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THE VALUE OF LEASE DISCLOSURES: SOME EMPIRICAL EVIDENCE

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The Value of Lease Disclosures:

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ABSTRACT

This study considers the information content of lease disclosures in establishing the market value of firms with substantial amounts of leased assets. The research results suggest that the market was largely strong-form inefficient with respect to lease information prior to the disclosure requirments of ASR-147 issued by the SEC in October, 1973, and that lease disclosures made since 1973 appear to be useful in establishing the value of firms with leased assets. As a result, to the extent that accounting information concerning assets and liabilities is useful in establishing market measures of risk and return, its imputed benefit is improved by the addition of lease information. In addition to providing evidence that the lease information is useful in valuing those firms with significant lease commitments, the study also provides a measure of the impact of leases on the systematic risk component of firms that have obtained financial leverage through leasing. This measurement of the effect on systematic risk permits the cost of leasing in the form of additional risk premium to be indirectly observed and evaluated as a part of the overall leasing decision.

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1.0 INTRODUCTION

From the mid-1960s through the mid-1970s, leasing in the United States grew at a rate of 15-29% annually. The American Association of Equipment Lessors estimated that about 15% of all industrial equipment, over $80 billion dollars worth, was leased as of 1974. [Shapiro, 1975]. In addition, real estate properties valued at billions of dollars are acquired under lease contracts.

The growth of leasing has resulted in an increasing interest in the subject by financial analysts, financial theorists, accountants and the business community in general. One apparent reason for the large growth in leasing has been the belief that acquisition of assets through leasing constitutes "off-balance sheet" financing, enabling corporate management to control the use of assets without recording either the asset or liability. Treatment of these non-capitalized type leases has been a key accounting issue for some time. Recent FASB pronouncements on leases abound. Debates concerning the advantages and disadvantages of leasing continue, with many advantages and disadvantages attributable to both sides of the issue.

1.1 Outline of the Study

The purpose of this paper is to determine whether the disclosure of non-capitalized lease information would affect the value of firms involved. The belief that accounting research should consider the economic substance of issues rather than legal or structural form has emerged as a popular approach to evaluating such controversial accounting topics. This paper focuses on the economic substance of the lease disclosure controversy by considering the impact of lease disclosures on the risk and return of leasing firms. Specifically, the research considers the impact of disclosures of the present value of lease commitments on the relationship between certain accounting ratios and the systematic market risk of the firm.

Section two of this paper reviews relevant background literature that forms the basis for the empirical work. Section three reports the results of the association tests between accounting ratios and systematic market risk for leasing and non-leasing firms. Section four provides a measure of the risk premium attributable to the non-capitalized financing leases. The empirical work in this section lends further support to the results obtained in Section three. Section five shows the limitations of the study as well as the summary and conclusions. Appendix A identifies the lease sample for Section three; appendix B identifies the lease sample for Section four; appendix C provides the basis for treating leases as debt; and appendix D provides the derivation of Hamada's model used in Section four of the paper.

2.0 CORE LITERATURE

The literature of accounting and finance is replete with articles which would rightly be a part of a literature review on the subject of leases. The purpose of this section is to identify only those elements of the literature that are at the core of the present research. The two major stages of this research which are reported in Sections three and four respectively, and the core literature for each of these Sections is identified separately. Sections 2.1 and 2.2 are background for Section 3; and Section 2.3 is background for Section 4.

2.1 Accounting Disclosures

A number of recent official pronouncements have dealt with leases. This paper focuses on Accounting Series Release No. 147 (ASR-147), the key prouncement affecting accounting disclosure of leases issued by the SEC in October, 1973 [SEC, 1973 B]. The FASB has issued several pronouncements subsequent to ASR-147 which have important implications for accounting disclosures regarding leases. However, since ASR-147 disclosure requirements preceded those from the FASB pronouncements, ASR-147 will be of primary importance in determining the reaction in the securities market to accounting lease disclosures. To the extent that FASB and ASR-147 disclosures are similar, this study contains information relevant to the evaluation of FASB 13 and other FASB pronouncements regarding leases.

The purpose of ASR-147 is to improve registrants' disclosure of their "off-balance sheet" financial commitments. The amendment to Regulation S-X, requires that for all reports filed after November 30, 1973, registrants must disclose the following information:

1. Total rent expense entering into determination of income.

2. Minimum rental commitments aggregated for the next five years, each of the next three five-year periods, and the remainder of the lease's term.

3. The basis for calculating rent, renewal options, purchase options, escalation clauses, guarantees and obligations, dividend or debt restriction, and any other impact on financial position.

4. For all uncapitalized financing leases:
   a. The present value of minimum lease commitments by category, computed with a discount rate implicit in the terms of the lease at the inception.
   b. The weighted average interest rate in the above.
   c. The present value of rentals to be received in subleases.
   d. The impact upon net income for each period if all non-capitalized financing leases were capitalized, related assets amortized on a stright line basis, and the interest cost accrued on the basis of the outstanding lease liability. If the impact is less than three percent of average net income, that factor may be stated in lieu of detailed disclosure.

ASR-147 does not require leases to be recorded as assets and obligations of the firm. However, the footnote disclosure did, for the first time in most cases, permit outsiders to evaluate the impact of "off-balance sheet" lease commitments on the asset and liability structure of the respective firms. In this study, ASR-147 is assumed to be the first required public disclosure of such lease information for all publicly traded firms with "material" lease commitments.[1] This study considers the impact of the previously undisclosed lease information on the "asset" and "debt" components of the (1) debt to total assets ratios and (2) debt to equity ratios.

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[1]The SEC, in ASR-147, defines material leases to be leases of five percent of the sum of stockholders' equity and liabilities.

2.2 Theory and Early Research in Association Tests

In capital-market theory, the value of any asset at a point in time is the discounted present value of the future benefits adjusted for uncertainty, and is, therefore, based on expectations concerning future events. The value of a share of stock is the present value of the expected future cash flows, discounted at the investor's required rate of return. Market participants are said to form expectations by analyzing and assimilating a wide range of information, including accounting information.

Over the past decade, much research has been directed toward evaluating the role of accounting information in the formation of investor expectations. For example, Beaver, Kettler and Scholes (BKS) [1970], assessed the degree of association between accounting-determined and market-determined measures of risk and return. Perfect association could not be expected since the former is historial data, while the latter is a function of expected future events. However, to the extent that the past reduces uncertainty about the future, some association should be expected. Recent papers by Beaver and Manegold [1975] and Gonedes [1975] support the validity of earlier research and the reasonableness of expecting an association between accounting and market measures.

