journal of Accounting and Economics* 10 (4): 277–310.
[26] Godfrey, J., and S. Warren. (1995). Lessee reactions to regulation of accounting for leases. *Abacus* 31 (2): 201-228.

contract terms to avoid capital lease criteria and by choosing financing options that reduced the overall reported leverage of the firm.

Impact on stock prices

43. El-Gazzar (1993)[27] examined the impact of Statement 13 on firm stock prices, focusing particularly on how increased tightness of debt covenants affected stock price. A number of prior studies suggested with mixed results that the higher leverage ratios that resulted from various non-lease accounting standards brought some firms closer to violating their debt covenants, which in turn led to negative stock price reactions. Those studies did not focus on actual debt covenants, but instead assumed that higher leverage ratios and lower interest coverage ratios led to an increased tightness of debt covenants. El-Gazzar (1993) applied this thinking to the adoption of Statement 13, but he examined actual debt covenants as published in debt registration filings and 10-Ks.

44. El-Gazzar (1993) hypothesized and found that for firms where capitalization under Statement 13 would have increased the tightness of existing debt covenants, stock prices declined significantly on two events that preceded the issuance of Statement 13—the public hearings in November 1974 (in which opponents of lease accounting changes failed to convince the FASB of the dangers of tightening lease accounting) and the modification of the Exposure Draft in June 1976 (in which the FASB was unable to reach a consensus to eliminate retroactive application of the standard). El-Gazzar also found that the magnitude of this effect was correlated with the impact Statement 13 would have had on the tightness of debt covenant restrictions. This result suggests that the market believed some firms would have to undertake costly efforts to deal with tightened debt covenants as a result of Statement 13.

45. Other than El-Gazzar (1993), there are no other studies that suggest a stock price reaction to the adoption of Statement 13. In fact, Abdel-khalik (1981) notes the following from his extensive survey of CFOs, auditors, bank lenders, and analysts:

> The majority of the survey participants were either unaware of any adverse effects or believed that no adverse effects took place.

[27] El-Gazzar, S. (1993). Stock market effects of closeness to debt covenant restrictions resulting from capitalization of leases. *The Accounting Review* 68 (2): 258–272.

> Responses were highly consistent among different occupational groups (p. iv).

46. This result and the lack of other documented stock price effects in the past 30 years suggest that the stock price reaction to Statement 13 was minimal and focused (at best) on very particular circumstances, such as the resulting tightness in debt covenant restrictions.

47. To summarize this section, the academic research that examines the impact of Statement 13 suggests the following conclusions:

    a. The market's assessment of firms' equity risk did not change following the adoption of Statement 13. This result holds for numerous measurements of equity risk and across multiple industries.

    b. In a side-by-side comparison of identical firms that differ only in their use of capital or operating leases, CFOs, bank lenders, auditors, bond analysts, and stock analysts tend to prefer the operating-lease firm over the capital-lease firm on metrics such as profitability, ability to repay, and ability to predict cash flows. This result seems at odds with the finding that Statement 13 had no impact on firms' equity risk, but this difference may have occurred because participants in these studies were assessing more than just equity risk when expressing a preference for the operating-lease firm over the capital-lease firm.

    c. Firms mitigated the impact of Statement 13 by renegotiating the terms of lease contracts to avoid capital lease criteria. Firms also shifted their financing away from fixed-price financing toward equity financing. This result was documented in the United States and in Australia in response to the issuance of their respective lease accounting standards.

    d. Stock prices declined for firms that would have experienced tightened debt covenant restrictions as a result of Statement 13. The magnitude of the stock price decline was positively associated with the change in the tightness in debt covenant restrictions that would have resulted.

    e. No other stock price reactions to events leading up to the issuance of Statement 13 have been documented, suggesting the possibility that the market's reaction to any new lease accounting standard also would be minimal.

48. The staff thinks the findings related to the Statement 13 impact on equity risk and users' perceptions of firms that use operating leases versus capital leases underscore the earlier studies reported in this memo. Generally speaking, these findings further support the notion that leases behave much like debt, although they are not equivalent. As a result, the staff continues to think that the accounting treatment for leases should convey the debt-like qualities of lease arrangements while still differentiating them from debt itself.

49. The other findings in this section describe market price reactions and contract restructuring behavior that is likely to occur again following any new lease accounting standard. The exact nature of these reactions will depend on the standard itself, so the staff thinks these studies simply provide a reminder to the Boards to consider carefully the likely gaming opportunities that the new standard may provide.

