Equipment Financial Leasing Practices and Costs: Comment

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■ Ivar Sorensen and Ramon Johnson (S & J) [8] have studied the cost of leasing, relating it to the characteristics of lease contracts written by non-bank lessors in the western U.S. and Canada. They conclude that high lease costs, different contract terms between lessors, and treatment of the investment tax credit suggest the lease market is not competitive. The conclusion is important for academic researchers because it upholds the finding of recent theoretical research [4, 6, 7] that market imperfections motivate leasing.

This comment develops further evidence. We draw a cross-section sample of 67 corporate leases written between 1971 and 1973 by a major Boston bank, including data on lessees drawn from the files of a bank lessor, thus eliminating two of the limitations that Sorensen and Johnson are careful to note. Our principal conclusions are several. When regressed against lessor's yields, lease-contract characteristics generally had far lower explanatory power than S & J found,

reinforcing their caveat on over-generalizing their results. To the extent that our findings achieve statistical significance, even stronger evidence of market imperfection (or faulty reasoning by model builders) develops. Our data are more consistent with leasing and borrowing as *complements* than as substitutes.

Rushing in where Sorensen and Johnson tread cautiously, we tackle estimation of demand and supply functions for leasing:

Supply $YLD_s = s(A_0, r, Z, Y)$
Demand $YLD_d = d(A_0, r, Z, T)$
Equilibrium $YLD_s = YLD_d$,

wnere:
YLD = lessor's after-tax yield on lease, adjusted for prepayments; A_0 = cash purchase price of the asset; r = pre-tax interest rate on borrowing by the lessee;

Exhibit 1. Reduced Form Equations

| | Dependent Variable | r | Pre-determined Variable | | |
			Z	Y	T
Coefficients	YLD	−0.9625*	0.2341	0.2443	0.2932*
Standard Errors	YLD	.0965	.1416	.1554	.1036
$R^2 = .132$	$F = 1.7269$				
Coefficients	A_0	−2.2389*	−0.7819	2.5033*	0.7020*
Standard Errors	A_0	.2788	.4088	.4485	.2992
$R^2 = .38$	$F = 11.2346*$				

*Significant at 95% confidence level.

Exhibit 2. Coefficients of Demand and Supply Equations for Leasing

Equation	A_0	r	Z	Y	T
Demand	.0976	−.7440	−.3742	—	.2247
Supply	.4177	1.7867	−.0924	.8012	—

Z = a dummy variable = 1, if lessee takes the investment tax credit (ITC), = 2, if lessor takes the ITC, = 0, if there is no ITC; Y = life of the lease in years; and T = a dummy variable = 1 in times of tight money identified using method in [2], or = 0, otherwise.

Besides differentiating between supply and demand, we follow McGugan and Caves [5] in adding the variable T to the demand equation. Other variables parallel those S & J use. The values of r, Y, and T are given before negotiations between lessor and lessee open, but *both* YLD and A_0 are subject to negotiation.[1] This follows from the standard textbook treatment of cost of capital and the scale of investment as interdependent. If lease markets are reasonably competitive, any negotiations on the ITC should be fully reflected in YLD.

In the language of the econometrician, YLD and A_0 are the endogenous variables and the others are predetermined variables. The ordinary least squares method must give way to that of reduced-form estimation, indirect least squares [1]. After transforming the variables into logarithms (to achieve a better fit than provided by the linear form), we estimate two reduced-form equations, each regressing one endogenous variable on all the predetermined variables.[2]

The results in Exhibit 1 are far less convincing than those in the S & J Exhibit 9 [8]; fewer coefficients are significant, R^2 and F are lower. For some reason (the peculiarities of the lessor sampled or perhaps downright Yankee cussedness), the lessor and lessees in our sample do not act the same as their western counterparts.

As a further comparison, we compute the coefficients of supply and demand equations in Exhibit 2, using the method of indirect least squares. (Each coefficient is a function of the coefficients in Exhibit 1 and thus has no independent standard error.) Examining the coefficients in Exhibit 2 provides a more direct check on leasing theory.

We look at two comparisons between the equations in our Exhibit 2 and the S & J Exhibit 9 [8], leaving other inferences to the reader. Our data suggest a positive association between asset size (A_0) and the lessor's yield (YLD) for both supply and demand. Prior theory might imply that, on the supply side,

[1]We treated A_0 as an endogenous variable because our sample contained many leases by individuals and small firms for automobiles, office equipment, and basic production equipment. As a result, a lessee may be willing to trade up or down in equipment quality in the final decision (that is, lease an Oldsmobile rather than a Chevrolet), thus making A_0 subject to negotiation. The extent to which this actually occurred could not be determined in this research.

[2]We also employed an ordinary least squares model, which assumes that A_0 is a pre-determined variable. The OLS coefficients were essentially the same as the coefficients obtained from the indirect least squares model. Results from the OLS model can be obtained from the authors.

lessors need encouragement for making larger loans, but logic suggests that lessees (demand equation) would associate lower rates with larger deals. Sorensen and Johnson find such a negative association for their model which combines the effects of supply and demand.

In a final comparison we note that the demand coefficient indicates a negative relation between YLD and the cost of borrowing (r).[3] This suggests a *negative* association between the demand for leasing (A_0) and the cost of borrowing; as the cost of borrowing rises, the lessees borrow less and *lease less*. They appear to treat the capital structure mix between leases and debt as fixed when the cost of borrowing varies within some "normal range." When credit rationing becomes severe, firms reconsider the debt-lease mix, and they lease more (positive coefficient for T).

Our comment reinforces the conclusions of Sorensen and Johnson that data drawn from lease contracts are consistent with imperfect lease markets. In particular, our data suggest that lessees may treat leasing and purchasing as *complementary* activities and *not* as substitutes. Finally, our statistical work

achieved far poorer significance than theirs, reinforcing their parting sentence — the last word is not in on leasing.

References

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[3]The average after-tax cost of borrowing was 5%, and the yield to the lessor averaged 18% in our sample. This will be treated more fully in another research study.