Leasing versus purchasing: Direct evidence on a corporation’s motivations for leasing and consequences of leasing

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Abstract

This paper provides new evidence on the possible sources of lessee equity value changes when leasing contracts are announced. We show that lessee common equity value increases significantly in sale and leasebacks and insignificantly in direct leases. We find support, in sale and leasebacks, for the tax-savings hypothesis and for the savings in bankruptcy costs hypothesis. We also find support for the hypothesis that leasing reduces the external financing costs related to adverse selection that arise in markets with asymmetric information. Finally, we show that lessees gain less in direct leases when they lease assets with salvage values that are sensitive to use. © 2001 Bureau of Economic and Business Research, University of Illinois. All rights reserved.

1. Introduction

The theoretical literature on corporate leasing predicts that the economic gains from leasing are negatively related to the lessee’s effective tax rate and positively related to the lessee’s external financing costs. Previous empirical studies have examined the valuation effects of leasing\textsuperscript{1} and the relation between a firm’s propensity to lease its assets and its tax rate and external financing costs.\textsuperscript{2} However, ours is the first study to examine the relation between the lessee’s economic gains from leasing and the lessee’s effective tax rate and its external financing costs.
The literature on corporate leasing implies that using and owning an asset to support an investment project are separate economic activities. An asset is purchased if the firm that has a comparative advantage in using it also has a comparative advantage in owning it. However, if another firm has a comparative advantage in owning the asset, a lease may enable the user to outsource its ownership to that firm. The lessee’s gain from leasing is the difference between the NPV of the project if it is leased and the NPV of the project if it is purchased. Because, among the choices available to the operating firm for financing the purchase of the asset, secured debt is most similar to leasing, our discussion of the costs and benefits of leasing assumes that if the asset were purchased it would be financed by secured debt. In this paper we examine the gain from leasing when the lessor has comparative advantages in using tax deductions to shield income from taxes and in obtaining financial capital.

Smith and Wakeman (1985, p. 899) observe that “The coexistence of both leased and purchased assets [in the same firm] suggests that the net benefits of leasing [for that firm] are uniformly neither positive or negative.” That implies two firms with identical tax situations and costs of external financing may have different leasing policies. This point is empirically supported by Sharpe and Nguyen (1995), who characterize firms in terms of their propensities to lease and find that about 20% of the variation in these propensities can be explained by regressions that include proxies for taxes and external financing costs. A leasing announcement, therefore, is an event with potential valuation effects, even when the announcing firm’s tax situation and capital-raising costs are publicly known to favor leasing.

Our sample includes announcements of both sale and leaseback and direct leases by nonfinancial firms. The nominal difference between the two types of leases: A direct lease involves a new asset while a sale and leaseback involves an existing asset. Whether this difference is associated with different announcement period returns between the two lease types is an empirical question. However, the size of the announcement period returns is secondary to our primary focus—the relation between these returns and the lessees’ tax rate and its external financing costs. The literature provides no reason to expect the effect of the lessees’ taxes and external financing costs on the lessees’ gains from leasing to directly relate to the type of lease.

We measure the economic gains from leasing in terms of the abnormal returns to the lessees associated with announcements of lease contracts. We then examine the cross-sectional relation between these abnormal returns and proxies for the lessees’ tax rates and costs of external financing. We find evidence consistent with the prediction that the relation between the lessee’s gain from leasing and its tax rate is negative. We also find evidence that is consistent with the predicted positive relation between the gains from leasing and the costs of external financing. However, our findings also suggest that the relation between the lessee’s gain from leasing and its cost of external finance are dependent on the sensitivity of the asset’s value to use and maintenance decisions.

The paper is organized as follows: In Section II we describe the background and related literature. In Section III we present our sources of data and sample statistics. In Section IV we describe the methodology and present results on the valuation effects of leasing.
Section V we present our results for the determinants of valuation effects of leasing. Our conclusions are drawn in Section VI.

2. Background and related literature

Our paper is closely related to Sharpe and Nguyen (1995). Whereas they study the effect of firm-specific variables representing tax rates and costs of external financing on variation in firms’ propensities to lease, we examine the effect of similar variables on the variation of returns associated with leasing announcements. We find that the average announcement period returns are positive for sale and leasebacks and zero for direct leases. In related research, Slovin, Sushka, and Poloncheck (1990) report that, for a sample of 59 structure and 14 aircraft sale and leasebacks between 1978 and 1986, the average two-day announcement period equity value change is significant and positive for nonfinancial lessee firms. While they speculate that the observed gains from the announcements represent the present value of tax savings generated from the leasing transactions, they do not directly test the tax-savings hypothesis.