The paper by BKS [1970] provides an important basis for the present study. BKS examined the association between several commonly accepted accounting-based risk measures and the systematic market risk ("beta") of 307 firms from 1947 to 1956 and 1957 to 1965. The results, partly summarized in Table 1, indicate the four variables with significant associations for both the sub-periods at the individual security level. The fact that BKS observed a

significant positive association between leverage and systematic market risk is a basis for the association tests conducted in the present study. If leverage is an important variable in assessing market risk, and if leases are perceived as debt to the lessee, then lease information, when included as debt, might be expected to improve the association between leverage and market risk (provided that information was not previously impounded by the market in the leverage measure).

Table 1

Partial Summary of Association

Tests Reported By Beaver, Kettler and Scholes

Sub-Period Correlation

Variable	1947-1956	1957-1965
Leverage	.23 (.23)	.25 (.22)
Accounting Beta	.39 (.44)	.23 (.23)
Earnings Variability	.58 (.66)	.36 (.45)
Payout	-.50 (-.49)	-.24 (-.29)

Numbers in parentheses are Spearman rank-order correlations while others are product moment correlations. All correlations are significant at the .01 level.

The disclosure guidelines of ASR-147 and the previous association tests of BKS provide the basis for the research conducted and reported in section three.

2.3 Capital Structure Research

A lease is perceived as a financial instrument permiting the acquisition of economic resources without the necessity of an immediate cash outflow. It is , in substance, no different than any other time-payment acquisition , with periodic payments including principal and interest. As a result, the market should perceive leases as debt in assessing the risk of a firm. The amount of leverage is, in theory, an important element the common stockholder considers in evaluating a firm's risk. This theory is supported by Modigliani and Miller (M&M) [1958] in their "Proposition II," which defines the value of the firm as a function of leverage.[2] If leases are valid components of financial risk and the M&M theory of capital structure is correct, then the impact of leasing on the riskiness of the firm may be measurable. Unfortunately, certain key variables in the M&M model are not readily observable. However, an alternative model, utilizing both M&M's capital structure theory and the Capital Asset Pricing Model (CAPM) theory was developed by Robert Hamada [1969]. Hamada's work demonstrates, both theoretically [1969] and empirically [1972], that the required rate of return to shareholders increases linearly with

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[2]For a more complete derivation, see Appendix C.

increases in financial risk (the debt-equity ratio).[3]

In his more specific formulation, Hamada proposes that for a given firm, a pure equity return (R_E) and a return with both debt and equity (R_D) could be computed. The pure equity (no debt) return, (R_E), is usually unobservable, but could be estimated by:

$$E(R_E)_t = \frac{d_t + cg_t + p_t + I_t(1-\tau)_t}{S_{A_{t-1}}} \tag{1}$$

where:

d_t = common dividends in period t.

cg_t = capital appreciation of the stock in period t

p_t = preferred dividends in period t.

I_t = interest payments in period t.

τ = corporate tax rate

$S_{A_{t-1}}$ = value of the stock with pure equity at t-1.

Since $S_{A_{t-1}}$ is generally unobservable, Hamada uses the following variation of equation (1):

$$E(R_E)_t = \frac{d_t + cg_t + p_t + I_t(1-\tau)_t}{(V-\tau D)_{t-1}} \tag{2}$$

where:

$V = S_B+D+PFD$

S_B = market value of common stock

D = total debt value (book value used)

PFD = market value of preferred stock

and all other terms as in (1) above. Hence equation (2) imputes a pure equity return (R_E) to each firm. Equation (3) below is the well-

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[3]A detailed derivation of Hamada's model is provided in Appendix D.

known measure of return on common stock given the presence of leverage (R_D) where all terms are defined as above:

$$E(R_D)_t = \frac{d_t + cg_t}{S_{B_{t-1}}} \tag{3}$$

Hamada uses the measures R_E and R_D as dependent variables obtained for each of 304 firms from 1947 to 1966 and, in the context of the CAPM, regresses them against a market index (Fisher's index) to obtain estimates of systematic market risk for levered (B_D) and unlevered (B_E) (or pure equity) versions of the return measures.

Specifically:

$$R_{E_{it}} = \alpha_{E_i} + \beta_{E_i} R_{M_t} + U_{E_{it}} \tag{4}$$

$$R_{D_{it}} = \alpha_{D_i} + \beta_{D_i} R_{M_t} + U_{D_{it}} \tag{5}$$

where:

$R_{E_{it}}$ = pure equity return (per equation 2) for firm i in period t.

$R_{D_{it}}$ = actual (levered) return (per equation 3) for firm i in period t.

α_{E_i} & α_{D_i} = the intercept for pure equity and levered returns respectively.

β_{E_i} = unlevered (pure equity) beta for firm i, an estimate of systematic market risk assuming no debt.

β_{D_i} = estimated systematic market risk for firm i.

R_{M_t} = Fisher's index of the market return in period t.

$U_{E_{it}}$ & $U_{D_{it}}$ = residuals from pure equity return and actual return respectively for firm i in period t.

Hamada's results demonstrate that the estimate of the unlevered beta (β_E) is less than the estimate of the levered beta (β_D), and

and suggests that leverage explains approximately 25% of the value of the beta on the average. Going on step further, Hamada suggests that the levered beta (β_D) theoretically should be a linear function of the ratio of "pure-equity" stock value to the stock value with debt (S_A/S_B), multipled by unlevered beta (β_E), such that:

$$\hat{\beta}_{D_i} = a_1 + b_1 \left(\frac{S_A}{S_B} \cdot \hat{\beta}_E\right) + U_{1i} \qquad (6)$$

Since the reciprocal should also be true, it should also hold that:

$$\hat{\beta}_{E_i} = a_2 + b_2 \left(\frac{S_B}{S_A} \cdot \hat{\beta}_D\right) + U_{2i} \qquad (7)$$

where a_1 and a_2 are expected to be 0 and b_1 and b_2 are expected to be 1 with the expected r^2 values close to 1.0 in both cases. Hamada's results, summarized in Table 2 below, provide empirical support for the theoretical relationship between leverage and value of the firm.

Table 2

Hamada's Results [1972] from Equations [6] and [7]

	a	b_i	r^2
Equation [6]	-.022	1.062	.962
Equation [7]	.030	.931	.969

More recent results by Beaver and Manegold [1975] and Hill [1976] lend further credence to the theory that leverage affects systematic market risk.

