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The Effect of Firm Characteristics on the Use of Percentage Retail Leases

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Abstract: *Choice of lease payments has been widely studied in the literature. There are three-not necessarily exclusive-explanations that have received attention. The first attributes the choice of fixed versus percentage lease payments to risk-sharing preferences. The second explanation views percentage-of-sales lease agreements as a way discriminating monopolists can appropriate economic rents. The third attributes percentage-of-sales lease agreements to a metering and bonding argument. This paper examines the proposition that the choice of percentage retail leases is driven in part by managements' desire to circumvent the cost of violating debt covenant restrictions. The evidence presented here supports the prediction that retail firms with higher debt-asset ratios are more likely to adopt percentage lease agreements.*

1. Introduction

Research on risk-preferences proposes that the popularity of a percentage lease agreement is linked directly to risk-sharing preferences.[1] The literature predicts this by making two assumptions-that some lessees are risk averse and some lessees are risk neutral. The literature would then say that risk averse lessees will generally prefer percentage lease agreements, while risk neutral lessees will generally prefer fixed lease agreements. The former occurs because the risk averse lessee prefers a certain income (after lease payment) to a risky income, and the latter occurs because the risk neutral lessee is indifferent to a certain income and an uncertain income and, hence, is willing to absorb the entire risk or uncertainty with respect to retail sales demand (see Stiglitz, 1974). Both cases assume a risk averse lessor.

There are two difficulties with this view. First, risk-sharing models cannot explain why it is only retail tenants and retail space where percentage-of-sales lease agreements exist. Second, risk-sharing models cannot explain why a percentage-of-sales lease agreement predominates in one area (inside the United States), while fat rental fees predominate elsewhere (outside the United States). Why should it be that most retail tenants in the U.S. are risk averse, while most retail tenants outside the United States are risk neutral.

Smith and Wakeman (1985) have used a metering and bonding argument to explain the existence of percentage-of-sales lease agreements. Their contention is that retailers negotiate a

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percentage-of-sales lease agreement in order to bond the quality of common property at a shopping center. Smith and Wakeman also contend (p. 905) that a percentage-of-sales lease agreement "provides the lessor/developer with stronger incentives to coordinate the range of shops over the life of the shopping center in order to maximize joint profitability." Wheaton (1999) uses a two period bargaining model to show that basing rent on a fixed percentage of tenant sales insures that the tenant configuration which is initially chosen and then maintained by the landlord is the same as the one which maximizes aggregate sales. This presumes that all tenants pay rent based on a percentage of sales. Yet, in practice, rent agreements often vary considerably from retailer to retailer, with some retailers effectively paying nothing but a minimum rental fee and other retailers paying a minimum rent plus a fixed percentage of sales.

Brueckner (1993) develops a model in which landlords act as discriminating monopolists, choosing an allocation of both space and sales that maximizes aggregate sales. It is argued that tenants with brand drawing power pay less base rent and a lower percentage of their sales owing to the customer traffic they are able to generate for other tenants at the center. Conversely, smaller, less known retailers, who depend on passing-by traffic, will pay higher rents. Brueckner's thesis is that percentage-of-sales lease agreements exist so that landlords can incentivize their tenants to work in the interest of the center as a whole. A problem with Brueckner's model is that it predicts the wrong sign between rent and sales.

An alternative avenue of research for explaining the existence of percentage retail leases is to take an internal look at the tenants themselves. An argument could be made that retail tenants like The Gap or The Limited structure their lease contracts to circumvent financial constraints. Indeed, past studies have generally found that managers of firms with higher D/A (debt-asset) ratios substitute from capital leases and conventional debt into equity and other forms of off-balance sheet financing to minimize debt covenants violation costs (for reviews see Holthausen and Leftwich, 1983; Watts and Zimmerman, 1986; and Christie, 1990). Generalizing from such studies, this paper argues that a retail tenant may choose a percentage lease payment over a fixed lease payment, because the former is simply charged to expense when actually incurred and is not considered as a future lease liability (see SFAS No. 29, "Determining Contingent Rentals"), while the latter is capitalized and shown either on the liability side of the balance sheet as a capital lease (with a corresponding entry on the asset side of the balance sheet) or is disclosed in footnotes to the financial statements as an operating lease (see SFAS No. 13, "Accounting for Leases"). This happens notwithstanding the fact that percentage lease payments can create a significant hardship for lessee firms if their net profits

were to decline.

