

DECISIONS IN COMMERCIAL REAL ESTATE LEASING IN THE REAL ESTATE SECTOR

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Abstract

This article develops analytical models for key decisions in commercial real estate leasing (the concepts and models developed in the article can also be applied to equipment leasing and other types of leasing).

Keywords: Decision analysis, strategy, leasing, complexity

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Introduction

Retailing remains the largest industry in the US. In 2004, the retailing industry generated approximately 31% of US GDP. In 2004, retail sales (for personal and household use) exceeded \$3.2 trillion (US Dept. Of Commerce). In 2004, US personal consumption expenditure exceeded \$6.4 trillion (63% of US GDP).

Lease Liabilities

Real estate leases are complex long-term contracts requiring simultaneous, continuous and phased performance, and different types of monetary and non-monetary performance by typically unrelated parties. The lessee's propensity to comply with lease terms at specific times is greatly influenced by economic conditions, lessee's resources, and the various costs that may be incurred by the lessee and lessor upon breach of the lease agreement. (Benjamin, Jud & Winkler, 2000). (McNally, Klein & Abrams, 2001); Pretorius, Walker & Chau (2003); (Triantis & LoPucki, 1994); Hylton (1993); Hylton (2002); Michael (2000). Mooradian & Yang (2002); Heyes, Rickman & Tzavara (2004); Katz (1990); Triantis (1993). The typical lease provides the lessor with periodic (quarterly or semi-annual) property inspection rights in order to monitor property conditions.

M = The landlord incurs other 'monitoring costs' for appraisals, reviews of filings, etc., in order to ensure compliance with lease terms.

CT = post-default 'cure costs' incurred by the lessee. In some instances, minor defaults occur because the lease terms are so many and onerous.

CL = 'cure costs' incurred by landlord if lessor does not seek other remedies and is willing to negotiate.

PDT = post-dispute pre-litigation costs that the lessee incurs.

PDL = costs that the landlord incurs to comply with lease terms in order to avoid further litigation or to

settle a dispute – these costs are incurred before there is resolution activity (ie. arbitration, court litigation or mediation) and include negotiation costs, attorney fees, transaction costs, etc..

RT = post-default 'remedy costs' which the lessee pays. These costs are incurred when there is some dispute resolution activity (arbitration, court litigation, or mediation) and include litigation costs, accrued rent and interest, engineering and consultants' costs, payment of necessary fees/expenses such as insurance and taxes, etc..

RL = 'remedy costs' which the landlord incurs typically to cure prolonged defaults of leases terms – these costs are incurred when there is some dispute resolution activity (arbitration, court litigation, or mediation) and include litigation costs, accrued rent and interest, engineering and consultants' costs, payment of necessary fees/expenses such as insurance and taxes, etc..

BL = The landlord gets 'remedy' benefits upon settlement or termination of the dispute – such benefits include accrued rent, costs of assigning the lease or subletting the space to another tenant, reimbursement of litigation expenses, and other accrued expenses such as utilities, maintenance and taxes.

DBL = The landlord gets 'damages benefits' if it wins in court or arbitration proceedings.

DBT = The lessee gets 'damages benefits' if lessee wins in court or arbitration proceedings.

P = The lessee incurs 'performance costs' in order to perform entire terms of the lease.

SR = While most corporate/franchisee tenants typically treat each store as an operating entity in terms of performance evaluation and capital allocation, the corporate tenant typically incurs 'supervisory/rationalization costs' to ensure compliance with all lease terms and to determine where or not to close or relocate stores.

L = The landlord obtains economic value from lessee's performance of all lease terms.

t = time horizon for evaluation. $t \in H$, where H is the lease term.

Specifically, the lessee will always comply with lease terms so long as Lessee knows that:

$$1. \int_0^t (R_T + P + PD_T) \partial t > \int_0^t (P + SR + C_T) \partial t$$

$$2. \partial C_T / \partial P > \partial PD_T / \partial P > \partial R_T / \partial P > 0$$

$$3. \partial C_T / \partial t > \partial PD_T / \partial t > \partial R_T / \partial t > 1$$

$$4. \partial C_T / \partial R_T > \partial PD_T / \partial t > \partial R_T / \partial t > 1$$

The landlord will be willing to negotiate instead of litigating lease defaults if:

4.

$$[\int_0^t (L - M - PD_L) \partial t > \int_0^t (L - R_L - PD_L + B_L - M)] \partial t \quad |$$

$$[\int_0^t (R_T + P + PD_T) \partial t \geq \int_0^t (P + SR + C_T) \partial t$$

Note that in (1) and (4), the decision to litigate or settle is almost completely independent of either party's estimates of probability of prevailing in court/arbitration proceedings and expected damage awards. This approach is somewhat different from existing models of litigation, for several reasons.