Lessor accounting

50. As mentioned previously, very little research has addressed lessor accounting issues. In fact, only three studies have done so. Powers and Revsine (1989)[28] focused on one particular lessor (Comdisco, Inc., a lessor of mainframe computers) to analyze how sensitive its income was to its selection of residual values. In a simulation analysis based on publicly available information in annual reports, 10-Ks, and data disseminated to the analyst community, the authors found that when the ratio of residual value to original cost was overestimated by as little as 5 percent, Comdisco's income in the last year of a 4-year lease declined by 114 percent. This effect was even more pronounced if an interest in the residual value was sold to a third party. For a growing firm, such losses would be masked as expiring leases are replaced with new leases, and could thus mislead financial statement users. The authors argued, therefore, that GAAP should require disclosures regarding actual versus expected residual value realizations and its impact on current earnings.

[28] Powers, M., and L. Revsine. (1989). Lessors' accounting and residual values: Comdisco, Barron's, and GAAP. *The Accounting Review* 64 (2): 346–368.

51. Johnson et al. (1993)[29] also examined the impact of residual values on lessor accounting. Mindful that the U.S. Tax Reform Act of 1986 made leasing more costly to lessees, the authors hypothesized that lessors would raise their estimates of residual value in order to maintain reported book income levels. Using data published in the Equipment Leasing Association's Survey of Industry Activity, the authors found significant support for this hypothesis while ruling out a number of alternative explanations. On average, estimated residual values as a percent of original cost increased from 8.4 percent pre-1986 to 12.1 percent post-1986. Despite the positive impact this change would have on income in the early years of a lease, the authors still found that fewer than 13 percent of lessors reported experiencing losses on their portfolio of residual values when those residual values were leased again or sold. That is, the vast majority of lessors still appeared to estimate residual values conservatively. Despite this finding of conservatism, Johnson et al. (1993) reiterated Powers and Revsine's (1989) call for better disclosures regarding actual versus expected residual value realizations.

52. Crosby (2003)[30] is the last study to have examined lessor accounting issues. Relying on hypothetical examples and computations, the author demonstrated that present value calculations that ignore upward rent reviews (present in many UK rental agreements) would understate the lease receivable and overstate the residual value if market value is held as the fair value control. The author also illustrated that failure to use a tenant-specific discount rate when calculating the present value of lease receivables would overstate the fair value of the receivable at inception. The author concludes that upward rent reviews and tenant-specific discount rates should be factored into any fair value estimate of a lease receivable.

53. In summary, the prior research on lessor accounting issues offers very few insights at this point. What little research has been done focuses on the impact residual value estimates can have on income, suggesting the need for better disclosure regarding actual and expected residual value realizations. This research also suggests the need to consider upward rent reviews and tenant-specific discount rates when estimating lease receivables at inception.

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[29] Johnson, J. M., R. J. Dowen, and C. L. Norton. (1993). An assessment of lessor accounting for residual values. *Accounting Horizons* 7 (3): 55–65.

[30] Crosby, N. (2003). Accounting for leases - the problem of rent reviews in capitalizing lease liabilities. *Journal of Property Investment & Finance* 21 (2): 79-108.

Unanswered research questions

54. There remain a number of unanswered research questions, the answers to which may prove useful to the Boards in their deliberations. The following is a tentative list of questions identified by the staff:

    a. How does the impact of lease accounting on *above-the-bottom-line* numbers (such as operating income, EBIT, or EBITDA) affect users' decisions? The answer to this question may help the Boards understand those situations in which the lease impact on above-the-bottom-line components matters to decision makers.

    b. What percentage of existing debt covenants require that operating leases be capitalized? The answer to this question may help the Boards understand the extent to which lessees would face costly renegotiation of covenants and restrictions if a new standard required capitalization of most operating leases.

    c. Along these same lines, to what extent do credit rating agencies capitalize operating leases in their credit analyses? The answer to this question may be helpful in countering any argument by constituents that capitalization of operating leases will affect their credit ratings and borrowing capacity.

    d. Are equity analysts less concerned with off-balance sheet leases than credit analysts? Because equity analysts are often more focused on the income statement and the income statement impact of proposed lease accounting standards is minimal, equity analysts may not care whether operating leases are capitalized. On the other hand, credit analysts are primarily concerned with both the ability to service debt and the ability to repay the debt, which requires analysis of both the income statement and the balance sheet. The answer to this question may help place into perspective the sometimes conflicting comments received from equity analysts and credit analysts.

    e. How does the decomposition of a lessor's asset into a receivable and a residual interest affect the evaluation of equity risk and other investor decisions? The answer to this question may help the Boards understand how the economic components of a lessor's assets are used by market participants.