This idea leads to an obvious empirical implication (which is formalized and made more precise in Section 2), namely that, retail firms with higher D/A ratios are financially constrained, and so, are more likely to adopt percentage retail lease agreements. This conjecture (which is tested in Section 4) has not hitherto been recognized in the literature. As to why, then, we do not see, say, office tenants with high D/A ratios paying percentage rents, we blame it on the problem of monitoring actual sales. How does one determine the amount of sales, for example, attributable to an IBM office located in New York City versus an IBM office located in Chicago or Los Angeles? The simple answer is one cannot, at least not very easily.

2. Hypothesis

To understand the role that firm characteristics play in the selection of percentage lease agreements, it is best to investigate a special case of Watts and Zimmerman's (1986) positive accounting theory. In their model, accounting methods adopted by a firm are systematically related to certain characteristics of the firm and/or its industry. Basically, their argument is that firm managers maximize their own interests (which tend to coincide more closely with those of stockholders than with the interests of bondholders) by engaging in actions that will present the results of firm operations in a most favorable way. This includes exploiting the accounting discretion under generally accepted accounting principles (GAAP) to pursue growth objectives even when growth does not benefit shareholders.

Empirically, there are a number of studies which suggest that management's preferences with regard to accounting methods depend upon the relative income effects of the methods. Watts and Zimmerman (1978), Hagerman and Zmijewski (1979), Bowen et al. (1981), and Zmijewski and Hagerman (1981) suggest that larger firms are more likely to choose those accounting methods which will reduce (or delay) the reporting of income. Their argument is based upon the belief that high accounting profits by larger firms are likely to lead politicians to subject these firms to negative wealth transfers through regulation. Dhaliwal (1980) argues that firms with large amounts of debt relative to equity will tend to choose accounting methods which result in higher or earlier reported earnings because of the existence of restrictive debt covenants. El-Gazzar et al. (1986), Imhoff and Thomas (1988), and El-Gazzar (1993) found that, at least prior to the promulgation of SFAS No. 13, leverage was a significant factor in explaining the choice of capital versus operating leases.

The purpose of this paper is to examine if managers of retail firms with high D/A ratios

(which is our measure of financially constrained) are more likely than managers of retail firms with low D/A ratios to choose percentage lease agreements, because percentage lease agreements result in higher reported equity. SFAS No. 13 requires a retail lessee to compute the present value of the minimum lease payments over the term of the lease using his or her incremental borrowing rate, and to record that amount either on the liability side of the balance sheet as a capital lease (with the gross amount of assets recorded under capital leases on the asset side of the balance sheet) or disclose the amount in footnotes to the financial statements as an operating lease. In either case, lease payments that depend on a factor like future sales volume are considered contingent rentals in their entirety and are excluded from minimum lease payments because future sales do not exist at the inception of the lease. More specifically, SFAS No. 29 defines contingent rentals as:

> *Contingent rentals.* The increases or decreases in lease payments that result from changes occurring subsequent to the inception of the lease in the factors (other than the passage of time) on which lease payments are based, except as provided in the following sentence. Any escalation of minimum lease payments relating to increases in construction or acquisition cost of the leased property or for increases in some measure of cost or value during the construction or pre-construction period, as discussed in FASB Statement No. 23, "Inception of the Lease," shall be excluded from contingent rentals. Lease payments that depend on a factor directly related to the future use of the leased property, such as machine hours of use or sales volume during the lease term, are contingent rentals and, accordingly, are excluded from minimum lease payments in their entirety [p. 4].