Each party's decisions can be made based on existing information because performance is clearly defined.

Most contract breaches are not tortious and thus, do not involve the award of large damages other than contractual damages. It is reasonable to state that the adjudicator's remedy can be predicted with some measure of accuracy because lease terms are relatively straightforward. On the other hand, judges and juries may not follow expected patterns of decisions, and damage awards vary depending on the circumstances of each case. In this instance, the issue of asymmetric information has several dimensions: a) the lessee has more information about its prospects and its ability to perform lease terms – in such information has minimal value primarily because of the validity of lease agreements, expectations of contractual performance, and established remedies and possible existence of credit enhancement such as letters of credit; b) either party may have more information about real estate market conditions and the possibility of finding another tenant for the space at the same or higher rent – in this instance, such information also has minimal or no value because of existence of established remedies for default, variations in rents in real estate markets, and the typical difficulty in confirming potential tenants, c) either party may have different opinions and or more information about the outcome of any prospective litigation.

Structure Of Leases

The existing literature on leasing in the real estate industry is extensive, but the materials don't analyze some of the following issues:

1. The optimal conditions for a lease.
2. The optimal lease, and the optimal Rent.
3. The effect of 'incompleteness' of leases on economics of such leases.
4. The choice between leasing and borrowing.
5. The choice between sale-leaseback and no-action, or borrowing.
6. The analysis of commercial property leases as part of the supply chain for retailers and medium/large companies. Location is crucial for retailers. Real estate rents often accounts for more than 30% of the operating expenses of retailers; and more than 15% of operating expenses of other types of companies.
7. The analysis of commercial leasing as a dynamical system.
8. Analysis of commercial property leases as Take-Or-Pay contracts The leasing process is essentially a four-stage dynamical system because: 1) the various components and relationships in the lease-system vary over time, 2) there is a clear network of relationships among distinct parties, which are defined by the lease contract, the Uniform Commercial Code, the Bankruptcy Code, custom and state laws, 3) factors that affect one component of the –lease system tend to affect other components of the system and the value of the relationships among the various components. See: Beer (2000); Dellnitz & Junge (1999); Moore (1991); Friedman & Sandler (1996); Evans (1998); Agarwal, Bohner, O'Regan & Peterson (2002); Iacov (2001); Van Gelder (1998); Tucker (1997); Izmailov & Solodov (2001); Iri (1997); Mordukhovich & Shao (1997); Treur (2005); Hojjati, Ardabli & Hosseini (2006); Kaiser & Tumma (2004); Schultz (1997); Chehab & Lamine (2005); Sebenius (1992); Xu (2005); Vasant, Nagarajan & Yaacob (2005); Bisdorff (2000); Corbett, DeCroix & Ha (2005). The components of the system include: a) lessor, b) lessee, c) broker, d) county clerk (where leases are recorded), e) banks and financial institutions – that finance leases, f) credit enhancement vendors (eg. FGIC, FSA, etc.), g) the Lease Agreement, h) any encumbrances on the subject property, i) the subject property; i) laws and regulations. The various stages of the lease-system are as follows:
 - a) Stage one – the decision to lease.
 - b) Stage two – finding a tenant and negotiating and signing the lease.
 - c) Stage Three – performance of the lease.
 - d) Stage Four – any default or non-performance of lease terms, up until lease expiration.

Many existing leases are 'incomplete contracts' because they: 1) are triple-net leases, 2) have overage clauses, 3) the performance obligation is not capped/limited or clearly defined. Mooradian & Yang (2002). Gross leases are much more complete than Net-leases because they contain more specific and definite terms, and less exposure or uncertainties. Due to financial difficulties experienced by US retailers between 1995-2004, it was expected and natural that many retailer-tenants would seek to reduce the fixed portions of rents, and to increase the 'overage' or

variable portions of rents. Bernfeld (Fall 2002). Grenadier (1995); Brickley (1999); McCann & Ward (2004); Tse (1999); Asabere (2004); Pretorius, Walker & Chau (2003); Seiler, Chatrath & Webb (2001); Pashigian & Gould (April 1998); Hansmann & Kraakman (2000); Mejia & Benjamin (2002). The effect of such ‘incompleteness’ in lease contracts can be substantial and depends on location, retailers’ brand name, tenant marketing efforts and transaction costs (costs of re-leasing the space, litigation costs, lost sales revenues, etc.). From the retailer’s/lessee’s perspective, the sources of incompleteness are:

1. Operating expenses – maintainance, insurance, premises liability not covered by insurance, etc.
2. Overage rents
3. Capital expenditures
4. Premises liability
5. Natural disasters
6. Landlord’s efforts in marketing the shopping mall.
7. Probability of adequate remedy for breach – suitability of pre-specified forum for resolution of disputes.
8. Lessee’s Employee’s effort levels at that location –
9. Lessee’s intensity of utilization of space.
10. Lessee’s Assignment or sub-letting rights, where Lessee must obtain lessor’s permission before any assignment or sub-leasing.
11. Presence or absence of hazardous materials in the site – where lease is a NNN lease – and the extent of lessee’s liability for environmental cleanups.