Hamada's work relates to leases in that it provides (1) a basis for testing the impact of leases included or not included in the definition of debt, and (2) a potential measure of the impact of leases on systematic market risk. Tests reported in Section four will evaluate leases in the context of the Hamada model and will provide some measure of the impact of leases on systematic risk.

3.0 LEASE INFORMATION BEFORE AND AFTER 1973

For years there has been an inconsistency between the theory and practice of leasing. Many authors have suggested that the "borrow and buy" alternative is superior to leasing [Bierman and Smidt, 1971, and Van Horne, 1974]. This general superiority is attributed to several factors: lessors sometimes charge a higher rate for leases than for loans; leases require advance payments at the beginning of the lease period, thus accelerating the timing of the cash outflows resulting in a higher negative net present value (NPV); accelerated depreciation is generally available in the "borrow and buy" alternative, yielding a higher tax shelter in earlier years and a lower negative NPV [Van Horne 1974].

Most of the recent literature has concluded that there is no real advantages to leasing or buying in the absence of different tax rates for the lessor and the lessee, assuming free and equal access to the capital markets [Miller and Upton, 1976, Lewellen, Long and McConnell, 1976, and Myers, Dill and Bautista, 1976]. Myers, Dill and Bautista concluded that:

> "Our solution is a useful reference point for explaining the popularity of financial leases. We have shown the importance of different tax rates for lessees vs. lessors, particularly when interest rates are high and accelerated depreciation is allowed for tax purposes. However, saving taxes seems to be the only motive that is both obvious and

> substantial. Other frequently cited reasons appear artificial or transitory--e.g., the idea that creditors can be fooled by off-balance sheet financing, that the lessee's stockholders can be fooled by the higher book profits that leasing often leads to, or that an organization's controls on capital expenditure can be circumvented by leasing rather than buying new assets. In efficient and competitive capital markets the lease vs. borrow problem should be a toss-up, apart from tax considerations." [1976, p. 815]

Results of an early survey by Vancil and Anthony [1959] add to the conflict between theory and practice. In a survey of some 500 institutional lenders, over 80% of the analysts responding considered long-term leasing equivalent to debt, with 72% of the respondents equating leases with debentures and secured long-term debt. At the same time, fewer than one-half of the insurance companies, fewer than one-quarter of the commercial banks, and almost no mutual funds, investment bankers, or fund trustees actually made regular use of formal analytical techniques equating lease payments with debt.

It is hoped that the research reported in this section will help to shed some light on the question of whether financial market participants consider leases components of financial leverage. The study assumes that before 1973 the market did not systematically receive accounting information on the asset and liability values of leases, and hence did not adjust for the non-disclosed lease information in establishing the systematic (or non-systematic) risk of the firm. Further, it is expected that once the lease information is disclosed, a predictable reaction in the association between accounting and market risk measures will occur.

3.1 Lease and Non-Lease Samples

To evaluate the impact of the lease disclosures on systematic market risk, a lease sample was identified from those firms on Compustat. It was expected that a sample of firms could be identified which reported significant leasing activities, with the disclosure of those activities made at about the same point in time each year across firms. A sample of 71 calendar year-end firms was identified as having Compustat data for the period 1965-1974, and having total lease commitments greater than or equal to 6% of total assets for 1973 and 1974.[4] The Compustat lease data were checked against 10-K data and seven firms were eliminated because of inconsistent or ambiguous data, leaving 64 firms. Finally, 13 firms that had missing or inconsistent CRSP monthly stock prices between 1968 and 1974 were eliminated, leaving a sample of 51 firms with verified Compustat and CRSP data. A control group was also selected to represent the non-lease firms. One hundred and fifty calendar year-end firms with the necessary Compustat and CRSP data but with no leases (per ASR-147) reported, were selected to represent the Control group.[5] This control group was expected to be representive of the association that would be obtained between accounting and market risk measures when leases were not an important factor. Also, the association results from this control group were expected to be comparable to the earlier results reported by BKS.

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[4]This definition of firms with a significant amount of lease activity is somewhat more rigorous than that imposed by ASR-147, and will provide a sharper distinction between lease and non-lease firms.

[5]The 10-K's for a sample of 10% of this group were checked to verify that there were no leases reported.

3.2 Association Tests - Full Lease Sample

The market model estimates of systematic risk (beta or β) for each firm in both the control group and the lease sample were obtained using monthly market returns (dividend adjusted) as the dependent variable and Fisher's Index (value weighted with dividends reinvested) as the independent variable. Three separate systematic risk measures (betas) were computed for each firm, with the first covering the ten-year period 1965-1974, the second covering the eight-year sub-period 1965-1972, and the third covering the two-year sub-period 1973-1974.[6] These systematic risk measures were then associated with the two accounting measures of risk: (1) debt to equity and (2) debt to total assets. The ratios for the ten-year period (1965-1974) were computed using an average ratio for the period 1973-1974 with and without leases included as debt. The ratios for the eight-year period were based on an average ratio for the same eight-year period (1965-1972), without leases included as debt (since no lease data was available for that period). The two-year period 1973-1974 used the same ratios as the two-year averages computed for the ten-year test above. The resulting ratios were computed with and without leases added to both debt and total assets for the "debt to total assets" ratio and to debt for the "debt to equity" ratio. It was not necessary to compute the ratios with and without the lease effect for the control group firms since they had no leases.

The results were expected to show that the association between

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[6]Forty-four of the 51 lease firms had the full set of 120 monthly returns while the other seven had at least 84 consecutive observations.

market beta and the two separate ratios would be stronger for the "with leases added" ratios than either the control sample ratios or the regular lease sample ratios (without lease adjustment). These results would suggest that considering leases to be leverage improves the association between leverage ratios and systematic market risk, and that leverage is more important for firms with significant leasing activities than for firms without leases. It was also expected that the association between market risk and the two separate leverage ratios computed without considering leases (for the lease sample) before 1973 would be considerably stronger (higher correlations) than for the 1973-74 period when lease information became available. This would suggest that the lease disclosures made during 1973-74 contained "new" information for the market, and that the debt to equity and debt to total assets ratios as previously computed were less useful in explaining systematic risk.

Table 3 summarizes the results of the association tests between market beta and debt to total assets (panel A), and between market beta and debt to equity (panel B).