These important differences suggest that managers of retail firms with high D/A ratios should be more likely than managers of firms with low D/A ratios to choose percentage lease agreements, since percentage lease payments are not reported as a future lease liability anywhere. Further, an argument can be made that percentage lease agreements may transfer wealth from debtholders, especially since percentage lease payments can greatly affect the ability of the firm to meet its current debts should net profit margins decline.

Based on this discussion, the following hypothesis is formulated:

> *Hypothesis.* Firms with higher D/A ratios are more likely to be financially constrained (and closer to debt covenant constraints), and so, are more likely to choose percentage lease payments.

The remainder of this paper provides a direct test of the above hypothesis where an attempt is made to add terms in the square of variables to allow for nonlinearities in the

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relationship.

3. Sample and descriptive statistics

To obtain our sample, we proceed as follows. We gathered data on 969 retail leases written by two major regional shopping center developers in the United States between 1962 and 1990, inclusive. For each lease, we collected data on the minimum rent, overage rent, lease term, age of lease, percent overage, actual sales per-square foot at the center, threshold sales per-square foot (which is the sales level below which the lessee pays nothing but a base rent and above which the lessee must pay a base rent plus a percentage of gross sales), tenant square feet, and anchor (department store) square feet. We drew this data from 1990 rent rolls. The entire sample consists of 100 different retailers located in 49 different regional shopping centers throughout the United States.

Next, for each retailer in the sample (or its parent company) we collected accounting variables from the merged COMPUSTAT annual industrial files of income-statement and balance-sheet data. Among the variables collected were total assets of the firm, D/A ratio, D/E (debt-equity) ratio, and net income. We also used the COMPUSTAT income-statement data to compute the standard deviation in net income of each firm to test whether retail firms choose percentage lease agreements when net income is uncertain. The COMPUSTAT data are for the years ending on or before December 1989 so that ex ante characteristics are used to correlate with the type of lease payment in 1990.

We then checked the lease data against rental quotes available in *Dollars and Cents of Shopping Centers* (1990). The lease data were also passed through filters examining minimum rents, overage rents, lease term, age of lease, percent overage, actual sales per-square foot at the center, and threshold sales per-square foot. The most usual filter appeared to be the check on reported sales. Any observations with missing retail sales were deleted. Moreover, any irregularity in the pattern of minimum rents and overage rents (e.g., where minimum rent was more than total rent) was checked. The latter event occurred in very few cases. In general, the relatively close agreement on rental rates between our sample and *Dollars and Cents of Shopping Centers* is considered a positive aspect of the data.

The sample is disaggregated by merchandise type to provide some information on the use of percentage leases. Where actual sales are difficult to monitor (e.g., for commercial banks, residential real estate brokers, travel agents, etc.), we expect the use of percentage leases to be lower than that of fixed leases. Further, we expect D/A ratios and lease arrangements to vary

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considerably from retailer to retailer. The Gap, for example, operates 960 stores under three brand names: Gap, GapKids, and Banana Republic. The Gap uses virtually no long-term debt in its capitalization and instead uses leased premises to facilitate its retail activities. In 1989 (a year before our sample begins), The Gap's total minimum rent and interest payments were $88.4 million dollars (or 6.0 percent of net sales). Additionally, payments on contingent rentals totaled $20.5 million, raising The Gap's total rent and debt costs to 7.0 percent of net sales.

The Melville Corporation provides another example of a retail company that makes heavy use of both off-balance-sheet lease liabilities and contingent rentals. The Melville Corporation is one of the largest specialty retail companies in the United States. Through its subsidiaries, Melville operates over 6,900 retail stores under various trade names, including CVS, Marshalls, Thom McAn, Linens'n Thing, Pay Less Drug, Accessory Lady, Chess King, among others. Melville uses operating leases to operate its retail businesses with a small number of capital leases. In 1989, Melville's interest expense and minimum rent combined to total $299 million (or 4.0 percent of net sales). In comparison, contingent rentals were $204 million, which consisted principally of rentals for leased shoe departments operated under license agreements with Kmart.