55. These are just a few questions that may merit future attention.

Conclusions

56. This memo has reviewed and summarized the existing research on lessee and lessor accounting issues that is likely to be helpful to the Boards in their current deliberations. It has also suggested direct implications for the current lease project. Finally it has suggested a number of research questions that remain unanswered, but that might prove helpful to the Boards. If the Boards are interested in reading another recent review of the academic literature on lease accounting, the staff recommends Lipe (2001)[31] and Ryan et al. (2001),[32] which both reviewed the prior research in light of the G4+1 proposal.

57. Appendix A of this memo provides an alphabetized list of the articles cited in this memo. Appendix B provides a tabular summary of the conclusions noted in this memo.

[31] Lipe, R. (2001). Lease accounting research and the G4+1 proposal. *Accounting Horizons* 15 (3): 299-310.
[32] Ryan, S., et al. (2001). Evaluation of the lease accounting proposed in G4+1 special report. *Accounting Horizons* 15 (3): 289-298.

Appendix A

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Appendix B

SUMMARY OF CONCLUSIONS FROM PRIOR RESEARCH

The impact of capitalizing leases

a. Balance sheet measures such as gearing or leverage ratios would be significantly increased by capitalization of operating leases.

b. Performance measures such as profit margin, return on assets, and asset turnover would also be affected by capitalization of operating leases, although not as dramatically as balance sheet measures.

c. The impact on balance sheet and performance measures would be most pronounced for service industry firms, such as airlines, hotels, retailers, media agencies, and vehicle distributors.

d. Capitalization of operating leases would likely alter the relative standing of firms within and across industries for gearing and other debt-related ratios. In contrast, capitalization of operating leases is not as likely to alter the relative standing of firms for performance measures, within or across industries.

e. These results hold across multiple jurisdictions throughout the world, including Germany, New Zealand, the UK, and the United States.

The similarity between operating leases and debt

a. Disclosed capital leases under ASR 147 are positively associated with equity risk, after controlling for debt levels (which also are associated with equity risk).

b. The present value of operating leases (calculated using a typical present value approach or a factor approach) also is positively associated with equity risk, after controlling for debt levels.

c. Amounts paid under contingent fee lease arrangements are not associated with equity risk, suggesting that the contingent fee component of lease payments does not behave like debt in its effect on equity risk.

d. The results relating operating leases to equity risk hold in at least two jurisdictions, the United States and the UK.

e. Leases (operating leases in particular) appear to be partial substitutes for debt financing, with leases partially consuming debt capacity.

How lease accounting information is used

a. Lending officers are willing to lend at lower rates and assign higher credit ratings to firms that use more operating leases than capital leases, suggesting that either lenders perceive capital leases and operating leases to be economically different or lenders are misled by the accounting.

b. At least one credit rating firm consistently adjusts its debt and leverage analyses to recognize the present value of operating leases, suggesting that it considers operating leases to be equivalent to debt.

c. Stockbroker analysts do not appear to capitalize operating leases when performing stock valuation or forecasting.

d. Users and preparers often hold quite distinct views on how to account for leases. However, they both seem to agree on some important issues as well.

The impact of Statement 13

a. The market's assessment of firms' equity risk did not change following the adoption of Statement 13. This result holds for numerous measurements of equity risk and across multiple industries.

b. In a side-by-side comparison of identical firms that differ only in their use of capital or operating leases, CFOs, bank lenders, auditors, bond analysts, and stock analysts tend to prefer the operating-lease firm over the capital-lease firm on metrics such as profitability, ability to repay, and ability to predict cash flows. This result seems at odds with the finding that Statement 13 had no impact on firms' equity risk, but this difference may have occurred because participants in these studies were assessing more than just equity risk when expressing a preference for the operating-lease firm over the capital-lease firm.

c. Firms mitigated the impact of Statement 13 by renegotiating the terms of lease contracts to avoid capital lease criteria. Firms also shifted their financing away from fixed-price financing toward equity financing. This result was documented in the United States and in Australia in response to the issuance of their respective lease accounting standards.

d. Stock prices declined for firms that would have experienced tightened debt covenant restrictions as a result of Statement 13. The magnitude of the stock price decline was positively associated with the change in the tightness in debt covenant restrictions that would have resulted.

e. No other stock price reactions to events leading up to the issuance of Statement 13 have been documented, suggesting the possibility that the market's reaction to any new lease accounting standard also would be minimal.

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