The prediction that the gains from leasing are negatively related to the firm’s effective tax rate is based on a transfer of tax deductions from the lessee to the lessor in a “true” lease. If the lessee has a lower tax rate than the lessor, the reductions in the tax bill created by these deductions are greater for the lessor than they would be for the lessee. Assuming some of the lessor’s tax savings are passed on to the lessee in terms of lower lease payments, the lessee benefits from the reduction in the lessor’s tax bill. Sharpe and Nguyen find, consistent with this prediction, that a firm’s propensity to lease is negatively related to proxies for its effective tax rate. We find that, as predicted, sale and leaseback announcement returns are negatively related to the lessee’s tax rate. However, direct lease announcement returns are unrelated to the lessee’s tax rate.

In a perfect financial market, the cost of raising capital for a new investment project is purely the rate of return that investors would expect to earn in the financial market for investments of equal risk. Thus, in the absence of imperfections, all capital sources have the same costs, implying that the value of the firm is independent of the mix of equity, debt, and leases in the firm’s capital structure. However, costly bankruptcy and asymmetric information are imperfections that may result in different sources having different costs and different effects on the value of the firm.

Bankruptcy is a legal mechanism that distributes the bankrupt firm’s resources to parties with claims against the firm. Some of the bankrupt firm’s resources are distributed to the lawyers and courts that represent the legal mechanism. If there is a possibility that the firm will default on payments it has legally obligated itself to make, the legal system has a valuable claim against the firm. This claim is a component of the external costs of debt and lease financing. A firm may be able to mitigate the expected ex post costs of bankruptcy by spending resources ex ante on writing a contract that reduces the involvement of the legal system in the event of bankruptcy. Clearly these ex ante outlays are also costs of bankruptcy. A firm can eliminate the costs of bankruptcy by relying solely on equity sources of capital.
However, equity has its own market imperfection costs. So the best financing strategy for most firms is a mix of equity, debt, and perhaps, leases.

Relative to secured debt, leasing has the potential to reduce the cost of bankruptcy because of the different treatments accorded to leases and secured debt in the event of bankruptcy. Actions by secured debt holders against a firm in bankruptcy are temporarily stayed. However, lessees in bankruptcy must continue to make lease payments in full or to return the asset to the lessor. Because it is simpler to repossess an asset if it is leased than if it is financed with secured debt, the expected direct costs of bankruptcy are less with leasing than with secured debt. However, the potential of leasing to reduce the costs of bankruptcy will only be realized for firms that have a low credit quality and consequent greater positive probability of bankruptcy. Consistent with the bankruptcy prediction, our evidence shows that the gain from sale and leasebacks is greater for lessees with a low credit quality. However, announcement returns for direct leases are negatively but only weakly related to lessee’s credit quality.

The existence of informational asymmetries between managers and investors can lead to both adverse selection and moral hazard costs. Myers and Majluf (1984) suggest that when managers have more information about the value of the firm than investors, they tend to issue stock when they know it is overvalued and repurchase stock when it is undervalued. Knowing this, investors will take managers’ decisions to issue stock as a signal that the stock is overvalued and adjust its value downward—the adverse selection problem. Adverse selection leads managers to reject some positive NPV projects that they might have accepted in a world with no informational asymmetries. Myers and Majluf demonstrate that if managers are able to issue safe debt the adverse selection problem is largely mitigated. Therefore, a pecking order of financial securities arises in their model, where internal financing is the most preferred method of financing, followed by debt, then equity. Because lease payments are senior to payments on debt, the Myers and Majluf model suggests that leasing can reduce the costs related to the adverse selection problem. Consistent with this prediction, we find that, when lessees are characterized as either high or low information asymmetry firms, the gains from leasing is greater for lessees in the high information asymmetry group.