TABLE 3

PANEL A:

Contemporaneous Association Between the Debt to Total Assets Accounting Ratio and Systematic Market Risk

Time Period	Control Sample	Lease Sample	Lease Sample With Lease Added
1965-1974	.25 (.22)	.52 (.54)	.58 (.55)
1965-1972	.40 (.41)	.63 (.65)	N/A
1973-1974	-.16** (-.19)**	.24 (.21)	.48 (.41)

PANEL B

Contemporaneous Association Between the Debt to Equity Accounting Ratio and Systematic Market Risk

Time Period	Control Sample	Lease Sample	Lease Sample With Leases Added
1965-1974	.21 (.25)	.64 (.58)	.70 (.63)
1965-1972	.32 (.43)	.60 (.70)	N/A
1973-1974	-.14** (-.20)**	.33 (.20)	.46 (.31)

Product moment correlations with Spearman rank-order correlations in parentheses. All correlations are significant at the 5% level except as noted below.

** significant at 10% level but not at the 5% level.

The correlation of .25 in Panel A obtained for the control group is comparable to the correlations of .23 and .25 obtained by BKS for the 1947-1956 and 1957-1965 periods for the same leverage ratio. The correlations for the lease sample (without leases added) were consistently higher than for the control group for all three periods examined. This fact is partially explained by the higher degree of leverage and greater homogeneity with respect to leverage. The mean debt-equity ratio, for

example, was 1.7 for the lease sample and 1.3 for the control group, with variances of 1.1 and 2.1 respectively.

Furthermore, the addition of leases to the two leverage ratios for the ten year period resulted in slight improvements in the correlation coefficients (.52 to .58 in panel A and .64 to .70 in panel B), while for the 1973-74 sub-period there was substantial improvement for both ratios (.24 to .48 in panel A and .33 to .46 in panel B).[7] Also, the accounting ratios for 1973-74 computed without the new lease disclosures resulted in lower correlations (.24 in panel A and .33 in panel B) than in the 1965-72 pre-lease disclosure period (.63 in panel A and .60 in panel B).[8] As noted in Table 3, both forms of the two ratios for the lease firms were significantly correlated with systematic risk. The correlations for the lease sample ratios for 1973-74 without leases added (.24 and .33) were not expected to be statistically significant. While the test of significance for correlation coefficients is not a particularly rigorous or substantive hurdle, it is interesting to note that these ratios for firms with substantial leasing activities did remain useful in explaining systematic market risk.

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[7]While it is hard to consider the lease sample to be a sample in the true sense of the word, some would consider it to be such and would inquire if the differences in the correlations are statistically significant. In panel A of Table 3, the change from .24 to .48 is significant at the $\alpha \geq .10$ level using a one-tailed test. The change from .33 to .46 in panel B is significant at $\alpha \geq .24$. It is probably more accurate to view these 51 firms as a population of lease firms with certain limiting characteristics. In the latter mode, all differences are viewed as "real" or significant differences, not due to chance. This should not detract from the results in any way.

[8]While it may not be considered necessary, both of these changes in correlations coefficients are significant at the $\alpha = .05$ level or below.

3.3 Association Tests - Lease Firm Sub-Sample

An analysis of the 51 lease firms revealed that 16 were transportation firms. Further investigation revealed that these 16 firms (4 railroads and 12 airlines) had reported lease information to regulatory agencies prior to 1973, and as a result their inclusion may have dampened the effect of the "new" lease disclosures. This could be true even though the lease information for these 16 firms was not readily available or widely disseminated. The association tests reported in Table 3 were repeated for the 36 leasing firms excluding railroads and airlines. The results, summarized in Table 4, reveal sharper differences than the full lease sample results in Table 3.

TABLE 4

Panel A

Contemporaneous Association Between the Debt to Total Assets Ratio and Beta - Lease Sample Less Airlines and Railroads

Time Period	Lease Sample	Lease Sample With Leases Added
1965-1974	.39	.41
1965-1972	.52	N/A
1973-1974	.04*	.37

PANEL B

Contemporaneous Association Between the Debt to Equity Ratio and Beta - Lease Sample Less Airlines and Railroads

Time Period	Lease Sample	Lease Sample With Leases Added
1965-1974	.58	.61
1965-1972	.52	N/A
1973-1974	.14*	.29

Since there were not substantive differences between Product Moment and Spearman Correlations in any of the remaining tests to be reported, only product moment correlations will be given. All are significant at the 5% level unless otherwise noted.

*Not significant at 10% level

Without the regulated companies included, it appears as if the market may have been inefficient in the strong-form sense prior to the 1973-1974 disclosures, and that once the "new" lease information became available, the market began to use the lease data in evaluating systematic market risk. This is particularily apparent for the debt to total asset ratio where the 1973-1974 "with leases added" correlation (.37) returns to a level almost equal to the ten-year correlation (.39). Both ratios for the 1973-1974 period

without the inclusion of leases are insignificant (.04 in Panel A and .14 in Panel B), suggesting they are no longer useful in explaining systematic market risk.[9]

The results of the association tests suggest that including leases in accounting measures of leverage improves the association between accounting and market risk measures. These results suggest that the disclosure of lease information appears contribute to the assessment of the value of the firm.

3.4 Summary of Association Results

The association tests were designed to detect changes in the degree of association when reported lease data were included in certain accounting risk measures. The period of initial lease disclosure also happened to be a period of negative market returns and considerable market turbulance and uncertainty. This sort of uncertainty might have an impact on the relationship between historical accounting data and expectation-based market measures, and might explain the uniformly low correlations for the 1973-1974 period. Even so, the changes in associations with and without lease data were in the expected direction and are consistent with the belief that adding leases to accounting leverage ratios improves the relationship between accounting and market measures of risk. The results imply that not only are lease data captured in systematic market risk measures, but that once they are available, commonly

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[9]Once again the change in the correlations from the 1965-1972 period to the 1973-1974 period for the lease sample ratios computed without leases (.52 to .04 in A and .52 to .14 in B) are both significant at the $\alpha = .05$ level or below. The change in correlations within the 1973-1974 period (.04 to .37 in A and .14 to .29 in B) were significant at the $\alpha = .07$ and the $\alpha = .26$ levels respectively.

used accounting measures of leverage are no longer useful in assessing market risk unless they include the lease information. This phenomenon was particularly salient when the lease sample was examined without the regulated transportation firms included.