While on the subject, The Limited provides an example of a retail company that makes relatively little use of contingent rentals. The Limited is principally engaged in the purchase, distribution, and sale of women's apparel. The company's retail divisions include Express, The Limited, Lerner, Victoria's Secret (subsequently spun off in a 1996 initial public offering), among others. The company maintains several lines of credit as well as several notes totaling $445.7 million. A substantial portion of the company's leased facilities have initial terms ranging from 10 to 20 years. In 1989, The Limited's minimum rent obligations were $248 million. In contrast, its contingent rents were only $27.1 million (combined total lease obligations and interest payments were $324 million dollars or 7.0 percent of net sales).

Musicland is another retail company that makes relatively little use of contingent rentals. Musicland operates 874 retail outlets under the names Musicland, Sam Goody, and Sun Coast Motion Picture Company, all of which sell either music and home video products. While Musicland's minimum rent obligations in 1989 were $48.6 million, its contingent rents were only $5.8 million. Interestingly, the combined total rent obligations and interest expense for Musicland in 1989 was 14.6 percent of sales, approximately twice the rate of The Limited.

Other examples of companies included in the sample are Liz Clairborne, Inc., Oxford Industries, and T.J.X. Companies. Liz Clairborne, Inc. designs, contracts for the manufacture of,

and markets an extensive range of women's apparel and accessories, men's sportswear and furnishings and women and men's fragrance products. Liz Clairborne, Inc. operates over 50 retail outlets under the names First Issue and Liz Clairborne. Oxford Industries designs, manufactures, and sells consumer apparel products for men, women, and children under the names Lanier Clothes, Oxford Shirtings, Oxford Slacks, Jhane Barnes, and B.J. Designs; and markets directly to customers through its Oxford Street outlets. T.J.X. Companies is the largest off-price apparel retailer in the United States, comprised of the T.J. Maxx and Hit or Miss chains. Liz Clairborne, Oxford Industries, and T.J.X. Companies are interesting because all three retailers tend to select nothing but fixed rental lease agreements.

Table 1 presents data on the number of observations, the average minimum rent, overage rent, total rent, actual sales per-square foot at the center, and the ratio of the threshold to actual sales per-square foot by size of tenant (per-square foot). We expect larger tenants to have some degree of market power in the market for leasing retail space (which they use to negotiate reduced rents, either in the form of reduced overages or lower base rents, or both). We also expect larger tenants to generate an externality effect that increases retail sales at the center (which causes self-interested landlords to lower the rents that they are willing to charge). The significance of this shown in Table 1. The data show that there is substantial variation in rent payments by size of store. Also the data show that overages are paid on about one third of the leases, but account for a relatively small amount (only about 9 percent) of total rent (see columns (5) and (6)).

Before shifting the focus of the discussion from leases to retailers, it is instructive to note that virtually all retail leases are structured as operating leases.[2] The lease period is typically short-term (between 10 and 11 years), and the estimated economic life of a regional shopping center is long-term (between 40 and 50 years). We should also point out that smaller retailers are generally forced by lessors to lease for a 10-year period, even though the economic life of this class of store is about 5 years. Also, virtually all retail leases fall within the non-cancelable category. We can assume that this occurs to allow the lessor to finance the asset.

We now turn to the distribution of retailers by D/A ratio. The mean D/A ratio for the retailers is 0.48. The lowest D/A ratio is 0.17 and the highest D/A ratio is 0.71. The average firm size is $2 billion. The biggest firms in our final sample (more than $1 billion in total assets) are Kmart, JC Penney's, Sears and Roebuck, Woolworth Corp., the Melville Corporation, The Limited, the Walgreen Co., and Rite Aid (all of which, with the possible exception of the Melville Corporation, which we have already talked about, are household names). The smallest firms in

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our final sample (less than $150 million in total assets) are Claire's Stores, Inc., a women's accessory and specialty store, which engages in the sale of fashion accessories, costume jewelry, handbags, and other related apparel, Martin Lawrence, Ltd., which is an integrated publisher, retailer, and wholesaler of serigraphs, lithographs, sculpture and other original works of art, and Piccadilly Cafeterias, which operates cafeterias in the southern and southwestern regions of the United States. Most firms have, however, between $150 and $300 million (in 1989 dollars) in total assets.