The moral hazard problem arises because the leased asset’s salvage value accrues to the lessor, which leaves the lessee with no incentive to pay attention to decisions that preserve the salvage value of the asset. In a world with complete information, the lessor knows ahead of time whether the lessee will use and maintain the asset carefully or abuse the asset. This knowledge is then priced into the schedule of lease payments. However, a moral hazard problem arises if information between the lessor and the lessee is asymmetric. Not knowing whether a particular lessee is a careful user or an abuser, the lessor responds by including various provisions in the lease contract that encourage more careful use of the asset (penalty clauses, metered lease payments, and such). However, since the cost of writing an effective contract increases as the sensitivity of the asset to use and maintenance decisions increases, there is an optimal point at which the benefits of writing such a contract equals the costs, and assets whose sensitivity is beyond this point will be purchased. Our evidence supports the prediction that the gain from leasing is lower for assets whose values are more sensitive to use and maintenance decisions.
3. Sources of data and sample statistics

We obtain announcements of sale and leasebacks and direct leases for the period 1984–1991 from the Dow Jones Interactive service. This service provides access to a database that contains the full text of The Wall Street Journal from 1984 onwards, enabling us to identify articles in which words like lease, leaseback, leasing, or sale and leaseback appeared. We identify articles that carried announcements of lease contracts. In these articles, the lessee firm, together with the type of lease contract, that is, sale and leaseback or direct lease, and the type of asset that is leased are identified. For each type of lease contract, lessees that satisfy the following criteria are identified: (i) common stock returns are available in the CRSP Daily Returns file, (ii) no contemporaneous events were announced two days before or after the lease event, and (iii) the firm is an industrial concern—financials and utilities are deleted from the sample.

We present in Table 1 the summary statistics for the sale and leaseback and direct lease announcements that satisfy the previous criteria. In Panel A, we show that forty-four lessees in sale and leasebacks and forty-two lessees in direct leases satisfy the sample criteria. A majority of the events fall in the early period of our sample. The mean price of assets that were sold and leased back is $103.8 million. A few high-priced transactions, such as Chrysler’s sale and leaseback in 1990 of its technology center for $800 million, raise the mean selling price considerably above the median selling price of $35 million. The frequency of occurrence for different types of assets is shown in Panel B of Table 1. In sale and leasebacks, land and buildings such as offices or manufacturing facilities accounted for twenty-nine out of the forty-four transactions. Other assets that appear in the sample are energy related, such as nuclear power plants, health-care facilities, high-technology equipment such as satellite transponders and supercomputers, mines, and mobile assets including aircraft and a rail tank fleet. In direct leases, land and buildings accounted for fourteen out of forty-two events. Additionally, mobile assets like aircraft or ships accounted for seventeen lessee events. Slovin et al. (1990) report positive and significant valuation effects of direct safe-harbor aircraft leases on lessee equity for 1981 and 1982. By the end of 1983, the safe-harbor provision of the Economic Recovery Tax Act of 1981 had been removed. Therefore, with a sample period of 1984 through 1991, no direct leases or sale and leasebacks in our sample fall under this provision—the safe-harbor provisions, which are perhaps the most important determinant of the Slovin et al. direct leasing results, do not apply to our sample. Moreover, in our sample aircraft accounted for only a part of the leases.

4. Valuation effects of lease announcements

Changes in the prices of common equity of lessees are studied by using the market-model returns methodology (Brown and Warner 1985). The OLS estimates of the parameters of the market-model are obtained by using 150 days of return data immediately prior to day –100. Market returns for the relevant time period are obtained from the CRSP equally weighted series. Abnormal returns are calculated for sixty days before announcement of the sale and leaseback, the day of the announcement and ten days after the announcement. A cumulative
average abnormal return (CAAR) is also calculated to study the cumulative effect of information on common equity returns until the end of the event period.

In Table 2 we report lessee common equity average abnormal returns and the CAARs for the initial announcement of the leasing transaction. The $p$ values based on the standardized residual methodology (Mikkelson & Partch 1986), and the proportion of negative abnormal returns with the $p$ value of the related sign test are also reported. Throughout this table, $p$ values reflect two-sided tests. As reported in Panel A of the table, for sale and leasebacks, average abnormal returns on day $-1$ and Day 0 are 1.39% ($p = 3.4\%$) and 1.24% ($p = 5.1\%$). The proportion of firms that have positive abnormal returns is 70.5% and 63.6% and the sign test shows that these proportions are significantly different from 50% at the 0.5% and 4.8% level.
levels, respectively. The sum of the day −1 and Day 0 returns is 2.63%, which is significant at a less than the 0.1% level. The lessee returns for sale and leasebacks that we report are qualitatively consistent with Slovin et al. (1990), who find a two-day return of 2.29% for nine aircraft leases and 0.85% for forty-four “structure” leases. Slovin et al. report CAARs of 2.92% for the interval (– 60, –2); our CAARs for the same interval of –3.58% are significant only at the 8.4% level.