The association tests involved accounting measures of leverage. Modern financial theory contains valuation and capital structure models that allow measurement of the effect of leverage on required returns for individual firms. Since financing leases affect the amount of a firm's assets and liabilities, such leases should be reflected in valuation and capital structure. The evidence presented above would be strengthened if valuation or capital structure models were developed and tested with leases included. The next section develops and tests such a model.

4.0 LEASES AND CAPITAL STRUCTURE

The work of Hamada [1969, 1972] reviewed in Section 2.3 demonstrates that the systematic risk for a levered firm is a function of the leverage ratio multiplied by the systematic risk of the same firm without leverage (see equations 6 and 7 and Table 2). These results suggest that accounting measures of leverage, financial risk, and systematic market risk are related, and that leverage has a measurable impact on the systematic risk (beta) of the firm.

The present study repeated the tests conducted in the Hamada study for both the lease and the non-lease (control) samples. Annual rates of return were calculated for each firm for the period 1955-1974 for both the pure equity return (equation 2) and the

return given the presence of leverage (equation 3). It was expected that the results would be similar to those of Hamada reported in Table 2 of section 2.3. It was also expected that when leases were added to a firm's leverage variable, the unlevering effect on the computation of the pure equity return (equation 2) would be measurable and would reduce the systematic risk of the unlevered beta computed from equation 4.

The exact form of the adjustment to equation 2 for the lease effect was made as follows:

$$R_{E_t} = \frac{d_t + cg_t + p_t + I_t(1-\tau)_t + \lambda_t(1-\tau)_t}{(V-\tau D-\tau L)_{t-1}}$$

where: $V = S_B + D + PFD + L$

L = present value of non capitalized-financing leases

λ = interest component of the lease payments

all else as in equation 2.

This adjustment to equation 2 is equivalent to capitalization of the leases as both assets and liabilities. In addition, the value of leases multiplied by the tax rate reflects the tax shelter effect and is subtracted in the denominator in a manner similar to debt. In the numerator, the interest component of the lease payments (λ) after taxes is added back to the return, further "unlevering" the rate of return measure to approximate a pure equity return. This interest component was calculated in amortization-table fashion using the reported weighted-average discount rate implicit in the leases.

4.1 Sample Selection

For this part of the research, both a lease and non-lease sample were required. The December 31 fiscal year-end requirement was dropped and the data requirement for computing returns was expanded to 15 years (1961-1974), resulting in a lease sample of 70 firms. A non-lease sample of 98 firms was taken from the original 150 firms in the control group, all having 15 years of return information and no significant leasing activity from 1961-1974. The return information requirement consisted of those variables included in equations 2, 2A, and 3, to permit the computation of a pure equity return (equation 2 and 2A) and a levered return (equation 3) on an annual basis.

4.2 Capital Structure Tests and Results

The pure equity (R_E) and the levered (R_D) returns were computed using equations 2 (or 2A for lease firms) and 3 for each firm. The returns for the 15 year period were regressed against the market return (Fisher's Index) using equations 4 and 5 to compute a "levered" systematic risk measure (B_D) and an "unlevered" measure (B_E). The average of these betas are reported as the first part of each of the capital structure tests that follow. In addition, the results of the cross-sectional regressions from equations [6] and [7] are reported as the second part of each capital structure test. In the latter equations, S_A/S_B and S_B/S_A are the leverage ratios with S_B equal to the observed market value of the stock and S_A the unobservable stock value assuming no leverage. The operational definition of S_A in equations 6 and 7 is the average denominator of the pure equity return (equations 2 and 2A)

over the 15-year test period.[10]

The first part of the capital structure tests was expected to show the unlevered (imputed) betas to be much lower than the levered (observable) betas, with the difference equal to a measure of the "cost" of leverage in terms of systematic risk. For the lease sample, when leases were added to the definition of debt in computing the unlevered (imputed) betas, it was expected that the unlevered beta would become even lower, with the differences in the unlevered betas (before and after considering the leverage effect of leases) equal to some systematic risk premium attributable to leasing. The second part of the capital structure tests was expected to yield results similar to those reported by Hamada (and summarized in Table 2) for equations 6 and 7, with the intercept terms close to zero, the slopes close to 1.0, and high r^2 values.

The first tests, conducted for the non-lease sample, are reported in Table 5. The results are very similar to those obtained by Hamada [1972], presented earlier in Table 2. The levered and unlevered betas are as expected and the association measures (r^2 values) from equations [6] and [7] are quite high.

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[10]In the original study, Hamada [1972] ran the cross-sectional regressions three times using three definitions of S_A: (1) S_A based on the first year of the test period only; (2) S_A based on the last year only; and (3) S_A based on the average over the test period. The average gave the best results. In this study S_A was computed based on a 15-year average and the average over the last 5 years, with no significant differences being observed. The average over the full period was used and is consistent with the earlier work.

Table 5

Capital Structure Tests -

Non Lease Sample

Part 1		EQUATION [5]	EQUATION [4]
N = 98	Time Period 1961 - 1974	B_D = .910	B_E = .737

Part 2	a	b	r^2
EQUATION [6]	.002	1.023	.982
EQUATION [7]	.016	.953	.984

NOTE: B = average beta in this and subsequent tables. It should be noted that these beta values are unweighted, hence the simple average over a large number of firms may be other than 1.0 without implying a bias in the index or the sample.

The next tests, reported in Table 6, are for the lease sample before leases are included in computing unlevered beta (B_E). Table 7 shows the results from the same set of tests for the lease sample after leases are included in the computation of unlevered beta (B_E).

Table 6

Capital Structure Tests -

Lease Sample Before Lease Adjustment

Part 1			
N = 70	Time Period	EQUATION [5]	EQUATION [4]
	1961 - 1974	B_D = 1.080	B_E = .765

Part 2	a	b	r^2
EQUATION [6]	-.038	1.111	.869
EQUATION [7]	.111	.797	.893

Table 7

Capital Structure Tests -

Lease Sample After Lease Adjustment

Part 1			
N = 70	Time Period	EQUATION [5]	EQUATION [4]
	1961 - 1974	B_D = 1.080	B_E = .756

Part 2	a	b	r^2
EQUATION [6]	-.029	1.104	.867
EQUATION [7]	.107	.800	.893

Once again, the levered and unlevered betas reveal the expected relationship, with strong associations reported in the second part of the tests in both cases. The impact of the leases on the

unlevered beta was quite small, changing B_E from .765 to .756 This was not unexpected since the lease information was only available for two of the 15-years.[11] It was encouraging to observe B_E in Table 7 to be less than B_E in Table 6. While the slight additional unlevering of this unlevered beta by .009 is not conclusive, it is in the theoretically expected direction and suggests that the model performed properly.[12]

Because of the encouraging results for the large lease sample, an effort was made to test further the effect of leases on systematic risk and leverage. As mentioned earlier, some regulated firms reported lease data prior to 1973 to regulatory agencies. Included in the sample of 70 lease firms were nine airlines, for which lease data were able to be accumulated from CAB Form 41 for between 11 and 15 of the years between 1961 and 1974. These nine firms were "significant lease" firms over their respective periods of observation.