Table 2 shows that in our sample of 100 retailers, most make heavy use of conventional debt (42 percent have D/A ratios in excess of 0.50). Another 56 percent have D/A ratios between 0.25 and 0.50. The majority of this debt tends to be short-term or intermediate-term (either bank financing or trade credit), and is used to carry inventories.[3]

Table 2 also shows that there are differences in D/A ratios by merchandise type. The 14 merchandise types are (1) family apparel, (2) specialty apparel, (3) men's wear, (4) women's wear, (5) women's specialty apparel, (6) shoes, (7) gifts and cards, (8) jewelry, (9) restaurants, (10) home furnishings, (11) leisure and entertainment, (12) drug and variety, (13) services and optical, and (14) other. Each of these categories is generally self explanatory. For example, included among men's apparel stores are Chess King, Oxford Street, and Richman Brothers. Included among women's apparel are Lerner Shops and Susie's Casuals, and so on. The other category includes stores like Jo-Ann Fabrics, Minnesota Fabrics, and Sears Key and Engraving.[4] Looking at the table, we see here that men's apparel, gifts and cards, and drug and variety tend to have some of the lowest D/A ratios (second perhaps only to home furnishings, services and optical, and other). This suggests that men's apparel, gifts and cards, and drug and variety should have among the lowest use of percentage lease agreements (see below). Too few observations prevented us from doing these tests for home furnishings, services and optical, and other.[5]

4. Probit analysis of the relationship between the use of percentage lease agreements and firm characteristics

We explore the relationship between the use of percentage lease agreements and firm characteristics in a probit regression framework. We use two criteria to define the use of percentage leases. The first is whether current sales are greater than the threshold sales breakpoint (which, as reported in Section 3, occurs in about one-third of the leases). Our second criteria strengthens this definition, by looking at the likelihood that the overage clause will be in-

the-money at some point in time over the entire term of the lease. We simulate this possibility by assuming that retail sales grow at an average annualized rate of 4 percent per year over time.[6] We then compare simulated and threshold sales on each lease for each retailer to determine when a percentage lease agreement has been selected and when a fixed lease agreement has been chosen.

We then define (Y_i, N_i) to be a pair of response variables for each retailer (which is our unit of observation). The value of the first variable, Y_i, is the number of percentage leases (or events) selected (which we estimate in the two ways discussed above). The value of the second variable, N_i, is the number of leases negotiated (or trials), and the ratio of Y_i to N_i is between 0 and 1, inclusive.[7]

Next we let Z_i be a theoretical (but not actually measured) index that determines when a percentage lease agreement is selected. For each retailer, we assume that a percentage lease agreement will be selected when $Z_i \geq Z_i^*$. Further, we assume that Z_i^* is a normally distributed random variable, so that the probability of selecting a percentage lease agreement is equal to the probability that Z_i^* is less than (or equal to) to Z_i, which equals $F(Z_i)$, $F(\cdot)$ being the cumulative distribution function of a standard normal variate. Since $F(Z_i)$ is measured by the area under the standard normal curve from $-\infty$ to Z_i, the event will be more likely to occur the larger the value of the index Z_i.