In Panel B of Table 2 we report day −1 and 0 mean and percentage negative abnormal returns for direct leases along with respective p values. We also report the two-day CAAR and its p value. Based on the evidence presented in this panel we conclude that the mean abnormal return and CAARs for direct lease lessees are close to zero overall.

Our analysis indicates that the average equity value gain to lessees that announce sale and leasebacks is significantly positive. The average valuation effect resulting from direct leases is, in contrast, zero. However, there is considerable cross-sectional variation in the abnormal returns in both sale and leasebacks and direct leases as shown in the maximum and minimum values of two-day abnormal returns in Table 2. For sale and leasebacks the two-day abnormal

Table 2
LESSEE COMMON EQUITY ABNORMAL RETURNS
Daily abnormal returns and CAARs on common equity surrounding an announcement in The Wall Street Journal of a sale and leaseback or a direct lease of assets. The sample spans 1984–1991 and includes only industrial firms. The market model methodology is used to calculate abnormal returns.

Panel A: Average abnormal returns and CAARs for sale-and-leaseback lessee common equityholders

<table>
<thead>
<tr>
<th>Event Day</th>
<th>Average Abnormal Return</th>
<th>P value of Z statistic</th>
<th>Proportion Negative</th>
<th>P value Sign Test</th>
<th>N</th>
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<tr>
<td>−1</td>
<td>1.39%</td>
<td>0.034</td>
<td>29.5%</td>
<td>0.005</td>
<td>44</td>
</tr>
<tr>
<td>0</td>
<td>1.24%</td>
<td>0.051</td>
<td>36.4%</td>
<td>0.048</td>
<td>44</td>
</tr>
<tr>
<td>From −60</td>
<td>To</td>
<td>CAAR</td>
<td>P value of Z statistic</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>−1</td>
<td>0</td>
<td>2.63%</td>
<td>0.000</td>
<td>−6.4%</td>
<td>14.2%</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>2.01%</td>
<td>0.056</td>
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Panel B: Average abnormal returns and CAARs for direct lease lessee common equityholders

<table>
<thead>
<tr>
<th>Day</th>
<th>Average Abnormal Return</th>
<th>P value of Z-statistic</th>
<th>Proportion Negative</th>
<th>P value Sign Test</th>
<th>N</th>
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<tr>
<td>−1</td>
<td>0.36%</td>
<td>0.545</td>
<td>47.6%</td>
<td>0.438</td>
<td>42</td>
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<tr>
<td>0</td>
<td>0.19%</td>
<td>0.684</td>
<td>40.5%</td>
<td>0.139</td>
<td>42</td>
</tr>
<tr>
<td>From −60</td>
<td>To</td>
<td>CAAR</td>
<td>P value of Z-statistic</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>−1</td>
<td>0</td>
<td>0.55%</td>
<td>0.519</td>
<td>−7.68%</td>
<td>15.3%</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>0.08%</td>
<td>0.610</td>
<td>—</td>
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</table>
return ranges from a minimum of –6.40% to a maximum of 14.19%. For direct leases, the range is from –7.68 to 15.3%.

5. Cross-sectional analyses of lessee returns

In this section we examine the cross-sectional relation between lessee gains from leasing (as measured by the two-day CAAR) and proxies for tax rates and external financing costs. We estimate and report the results for a number of linear cross-sectional regressions.

5.1. Hypotheses

5.1.1. The tax-savings hypothesis The tax-savings hypothesis predicts that leasing produces value by allowing low-tax-rate lessees to transfer valuable depreciation and interest tax deductions to high-tax-rate lessors. We define the lessee’s tax rate as Taxes Paid divided by the Operating Income (TAX) of the firm in the year prior to the occurrence of the event. Our prediction is that the CAAR from leasing is negatively related to the TAX variable.