The tests were recomputed on the lease sub-sample of nine airlines for periods varying from 11 to 15 years, and the results before and after adjusting for leases are reported in Tables 8 and 19 respectively.

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[11]The pure equity return computed before (equation 2) and after (equation 2A) the effect of leases requires a denominator from the previous year (t-1). As a result, the only difference in the denominator of 2 and 2A is one year's lease data. The other 13 observations would have a dampening effect on the difference observed in B_E from Table 6 (before adjustment) to Table 7 (after adjustment).

[12]The difference of .009 was not statistically significant using a parametric test. This is probably influenced by the dampening effect of the 13 observations which did not include the lease information. However using a non-parametric sign test, there is only a very slight probability ($\alpha < .0001$) that 64 of the 70 sign changes were in the expected direction due to chance.

Table 8

Capital Structure Tests -

Airline Sample Before Lease Adjustment

Part 1			
N = 9	Time Period	EQUATION [5]	EQUATION [4]
	1961 - 1974	B_D = 1.235	B_E = .713

Part 2	a	b	r^2
EQUATION [6]	.126	1.056	.741
EQUATION [7]	.063	.779	.728

Table 9

Capital Structure Tests -

Airline Sample After Lease Adjustment

Part 1	Time Period	EQUATION [5]	EQUATION [4]
N = 9	1961 - 1974	B_D = 1.235	B_E = .604

Part 2	a	b	r^2
EQUATION [6]	.258	.956	.664
EQUATION [7]	.029	.792	.747

NOTE: The part 2 results are not as "tight" as before, largely due to a significant drop in sample size.

The results for the airlines are consistent with those of the entire lease sample, with a sharper difference in unlevered betas (B) before and after adjusting for leases. The unlevered beta drops

.109, from .713 to .604, when leases are adjusted for in the measure of pure equity return.[13] This drops suggests a rather substantial change in systematic risk measures for heavy leasing firms, which would probably result in a significantly different perception of a firm's risk by owners and investors. These results appear to substantiate that the disclosure of lease commitments is an important elements of accounting information which is useful in assessing systematic market risk.

4.3. Summary

Section three reported results implying that once lease disclosures were reported, they were impounded in the market risk measures. The capital structure model used in this section attempted to go beyond mere information content and to measure the risk premium associated with leases. With the airline sample, it was possible to measure implicitly the total risk premium over and above a pure equity situation, and to decompose this premium into an amount of risk attributable to capitalized debt plus an amount attributable to uncapitalized leases. The results suggest that leases are a significant element of financial risk having a definite impact on the assessment of systematic market risk. This method of measuring the indirect impact of leases on the systematic risk premium of the firm should prove useful in both ex-post and ex-ante evaluations of leasing decisions (or other financing decisions) by internal and external financial statement users alike.

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[13] To test this change for significance, a non-parametric sign test was used. All nine airlines had a decrease in unlevered beta, resulting in a significant additional unlevering effect. The probability of nine straight decreases = .00195. Also, the parametric test for differences in the B_E's indicated that the .109 difference was significant at the $\alpha = .06$ level. This is quite a strong result given there were only nine firms involved.

5.0 Conclusion

There has been a great deal of interest in the area of leases and lease disclosure in both the practical and academic literature of accounting and finance. This study contributes to the growing body of evidence suggesting that lease commitments have a levering effect similar to debt and have an impact on the market's evaluation of the risk and return parameters of leasing firms. This evidence supports FASB Statement No. 13's position that leases are essentially long term purchases that should be reported as assets and liabilities on the lessee's books. This study, in addition to the recent study by Ro [1978], suggests that both the balance sheet and income statement effects of ASR-147, once disclosed, alter the market's assesment of the value of equity securities for leasing firms. These results strongly suggest that the market perceives the lease disclosures as new information which is useful for establishing equilibrium prices.

The results of this study are also consistent with an earlier study by Hughes and Oldfield [1976] which used the M&M model to evaluate the impact of lease disclosures on the value of the firm. Hughes and Oldfield concluded that "... the information contained in footnotes on lease commitments is reflected in share prices which evolve from investor decisions in the same fashion as we we would expect debt to be" [1976, p. 15].

Another recent paper by Abdel-khalik, Thompson and Taylor [1978] evaluated the impact of ASR-147 disclosures on bond risk premiums. Their results suggest that there were no significant adjustments in the bond market's assessment of lessee default risk observed from January 1973 to May 1974. This is not consistent with the results of this study or the Ro and Hughes and Oldfield studies.

However the bond market data used in this study were admittedly "relatively dirty" [p. 152]. The conclusions of the study acknowledge that, "The findings presented here do not necessarily imply that the 'information content' of disclosure requirement under ASR No. 147 is immaterial..." [p. 152]. Still, the study does suggest that the bond market did not revise the assessment of the lessee's default risk as a result of the lease disclosures reported in 1973. This would suggest that the lease information was impounded prior to 1973, or that the lease disclosures were not relevant information. Perhaps the major impact of the Abdel-khalik, et.al. study is to suggest that additional research in the bond market might prove beneficial in evaluating information content.

The results reported in Section 3 and 4 are somewhat stronger than either the Ro study or the Hughes and Oldfield study. Yet all three studies provide some evidence suggesting that the lease information was not impounded in the market value of the firm prior to 1973, and as a result, provided new information. The outcome of the market association tests reported in this study, which changed significantly once the lease information was disclosed, is consistent with the belief that the market was inefficient in the strong-form sense regarding lease information prior to 1973.