We model Z_i as

$$
\begin{aligned}
Z_i^* \equiv F^{-1}(Y_i|N_i) = a &+ b_1\, D/A_i + b_2(D/A_i)^2 + b_3\, D/E_i \\
&+ b_4(D/E_i)^2 + b_5\text{ASSETS}_i b_6(\text{ASSETS}_i)^2 \\
&+ b_7\text{SIZE}_i + b_8(\text{SIZE}_i)^2 + \Sigma_{j=1}^k \gamma_j D_{ji} \\
&+ b_g \sigma_i \\
&i = 1,2,\dots,n
\end{aligned}
\tag{1}
$$

where Y_i = the number of events (in-the-money percentage leases) for each retailer; N_i = the number of trials for each retailer; D/A_i = debt-asset ratio; the numerator includes total on-balance sheet liabilities; D/E_i = debt-equity ratio; $ASSET_i$ = the value of the firm's assets (measured in millions of dollars); $SIZE_i$ = average tenant size (as a percent of anchor department store size); D_{ji} = 0-1 indicator variable for merchandize type; σ_i = the standard deviation of income; and n = the number of different retailers.

Here, the parameters a, b_1, b_2, ..., b_9, and γ_j determine the critical cutoff value of Z_i^* and

the event that $Z_i \geq Z_i^*$.

The probit results of estimating (1) are reported in Table 3. We use three different model specifications. Model 1 includes all balance-sheet variables and three merchandise dummies. Model 2 adds average tenant size (this measure causes different rankings of retailers than by the value of the firm's assets). Model 3 adds average tenant size and the standard deviation of income. The latter variable introduces a potential errors in variables problem into the probit calculation procedure (since there are no hard-and-fast rules as to how the standard deviation of income should be measured). Fortunately, the model is robust to the calculation of the standard deviation of income.

The results in Table 3 indicate (as expected) a positive relationship between the choice of a percentage lease agreement and D/A ratios. Here the coefficient of the D/A ratio term is always positive and statistically significant, regardless of the criteria used to define Y_i (t-ratios appear in parentheses). The coefficient of the D/A ratio squared term, however, is statistically significant only when Y_i is defined based on current sales (see columns (1)-(3)). When Y_i is defined based on current and future sales (see columns (4)-(6)), the coefficient of the D/A ratio squared term is negative and insignificant, suggesting that the linear form for the D/A ratio may be acceptable.

A few other patterns are evident in Table 3. Generally, the coefficients of the D/E ratio term and the D/E ratio squared term are too imprecisely estimated to place much confidence in them. The two exceptions are with the coefficient of the D/E ratio term in column (3) and the coefficient of the D/E ratio squared term in columns (4) and (5). Here the coefficient estimates are positive (as would be expected), and significantly so.

The effects of firm assets are presented next. For four out of the six probits, there is a negative relationship between firm assets and percentage leases. In two of these cases, the coefficient of firm assets is negative and significantly different from zero at the 0.05 level. We find the coefficient of firm assets squared is insignificantly different from zero in five out of the six probits. Overall, the interpretation of these results is that larger firms generally use less percentage leases. This is likely due to the fact that larger tenants have market power in negotiating leases and greater financial stability.[8]

If we were to perform t-tests on the individual coefficients of the three terms involving 0-1 variables, we would consistently find the first negative and significant in all six probits (at the 0.05 level), the second negative and significant when Y_i is defined based on current and future sales, and the third negative but insignificant. These results are consistent with the low D/A

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ratios in Table 2.

One would expect the coefficient of the tenant size term to be positive and the coefficient of the tenant size squared term to be negative, so that the choice of percentage leases decreases as tenant size increases (which is what we find). This type of story is consistent with the fact that larger tenants generate externalities, and with the evidence that larger tenants usually receive subsidized fixed lease agreements to locate at the center.

The results also show a positive and significant relationship (as expected) between the standard deviation of net income and the use of percentage leases. Such incentives exist because the use of fixed leases can easily increase the probability of negative income beyond the point that the tenant is willing to tolerate, especially if net income is extremely volatile.