5.1.2. The cost of bankruptcy hypothesis We proxy the probability of bankruptcy in terms of the lessee’s interest coverage ratio, INTCVG. In their study of distressed firms, Asquith, Gertner, and Scharfstein (1994) use the interest coverage ratio as an indicator of financial distress where firms having high interest coverage are considered to be less likely to incur financial distress. The predicted coefficient on INTCVG is negative.

5.1.3. The cost of asymmetric information—adverse selection In order to capture the potential of leasing to reduce the cost of adverse selection we classify firms that do not pay a dividend as high information asymmetry firms and those that pay a dividend as low information asymmetry firms. We set the dummy variable DIVIDEND equal to 0 if a firm paid a dividend in the previous year and 1 otherwise. Assuming that a firm’s dividend-paying history is a reasonable proxy for informational asymmetry, the predicted coefficient on DIVIDEND is positive.

5.1.4. The cost of asymmetric information—moral hazard The cost of moral hazard is positively related to the sensitivity of an asset’s value to use and maintenance. We proxy the sensitivity of the salvage value of an asset to use and maintenance decisions by classifying our assets using the indicator variables HIGHTECH (=1, if leased asset is high tech) and AIRCRAFT (=1, if leased asset is an aircraft) with the idea that the salvage value of high-tech assets and aircraft is more sensitive to use. We further classify the remaining assets using an indicator variable into real estate (REALEST=1, if leased asset is real estate), and other (REALEST=0, if leased asset is not real estate).
5.2. Regression results

In Table 3 we present our results from the cross-sectional regressions for the combined sample of sale and leasebacks and direct leases announced in 1984–1991. The dependent variable is the lessee common equity abnormal return for the days −1 and 0. TAX is Taxes Paid divided by Operating Income. DIVIDEND is a dummy variable that accounts for whether the firm paid a dividend in the previous year (DIVIDEND=0) or not. TYPE is a dummy variable that accounts for whether the observation is a direct lease (TYPE=1) or a sale and leaseback. INTCVG is the interest coverage ratio. The p values of two-sided hypothesis tests are provided in parentheses, unless the hypothesis predicts the sign of the relationship in which case the p value of the one-sided hypothesis is provided.

<table>
<thead>
<tr>
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<th>1</th>
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<td>Intercept</td>
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<td>0.007</td>
<td>0.011</td>
<td>0.024</td>
<td>0.014</td>
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<tr>
<td></td>
<td>(&lt;0.01)</td>
<td>(0.42)</td>
<td>(0.24)</td>
<td>(&lt;0.01)</td>
<td>(0.14)</td>
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<td>(0.04)*</td>
<td>(0.03)*</td>
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<td>DIVIDEND</td>
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<td>INTCVG</td>
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<td>−0.0009</td>
<td>−0.001</td>
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<tr>
<td></td>
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<td>(0.09)</td>
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<td>(0.02)</td>
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<td>N</td>
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<td>81</td>
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<td>TAX+TAX*TYPE</td>
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<td>0.002</td>
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<td>(0.24)</td>
<td>(0.18)</td>
<td>(0.62)</td>
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<td>DIVIDEND+</td>
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<td></td>
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<td>(0.01)</td>
<td>(0.004)</td>
<td>(0.003)</td>
<td>(0.27)</td>
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Notes: * p value of one-sided hypothesis.

5.2. Regression results

In Table 3 we present our results from the cross-sectional regressions for the combined sample of sale and leasebacks and direct leases. The dependent variable in our regressions is the two-day cumulative abnormal return for days −1 and 0. Data are available in COMPUSTAT for 81 of the 86 lessees in our valuation study, of which forty-two are sale and leasebacks and thirty-nine are direct leases. The sample sizes vary across the six regression equations reported in the table because not all data items are available for all lessees. For our hypotheses that predict the sign of a slope coefficient, we report the p value of the one-sided hypotheses tests in parentheses below the reported coefficient. For the other coefficients, we report p values of the two-sided hypotheses tests.
We allow the response surface for sale and leasebacks to vary from that for direct leases by including a dummy variable TYPE (which is set to 0 for a sale and leaseback) and letting the dummy variable TYPE interact with each of the independent variables. The regression reported in the first column of the table is a test of the tax-savings hypothesis. The negative (-0.041) and significant \((p = 5\%)\) coefficient on TAX is consistent with the tax-savings hypothesis for sale and leasebacks. The coefficient on the interaction variable TAX*TYPE, \(\beta_3\), is the difference between the slope of the TAX regression for direct leases and the slope for sale and leasebacks. That \(\beta_3\) is positive (0.111) and significant \((p = 4\%)\) shows that the relation between returns and taxes for direct leases is significantly less negative for direct leases than for sale and leasebacks. Specifically, the relation between direct leases and taxes is estimated by \(\beta_1 + \beta_3\) and is shown to be not significantly different from zero.\(^{13}\)