Intensity Of Use

The intensity of Lessees utilization of leased space does affect landlords in gross leases. The Retailer/tenant can eliminate much of such incompleteness by electing a gross lease structure. Albert & McIntosh (1989). Miceli & Sirmans & Turnbull (2001). Homem-De-Mello (2001).

Let:

- Rg = rent under gross lease structure (Per SF/month)
- Rn = Minimum/Base rent under triple-net lease structure (per SF/month)
- Mn = tenant’s maintainance costs (per SF/month) under net lease – cleaning, CAM, etc.
- Mg = landlord’s maintainance costs (per SF/month) under net lease – cleaning, CAM, etc.
- I = insurance paid by NNN tenant (per SF/month)
- T = Taxes paid by net-lease tenant (Per SF/month)
- ϕ_t = tenant’s tax rate
- ϕ_l = landlord’s tax rate
- L = fine/damages from premises liability paid by tenant if event occurs
- Pp = probability that an event that will trigger premises liability will occur
- C = capital expenditures (per SF/Month) paid by tenant in NNN lease (assume non-bonded lease)
- B = breakpoint in net-lease (Per SF/Month)
- α = overage rate – percentage of monthly sales per SF, paid to landlord

- S = sales per SF per month at store location
- Pi = probability of achieving overage sales Si
- Si = Sales (per SF/month) at which the retailer tenant is indifferent between a gross lease and a net lease
- Pig = probability of re-leasing space in time t, if tenant defaults under gross lease
- Pin = probability of re-leasing space in time t, if tenant defaults under net lease
- Pdg = probability of lease default by tenant under gross lease
- Pdn = probability of lease default by tenant under net lease
- Pdnl = probability that landlord will pay for operating expenses if retailer/tenant defaults in net-lease
- Dg = landlord’s carrying costs upon lease default, under gross lease (per SF/month) = operating costs
- Dn = tenants’s carrying costs upon lease default, under net lease (per SF/moth) = operating costs
- Un = normal intensity of lessee’s utilization of leased space; $0 < Un < 1$.
- Ue = expected intensity of lessee’s utilization of leased space; $0 < Ue < 1$.
- Og = operating expenses under gross lease (Per SF per month)
- On = operating expenses under net-lease (Per SF per month)

The retailer/lessee will be better off bearing the costs of contract-incompleteness if the following conditions exist:

1. $\int_0^1 [R_g - R_n - (D_g P_{dg} P_{ig}) - ((U_e - U_n) * O_g)] \partial t < \int_0^1 [((S - B)\alpha) - \{(M_n - I - T) * (1 - \phi_t)\} - (P_p L) - C - (P_{dn} P_{in} D_n) + \{(P_{dn})(I + T)\}] \partial t$
2. $(P_{in} | P_{dn}) > (P_{ig} | P_{dg})$
3. $R_g < [R_n + ((S - B)\alpha)]$
4. $M_n \approx M_g$

Hence, the retailer/lessee’s objective function is:

$$\text{Max} [((S - B)\alpha) - \{(M_n - I - T) * (1 - \phi_t)\} - (P_p L) - C - (P_{dn} P_{in} D_n) + \{(P_{dn})(I + T)\}]$$

The net-lease structure provides incentives to tenant, because: **1)** tenant has more direct control over property operating costs, whereas, under the gross lease structure, the landlord can earn profits from management of operating costs (achieving operating expenses at costs lower than those implicit in the gross lease, due to economies of scale, and or knowledge of the property management industry, and or access to resources); **2)** the overage rent structure provides an incentive for tenant to increase sales, and provides an incentive to landlord to cooperate, **3)** rents under the net-lease structure are generally lower than gross-lease rents – hence the net lease reduces tenant’s probability of bankruptcy. Hence, the tenant’s effort under a net-lease structure (En), will always be greater than the tenant’s effort under a gross lease structure (Eg). The net-lease structure also better helps the landlord hedge against inflation.

The retailer/tenant’s problem is to minimize the probability of lease default, and to make profits.

Because there are substantial re-leasing costs if default occurs, the landlord’s problem is to cover the fixed costs and semi-fixed costs (taxes, insurance,

maintenance) and have a chance of making some profit.