5. Concluding discussion

Our concern here has been with the idea that a retail firm may choose a percentage lease agreement over a fixed lease agreement because percentage lease payments are charged as an expense when incurred and not reported as a future lease liability, while fixed lease payments are reported as a future lease liability. The analysis was motivated by the theory contained in Watts and Zimmerman (1986). We adopted this setting to the choice of percentage lease payments, specifically noting that percentage lease payments can create a significant hardship for lessee firms if their net profits were to decline. The empirical prediction of our analysis was that retail firms with higher D/A ratios are more likely to be financially constrained or more likely to be closer to debt covenant constraints, and so, are more likely to choose percentage lease payments.

We then examined empirically a large sample of retail lease agreements and the relationship between the choice of percentage lease agreements and leverage ratios of the companies. Our findings, which seem to be the first systematic data on this basic topic, were generally supportive of the view that managers of retail firms with high D/A ratios choose percentage lease agreements. This analysis raises questions about past attempts to explain the choice of lease payments, at least when the justification for choosing a percentage-of-sales lease agreement rests in part on a risk-sharing argument or in part on a metering and bonding argument.

Notes

1. The literature on risk-sharing in percentage leases dates back more than a century ago to classical economists like Adam Smith, and, later, to Alfred Marshall (1890), and then

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to Johnson (1950) and Cheung (1969).

2. Essentially, operating leases give the lessee the right to use the leased property over a period of time but they do not give the lessee all of the benefits and risks that are associated with the asset (see SPAS No. 13).

3. Most retailers at certain times of the year invest large sums of money (typically between 40 and 50 percent of their total assets) in merchandise (often to purchase goods for an entire season), whereas at other times, only small sums are needed to pay business expenses. Commercial banks are the largest single source for short-term and intermediate-term loans for retailers, followed by trade credit. Factoring is also used by retailers to ease the burden of credit and collections, and to raise working capital.

4. Owing to missing data, however, all but Jo-Ann Fabrics drop out of the other merchandize category.

5. We have only one retailer in each of these two categories. Thus, in what follows we focus entirely on the difference in the use of percentage lease agreements by men's apparel stores, gift and card shops, and home furnishings retailers.

6. We also simulated retail sales assuming average annualized rates of growth of 3, 5, and 7 percent per year over time. However, the choice of sales growth rates has little effect on the overall performance of the model.

7. When Y_i is defined based on current sales, the ratio of Y_i to N_i is zero for 42 out of the 100 retailers; it is between 0 and 100 percent for 51 retailers; and exactly equal to 100 percent for seven retailers. In contrast, when Y_i is defined based on current and future sales, the ratio of Y_i to N_i is zero for 21 out of the 100 retailers; it is between 0 and 100 percent for 53 retailers; and exactly equal to 100 percent for 26 retailers.

8. In addition, if, as is perhaps reasonable to suppose, the preference function common to each retailer exhibits decreasing absolute risk aversion, then retailers with larger assets (and hence larger net worth) will prefer to use less percentage leases. Such behavior is consistent with the belief that wealthier retailers can afford to take larger risks (i.e., more fixed lease payments) with their investments.

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Notes

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Appendix
Table 1
Mean summary statistics by size of tenant

Size of Tenant (square feet)	(1) No. of Observations	(2) Base Rent Per-square foot	(3) Overage Rent Per-square foot	(4) Total Rent Per-square foot	(5) Overage Rent, % of Total Rent	(6) % of Leases paying Overage Rents	(7) Sales Per-square foot	(8) Ratio of Sales Breakpoint to Actual Sales
0-1,500	184	29.51	2.27	31.79	6.33	30.98	375	1.42
1,501-2,500	156	20.42	3.12	23.54	11.32	42.31	356	1.22
2,501-3,500	148	17.52	2.36	19.89	9.05	31.76	286	1.42
3,501-5,000	140	16.63	2.29	18.93	9.31	35.00	271	1.43
5,001-7,500	140	16.63	2.29	18.93	9.31	35.00	271	1.43
7,501-10,000	14	13.47	0.61	14.09	4.23	14.29	220	1.49
Over 10,000	14	14.25	1.71	15.96	8.48	28.57	229	1.25
Total	725	20.69	2.44	23.13	8.76	33.79	319	1.38