Results are reported as regression 2 in Table 3 for the adverse selection costs hypothesis, which assumes that because leasing has lower adverse selection costs than secured debt, high information asymmetry firms have more to gain from leasing than low information asymmetry firms. Assuming that firms that did not pay a dividend in the previous year \((\text{DIVIDEND} = 1)\) are high information asymmetry firms, the positive (0.036) and significant \((p < 1\%)\) DIVIDEND coefficient is consistent with the adverse selection costs hypothesis for sale and leasebacks. The coefficient on DIVIDEND*TYPE (-0.034) is weakly significant \((p = 10\%)\), implying the possibility that for direct leases the relation between returns and DIVIDEND is different from the relation between DIVIDEND and returns in sale and leasebacks. When we look at the coefficient on DIVIDEND + DIVIDEND*TYPE (-0.002), which indicates the nature of the relation between DIVIDEND and returns in direct leases, we conclude from its significance level \((p = 87\%)\) that there is no relation. Based on these results, it appears that leasing reduces adverse selection costs in sale and leasebacks but not in direct leases. However, we will show that, when the type of asset is accounted for, a direct lease may reduce adverse selection costs in direct leases also.

In the third regression we include both TAX and DIVIDEND as independent variables. Our previous conclusion that returns in sale and leasebacks are negatively related to taxes and positively related to dividends and that returns in direct leases are unrelated to taxes or dividends is found to be robust when both taxes and dividends are included in the same regression.

In the fourth regression we test the bankruptcy costs hypothesis, which predicts a negative relation between the interest coverage ratio and returns. We find that the coefficient on INTCVG is negative (-0.001) and significant \((p = 2\%)\). This suggests that returns in sale and leasebacks are negatively related to the interest coverage ratio, which is consistent with our prediction that firms close to financial distress can reduce the expected costs of distress by leasing rather than purchasing their assets. However, the significant \((p = 2\%)\) and positive (0.002) coefficient on INTCVG*TYPE suggests that the relationship between returns in direct leases and the interest coverage ratio is different from that for sale and leasebacks. We find that the coefficient on INTCVG + INTCVG*TYPE is positive (0.001) and weakly significant \((p = 10\%)\). This implies that financially strong lessees with high interest coverage gain more from direct leases than do weak lessees. We calculate the mean interest coverage ratio for sale and leaseback firms and for direct lease firms in order to investigate the difference in the relationship between interest coverage and lessee returns for the two kinds...
of firms. The mean interest coverage ratio for sale and leasebacks is 1.46, while for direct leases it is 12.95; it appears that sale and leaseback firms are much closer to distress than the direct leases.\textsuperscript{14} This finding, along with the regression results, suggests a piecewise relation between returns and INTCVG where the first (second) piece has a negative (positive) slope. We estimated a piecewise regression (not reported) where we assumed the sloped changed at the median INTCVG for the entire sample. We found that the slope of the first (second) piece is negative (positive) and significant at the 4.8% (3.4%) level. We are not aware of any theoretical argument that is consistent with the positive-sloped piece.

In the fifth regression we include both DIVIDEND and INTCVG as independent variables. Our previous conclusion that returns in sale and leasebacks are positively related to dividends and negatively related to the interest coverage ratio and that returns in direct leases are unrelated to dividends but positively related to the interest coverage ratio is found to be robust when both dividends and interest coverage are included in the same regression.

In the sixth regression we include both TAX and INTCVG as independent variables. We find, consistent with our previous results, that in sale and leasebacks returns are negatively related to taxes (coefficient = −0.036, \( p = 7\% \)) and to the interest coverage ratio (coefficient = −0.001, \( p = 5\% \)) and in direct leases that returns are unrelated to taxes. However, the coefficient on INTCVG + INTCVG*TYPE is positive (0.0003) but insignificant (\( p = 27\% \)). When both taxes and interest coverage are included in the same regression, the positive relationship between returns in direct leases and interest coverage becomes insignificant.