5.1 Additional Research

It would be possible to approach this subject from still another methodological direction, relying more heavily on the market model and evaluating residuals for the period leading up to and subsequent to the "new" lease disclosures. Of course, such a methodology is no more free of assumptions or interpretation problems than the methodology employed by Ro, Hughes and Oldfield, or the present study. These studies,

while using the market model to some degree, are not as significantly influenced by model specification problems that are crucial in a straight API type of analysis. Still, it would be interesting to observe the return residuals around the disclosure date, providing some cross sectional adjustment could control for changes in the parameters of the market model.

Future research could also evaluate the contribution of FASB Statement No. 13. The present study uses only footnote information on lease commitments, and assumes that the NPV of such commitments represents both the asset and liability values. It is possible that the asset value might be something other than the balance in the liability. If this were a significant assumption, then FASB No. 13 information could also provide significant incremented effects on the value of the firm. The impact of FASB No. 13 disclosure is yet to be evaluated.

Also, it would be useful to evaluate ASR-147 disclosure for additional time periods. The period 1973-1974 may not have been a representative valuation interval. Additional oservations would permit a more comprehensive assessment of the impact of leasing on systematic risk. This study attempted to measure the risk premium associated with leasing for a small sample of regulated firms that had reasonable data bases. Such tests on non-regulated firms will become more feasible as the number of disclosure years increases.

5.2 Summary

Theory suggests that leasing is another form of leverage. The present study suggests that after 1972 the market treated leases as leverage in establishing the market value of the firm. Including

leases in two different leverage ratios improved the association between systematic market risk and the leverage ratios. Futhermore, leverage ratios that did not include leases as leverage (once lease data were disclosed) were not significantly associated with systematic market risk.

Using the capital structure model developed by Hamada [1969], unlevered betas were calculated by deriving rates of return which were adjusted for both interest payments and the value of debt. A lease-adjusted version revealed that leases had an additional unlevering effect. Although this unlevering effect was slight for the overall sample, it was substantial for a sub-sample of nine airlines having lease disclosures prior to 1973. A risk premium attributable to financing leases was approximated from the model that explains systematic risk as a function of leverage. The results not only confirm and strengthen the evidence from the association tests, but also provide a framework for measuring the impact of additional leverage on systematic risk.

APPENDIX A

SAMPLE FIRMS - TEST OF ASSOCIATION

SAMPLE GROUP 1 - LEASE SAMPLE (n = 51)

Airco, Inc.
Allied Chemical Corp.
American Airlines, Inc.
American Seating Co.
Amfac, Inc.
Atlantic Richfield Co.
Braniff International Corp.
Chessie System, Inc.
Clark Oil & Refining Corp.
Cluett, Peabidy & Co.
Continental Air Lines, Inc.
Continental Oil Co.
Cook United, Inc.
Cooper Tire & Rubber
Di Giorgio Corp.
Eastern Air Lines
Edison Brothers Stores
Emery Air Freight Corp.
Fieldcrest Mills
Fuqua Inds., Inc.
General Host Corp.
Hilton Hotels Corp.
Howard Johnson Co.
Kansas City Southern Inds.
Kroger Co.
Murphy (G.C.) Co.
National Can Corp.
North American Boal
Northwest Airlines, Inc.
Olin Corp.
Pan American World Airways
Pennwalt Corp.
Peoples Drug Stores, Inc.
Phillips Petroleum Co.
Pitney-Bowes, Inc.
PSA, Inc.
Reynolds (R.J.) Inds.
Safeway Stores, Inc.
Scovill Mgf. Co.
Seaboard World Airlines
Sonesta International Hotels Corp.
Soo Line Railroad
Standard Oil Co. of California
Tiger International Corp.
Time, Inc.
Trans World Airlines
UAL, Inc.
Unarco Inds, Inc.
Union Oil Co. of California
Weis Markets, Inc.
Western Air Lines, Inc.

APPENDIX B

SAMPLE FIRMS - CAPITAL STRUCTURE TEST

SAMPLE GROUP 1 - LEASE SAMPLE (n = 70)

Company

Consolidated Foods Corp.
General Host Corp.
Beatrice Foods Co.
Staley (A.E.) Mfg. Co.
Archer-Daniels-Midland Corp.
Reynolds (R.J.) inds.
United Merchants & Mfrs.
Cluett, Peabody & Co
Genesco, Inc.
Manhattan Ind. Inc.
Phillips Van Heusen
American Seating Co.
Allied Chemical Corp.
Olin Corp.
Air Products & Chemicals
Airco, Inc.
Ashland Oil, Inc.
tlantic Richfield Co.
Continental Oil Co.
Phillips Petroleum Co.
Standard Oil Co (Indiana)
Union Oil Co. of California
Standard Oil Co. of California
Armstrong Rubber
Cooper Tire & Rubber
National Can Corp.
Belden Corp.
Crane Co.
Scovill Mfg. Co.
Pullman, Inc.
American Airlines, Inc.
Braniff International Corp.
Continental Air Lines, Inc.
Delta Air Lines, Inc.
Eastern Air Lines
Northwest Airlines, Inc.
Pan American World Airways
Seaboard World Airlines
Trans World Airlines
UAL, Inc.
Western Air Lines, Inc.
Di Giorgio Corp.
Wickes Corp.
Allied Stores
Amfac, Inc.
Assd Dry Goods Corp.
Carter Hawley Hale Store
Federated Dept. Stores Inds.
Gamble-Skogmo
Macy (R.H.) & Co.
May Dept. Stores Co.
Mercantile Stores Co, Inc.
Penney (J.C.) Co.
Scoa Inds, Inc.
Kresge (S.S.)
Murphy (G.C.) Co.
Woolworth (F.W.) Co.
Kroger Co.
Luch Stores, Inc.
Winn-Dixie Stores, Inc.
Lane Bryant, Inc.
Mayes (J.W.), Inc.
Host International, Inc.
Marriott Corp.
Thrifty Drug Stores
Walgreen Co.
Petrolane, Inc.
Hilton Hotels Corp.

APPENDIX C

CAPITAL STRUCTURE AND LEASES

If the theory that leases are amortized debt holds, the market should perceive leases as debt. In other words, investors will "penalize" firms for leases in the same manner that they do for debt. By "penalize" it is meant that residual equity investors require a premium to compensate for the increased financial risk incurred by the senior fixed charges of debt. Modigliani and Miller (MM) [1958] hypothesized in their "Proposition I" that the value of a firm is invariant to the amount of leverage:

In equilibrium, for any firm j in class K,

$$V_j = (S_j + D_j) = \overline{X}_j/\rho_k \qquad (C1)$$

where:

V_j = value of firm j(S_j = stock + D_j = debt).