Table 2
Distribution of D/A ratios by merchandize type

Merchandize Type	Mean D/A Ratio	Percent of Each Merchandize Type		
		D/A Ratio <0.25	D/A Ratio ≥0.25 and D/A Ratio <0.50	D/A Ratio≥0.50
Family apparel (*n*=11)	49	0	55	45
Specialty apparel (*n*=3)	67	0	0	100
Men's apparel (*n*=11)	43	0	91	9
Women's apparel (*n*=8)	60	0	0	100
Women's specialty apparel (*n*=6)	63	0	17	83
Shoes (*n*=26)	47	0	65	35
Gifts and cards (*n*=5)	43	0	80	20
Jewelry (*n*=5)	48	0	50	50
Restaurant (*n*=2)	42	33	0	67
Home furnishings (*n*=1)	44	0	80	20
Leisure and entertainment (*n*=13)	46	8	54	38
Drug and variety (*n*=5)	46	0	80	20
Services and optical (*n*=1)	38	0	100	0
Other (*n*=1)	48	0	100	0
Total (*n*=100)	48	2	56	42

Table 3
Estimates of the effect of firm characteristics on the use of percentage lease agreements (t-values reported in parentheses)

	Y_i Based on Current Sales			Y_i Based on Current and Future Sales		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Intercept	-5.93	7.35	-9.05	-1.78	-1.94	-2.93
	(-6.38)	(7.63)	(-12.23)	(-1.28)	(-1.47)	(-3.12)
D/A ratio	27.60	33.22	31.55	19.88	19.43	18.99
	(7.20)	(8.38)	(8.00)	(6.21)	(5.83)	(5.49)
(D/A ratio)^2	-39.35	-47.91	-102.69	-4.56	-4.47	-33.45
	(-2.71)	(-3.51)	(-13.21)	(-0.05)	(-0.48)	(-1.93)
D/E ratio	0.78	1.24	19.29	-8.54	-8.42	-1.01
	(0.01)	(0.02)	(4.46)	(-1.18)	(-1.14)	(-0.01)
(D/E ratio)^2	0.72	0.79	-1.51	1.98	1.96	0.76
	(0.33)	(0.38)	(-1.16)	(2.36)	(2.31)	(0.29)
ASSETS	4.04E-04	1.58E-05	-1.53E-04	-5.22E-05	-8.72E-05	-1.72E-04
	(0.33)	(0.05)	(-3.47)	(-0.57)	(-1.52)	(-4.69)
(ASSETS)^2	-1.81E-09	1.59E-10	5.03E-09	4.25E-09	6.57E-09	9.12E-09
	(-0.11)	(0.01)	(0.76)	(0.61)	(1.40)	(2.59)
SIZE		52.61	75.28		74.76	83.42
		(4.04)	(7.88)		(7.23)	(8.81)
(SIZE)^2		-1417.90	-1548.60		-29.79	-2964.10
		(-1.98)	(-2.43)		(-7.14)	(-7.08)
Men's apparel	-0.61	-0.59	-0.61	-0.36	-0.35	-0.37
	(-6.87)	(-6.48)	(-6.89)	(-3.20)	(-3.08)	(-3.28)
Gifts and cards	-5.97	-6.03	-6.54	-1.30	-1.28	-1.45
	(-0.01)	(-0.01)	(-0.01)	(-3.96)	(-3.92)	(-4.89)
Drug and variety	-0.59	-0.64	-0.68	-0.32	-0.08	-0.10
	(-1.74)	(-1.70)	(-1.94)	(-0.70)	(-0.03)	(-0.05)
σ			0.010			0.005
			(18.67)			(5.25)
Summary Statistics:						
Log likelihood	-425.45	-449.76	-440.16	-462.11	-456.46	-453.82
Pseudo R^2	0.98	0.99	0.99	0.98	0.99	0.99