Finally, we estimate a regression for direct leases that contains indicator variables for the type of asset leased.\textsuperscript{15} The purpose of this regression is to gain insight into the effects of the potential adverse selection (the gain from leasing is positively related to whether the firm exhibits a high degree of information asymmetry) and moral hazard problems (the gain from leasing is negatively related to the sensitivity of the asset’s value to use and maintenance) on the gains from leasing. For the thirty-nine out of forty-two direct leases for which we have dividend data, four are for high-tech assets, thirteen are for aircraft, seventeen are for real estate (including health-care facilities) assets, while the remaining five are unclassified. Reproduced below is the regression equation that we estimate together with the estimated coefficients and their \( p \) values in parentheses. The \( F \) statistic for the regression is significant at the less than 1\% level while the \( R^2 \) is 33.4\%.

\[
\text{AR}_{-1,0} = \beta_0 + \beta_1 \text{HIGHTECH} + \beta_2 \text{REALEST} + \beta_3 \text{AIRCRAFT} + \beta_4 \text{DIVIDEND} + \beta_5 \text{HIGHTECH*DIVIDEND} + \beta_6 \text{REALEST*DIVIDEND} + \beta_7 \text{AIRCRAFT*DIVIDEND}.
\]

The coefficients in the first line of this regression reflect the average gains to dividend-paying firms when they announce a direct lease of an unclassified asset or an asset from one of the classified types (high-tech, real estate, and aircraft assets). The intercept, \( \beta_0 \), is the estimated
gain from leasing an unclassified asset. The remaining coefficients, $\beta_1$, $\beta_2$, and $\beta_3$ are the differences in the gains from leasing an asset in the indicated class and leasing an unclassified asset. Given the low $p$ values on the coefficients in the first line, we conclude that the announcement period returns are not significantly different from zero for the dividend-paying firms.

The average gains from a direct lease announcement by a nondividend-paying lessee are shown in the second line of the regression. The coefficient on DIVIDEND is the difference between the gains to a nondividend-paying lessee and to a dividend-paying lessee from leasing an asset in the unclassified group. The positive (0.085) and significant ($p < 1\%$) coefficient indicates that, consistent with the reduction in adverse selection cost hypothesis, a nondividend-paying, high information asymmetry lessee gains more from leasing a unclassified asset than does a dividend-paying, low information asymmetry lessee. The negative and significant coefficients on the DIVIDEND and asset type interaction terms indicate that the gain from a direct lease of an asset from a designated class is less, by the value of the coefficient, than a direct lease of an unclassified asset. In the context of the moral hazard hypothesis, these negative coefficients imply that, on average, the value of asset from one of the designated classes is more sensitive to use and abuse than an unclassified asset. The coefficient on DIVIDEND*REALEST ($\beta_6 = -0.086, p = 2\%$) suggests that the potential for the moral hazard problem exits even on direct leases of real estate by nondividend-paying (high information asymmetry) lessees. However, the moral hazard problem seems less severe for real estate than for high-tech assets ($\beta_5 = -0.114, p = 1\%$) or for aircraft ($\beta_6 = -0.113, p < 1\%$).

Our overall conclusion with respect to direct leases is that the returns to lessees from direct leases is strongly related to the type of asset that is leased and whether or not the lessee exhibits a high degree of information asymmetry. Once we account for the type of asset that is leased and whether or not the lessee exhibits a high degree of information asymmetry, we find that leasing reduces the adverse selection problem but may exacerbate the moral hazard problem for assets whose salvage values are relatively sensitive to use and maintenance decisions.

### 6. Conclusions

In this paper, we provide new evidence on the sources of lessee equity value changes when new leases are announced. We begin by confirming the Slovin et al. (1990) finding that lessee equity values increase when new sale and leasebacks are announced. Additionally, we show that lessee equity values remain unchanged when new direct leases are announced.