$\overline{X}_j$ = stream of expected returns of firm j.

ρ_k = equity capitalization rate of a pure equity stream for the K^{th} class firms.

Equation (C1) states that the market value of any firm is independent of its capital structure and may be calculated by capitalizing its expected return at the rate ρ_k appropriate to its class.

Equation (C1) can be solved for ρ_k to yield an average cost of capital:

$$\rho_k = \frac{\overline{X}}{(S_j + D_j)} = \frac{\overline{X}_j}{V_j} \qquad (C2)$$

Equation (C2) states that the average cost of capital to any firm is completely independent of its capital structure and is equal to the capitalization rate of a pure equity stream of its class. In their "Proposition II", MM Specifically define the rate of return, or yield to equity investors of a firm, as the capitalization rate appropriate to the firm's risk class plus a premium related to financial risk equal to the debt-equity ratio multiplied by the spread between the capitalization rate and r, the interest rate on debt. Proposition II is derived from Proposition I. The expected rate of return or yield, i, on the stock of any company j belonging to the K^{th} class is a linear function of leverge as follows:

$$i_j = \rho_k + (\rho_k - r)\, D_j/S_j \qquad \text{(C3)}$$

Equation (C3) state that the expected yuield of a share of stock (i_j) is equal to the appropriate capitalization rate, ρ_k, for a pure equity stream in the class, plus a premium related to financial risk equal to the debt-equity ration (D_j/S_j) multiplied by the spread between ρ_k and r; or, equivalently, the market price of any share of stock is given by capitalizing its expected return by i. MM [1963] later amended this yield function to include the impact of taxes. In the tax correction paper, MM suggest leases in a parenthetical expression: "Thus for borrowed funds (or any other tax-deductible source of capital) the marginal cost or before-tax required return is simply the market rate of capitalization..." [1963, p. 441]. While leases are not specifically mentioned by MM, they are the only substantial tax-deductible source of capital other than debt.

APPENDIX D

DERIVATION OF HAMADA'S MODEL

Hamada's thesis is as follows: Recall that the CAPM gives a formal market relationship between an asset's required rate of return and its individual risk, as measured by $COV(R_i, R_M)$. Assume a corporation, A, in equilibrium with no debt in its capital structure. Denote:

S_A = present equilibrium market value of equity.

$E(S_{AT})$ = expected value one period later.

E(DiV) = ex[ected dividends.

$E(X_A)$ = EBIT (earnings before income taxes - after depreciation)

then:

$$E(X_A) = E(DiV) + E(S_{AT}) - S_A \tag{D1}$$

The expected percentage return rquired by stockholders is:

$$E(R_A) = \frac{E(DiV) + E(S_{AT}) - S_A}{S_A} = \frac{E(X_A)}{S_A} \tag{D2}$$

Assume Corporation A issues debt, D, at the risk-free rate, R_F, and repurchases equity with the proceeds. Call the debt-structured corporation B, and the remaining stockholders' required return is:

$$E(R_B) = \frac{E(X_A) - R_F D_B}{S_B} \tag{D3}$$

The computations of (D2) and (D3) are the same except for the interest payment $R_F D_B$.

Hamada now plugs in the expected return, $E(R_i)$, from the CAPM model into (D2), such that:

$$R_F + \lambda COV(R_A, R_M) = \frac{E(X_A)}{S_A} \tag{D4}$$

$$R_F + \lambda COV(R_B, R_M) = \frac{E(X_A) - R_F D_B}{S_B} \tag{D5}$$

Intuitively, B should be riskier than A since it has an after-interest payment residual income. If this is true, $COV(R_B, R_M)$ should be greater than $COV(R_A, R_M)$. The expected returns are different, so it is not quite clear what the equilibrium relationship is between S_A and S_B. Rearrange (D4) and (D5) and set them equal:

$$S_A[R_F + \lambda COV\ (R_A, R_M)] = S_B[\lambda COV(R_B, R_M) + R_F(1 + \frac{D_B}{S_B})] \tag{D6}$$

The covariances are defined (see Hamada [1969] for derivation) as:

$$COV(R_A, R_M) = \frac{1}{S_A} COV(X_A, R_M) \tag{D7}$$

$$COV(R_B, R_M) = \frac{1}{S_B} COV(X_A, R_M) \tag{D8}$$

Substituting (D7) and (D8) into (D6) gives:

$$S_A\ [\frac{\lambda}{S_A} COV(X_Z, R_M) + R_F] = S_B\ [\frac{\lambda}{S_B} COV(X_A, R_M) + R_F(1 + \frac{D_B}{S_B})] \tag{D9}$$

which simplifies to:

$$S_A + S_B + D_B \tag{D10}$$

To complete Hamada's proof of MM Proposition I, the relationship between the total market value of the Firm, V, and earnings must be expressed:

$$V = S_B + D_B$$

from (D10) and (D2):

$$V = S_A = \frac{E(X_A)}{E(R_A)} \tag{D11}$$

Equation (D11) says "the total value of a firm depends only on the expected earnings from its assets, the uncertainty of these earnings [expressed by $COV(R_A, R_M)$], and the market factors λ and R_F. The financing mix is irrelevant given our assumptions." [Hamada, 1969, p. 18].

Hamada also proves Proposition II. To determine the effect of leverage on the expected rate of return plug the covariances (D7) and (D8) into the CAPM, such that:

$$E(R_A) = R_F + \frac{\lambda}{S_A} \; COV(X_A, R_M) \tag{D12}$$

$$E(R_B) = R_F + \frac{\lambda}{S_B} \; COV(X_A, R_M) \tag{D13}$$

Subtracting the above and using (D10)

$$E(R_B) - E(R_A) = COV(X_A, R_M) \left[\frac{D_B}{S_B S_A}\right] \tag{D14}$$

from (D12).

$$\lambda COV(X_A R_M) = S_A[E(R_A) - R_F] \tag{D15}$$

substituting (D13) into (D14) yields MM Proposition II:

$$E(R_B) = E(R_A) = [E(R_A) - R_F] \left(\frac{D_B}{S_B}\right) \tag{D16}$$

Equation (D16) says that the required rate of return (capitalization rate) increases linearly with the debt-equity ratio. Paraphrasing MM, the expected yield on a share of stock is the capitalization rate for a pure equity stream, plus a premium for financial risk equal to the debt-equity ratio multiplied by the spread.

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