We find, in sale and leasebacks, that the lessee’s tax rate is significantly negatively related to lessee return, that is, the lower the lessee’s tax rate, the greater the return from the sale and leaseback. This finding supports the tax-savings hypothesis. We also find that equity value increases are greater for nondividend-paying lessees than for dividend-paying lessees. We interpret this finding as evidence that leasing reduces the adverse selection problem that arises when high information asymmetry firms attempt to raise capital. We find in sale and leasebacks that equity values increase more for firms with low interest coverage ratios while
in direct leases equity values increase more for firms with high interest coverage ratios. In sale and leasebacks we find support for our financial distress hypothesis, which suggests firms that announce a lease are able to reduce the expected costs of distress. We also find that the typical sale and leaseback firm has significantly less interest coverage than a typical direct lease firm.

Finally, we show that in direct leases the gains from leasing are lower for high information asymmetry firms that lease assets whose values are sensitive to use and maintenance decisions. Because, in a lease, the salvage value of the leased asset accrues to the lessor, the lessee has no incentive to preserve the value of the leased asset. Our evidence is consistent with the idea that lessors factor this moral hazard problem into lease payments.

Notes

3. Smith and Wakeman (sec. II) provide an integrated analysis of the various nontax and nonfirm determinants of the lease or buy decision.
4. One could argue that the valuation effect of a direct lease represents the joint effects of a capital expenditure decision and a financing decision whereas the valuation effect of a sale and leaseback is a pure financing effect. Based on the McConnell and Muscarella (1985) finding that increases in capital expenditures are associated with increases in share prices, the argument that a direct lease includes a capital budgeting decision would seem to imply that direct leases would be associated with greater valuation effects than would sale and leasebacks. However, if both types of leases represent pure financing decisions, the implication is that they should have identical valuation effects.
5. In a study of twenty-three sale and leasebacks by bank lessees during the period 1979–1988, Slovin, Sushka, and Poloncheck (1991) find that the announcements are associated with significant negative announcement period equity value changes. However, because our sample consists only of nonfinancial firms, these results are not comparable to ours. Handa (1991) finds that for a sample of sixty-four sale and leasebacks during 1979 to 1987, the equity value of lessee firms decreases on average by a significant amount at the announcement of a sale and leaseback. Unfortunately Handa does not provide a breakdown of his sample in terms of financial and nonfinancial firms.
6. The standard citations are Myers, Dill, and Bautista (1976), Miller and Upton (1976), Lewellen, Long, and McConnell (1976). Other papers that provide important insights into the intricacies of the tax effects of leasing are: Brealey and Young (1980), who show that buying will always dominate leasing in a capital structure equilibrium where the net tax advantage of debt is zero; Lewis and Schallheim (1992), who examine leasing as part of the larger capital structure decision.
7. See Sharpe and Nyugen (p. 275) for a discussion of the legal treatment of lease versus debt claims under bankruptcy.
8. For a succinct summary of the history of tax laws as they pertain to leasing, see Schallheim (1994, pp. 60–62).

9. Another potential motivation for leasing suggested by Kim, Lewellen, and McConnell (1978) is that leasing allows firms to violate “me first” rules and thereby transfer wealth from bondholders to shareholders. When we examined this wealth transfer hypothesis in terms of both lessee bond and preferred stock announcement returns, the results were not significant. However, due to the small number of firms for which bond and preferred return data were available, we do not present the results for this hypothesis. We were able to identify only five firms with sufficient bond data and five firms with sufficient preferred stock data.

10. This ratio is used frequently in the literature as a measure of the tax rate. For instance, Kaplan (1989) uses it to investigate whether the gains in management buyouts come from savings in taxes and he finds that the tax rate of the firm falls significantly in the postbuyout period.

11. This is after discarding an observation because it was an outlier. Because the results are statistically more significant when this outlier is included, what we report here is conservative.

12. Another approach that allows the response surface to differ is to have separate regressions for the direct leases and sale and leasebacks. Our results from the two approaches are qualitatively similar. We do not reproduce the results for the separate regressions but they are available from us.

13. The test statistic to be used for such a linear combination of parameters is the $t$ statistic described in Greene (1993, sec. 6.5.2). The $p$ values of such linearly combined parameters appear in the last three rows of Table 3.

14. A $t$ test of difference in means rejects the null hypothesis that the two means are equal at the 5% level.

15. From Panel B of Table 1, we know that twenty-nine out of the forty-four sale and leasebacks are for real estate assets. There does not appear to be sufficient variety in the type of assets leased in sale and leasebacks to be able to test the part of the external financing costs hypothesis that considers the type of asset leased. Therefore we run the asset type regressions only for direct leases.

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