Because $R_g > R_n$, for any given space in almost all instances, $P_{dg} > P_{dn}$, in almost all instances. Hence, there is an optimal Rent (R_i) under the net-lease structure at which:

- a) the retailer will be indifferent between a gross-lease and a net-lease, and
- b) the landlord will be assured that relevant property-specific fixed costs and semi-fixed costs (taxes, insurance, maintenance) are paid, and
- c) the landlord will have an opportunity to earn at least the market rent for the space, and
- d) the probability of Lessee's default is lower than when the rent is R_g .

Real estate costs (lease expenses) account for more than thirty percent of retailer's operating expenses; and real estate assets (owned assets and long term capital leases) typically account for more than thirty-five percent of retailers' total assets. Hence, real estate is a major element of the supply chain of retailers. Cachon & Larivere (2005); Corbett & DeCroix (2001); Krishnan & Kapuscinski (2001); Seile, Chatrath & Webb (2001); Pretorius, Walker & Chau (2003); McNally, Klein & Abrams (2001); Howgego (2002); Gibson & Barkham (2001); Chang & Harrington (2000); Arrunada (2000); Albert & Intosh (1989); Miceli & Sirmans & Turnbull (2001); Miceli & Sirmans (1995); Homem-De-Mello (2001).
Let:

- R_i = optimal rent (per SF per month).
- π_i = overage rate required to achieve Optimal Rent R_i with Breakpoint B_i . $0 < \pi_i < 1$.
- π = normal overage rate.
- P_i = probability of achieving minimum overage sales S_i in each month in the future.
- S_i = Sales (per SF) at which the retailer/tenant is indifferent between a gross lease and a net lease.
- P_{lg} = probability of re-leasing space in time t , if tenant defaults under gross lease.
- P_{ln} = probability of re-leasing space in time t , if tenant defaults under net lease.
- P_{dg} = probability of lease default under gross lease.
- P_{dn} = probability of lease default under net lease.
- D_g = landlord's carrying costs upon lease default, under gross lease (\$ per SF/month) = operating costs
- D_n = tenants's carrying costs upon lease default, under gross lease (\$ per SF/month) = operating costs
- O_g = operating expenses under gross lease (\$ Per SF per month).
- O_n = operating expenses under net-lease (\$ Per SF per month).
- S_i = historical average sales per SF at location; adjusted for expected sales per SF/month during the next /future 36 months.
- B_i = Breakpoint (\$ per SF/month) required to achieve optimal rent R_i using overage rate π_i
- T_l = landlord's tax rate
- T_t = tenant's tax rate

Then, the optimal rent (R_i) must satisfy the following conditions:

1. $R_i = \text{Max} [\{P_i(S_i - B_i) \pi_i\}, \{ \text{Max}((1 - T_t)O_n, (1 - T_t)O_g) + C + (P_{dn} * (T + I + 5M_n) * (1 - T_t)) + (P_{dn}D_nP_{ln}) \}]$
2. π_i is the Overage Rate at which: $[\{O_n(1 - T_t) + C + (P_{pl}) + ((S_i - B_i) * \pi_i) \} * (E_g/E_n)] = R_g$
3. $\pi_i > \pi$; and $B > B_i$
4. $B_i = \{ \text{Max} [\{(1 - T_t)O_n\}, \{(1 - T_t)O_g\}] + C + (P_{dn}D_nP_{ln}) \}$

$P_i = f$ (population within primary trade area, average household disposable income, historical sales per SF at store, total available retailing SF in primary and secondary trade areas, etc.).

$$P_i = P_f | P_h$$

Where:

P_f = probability that future monthly sales per SF will exceed S_i

P_h = probability that monthly sales per SF will exceed S_i , based on historical sales per SF/month at the store.

Given the financial problems experienced by retailers between 1995-2004, the lease-buy decision has become more important for retailers; because leasing can reduce capital commitments and perceived leverage. Hence, a) the retailers' lease interests (leasehold interests, etc), and b) recording of leases at local county clerks' offices are likely to become more important, c) Security interests in leases will probably become more popular as financing instruments. Most existing mortgage documents include a formal 'assignment of leases and rents' which is typically filed at the county clerk's office with the mortgage. However, some states require UCC filings for such security. It is likely that more transactions will involve UCC-1 and UCC-3 filings covering leases and rents.

Retailers also face the choice between a sale-leaseback and borrowing new funds. The main effect of the sale-leaseback are that: a) it can reduce reported assets and debt, b) it can increase the retailer's borrowing capacity, and can change the capital structure, and can lower the retailer's incremental cost of capital, c) it generates cash immediately with possibly lower transaction costs (than borrowing) and at possibly higher asset values (than from borrowing), and at possibly lower implied interest rates; d) it can provide tax benefits, depending on whether the seller/lessee generates taxable income. The literature on wealth effects of sale-leasebacks is extensive. See: Albert & Intosh (1989); Miceli & Sirmans & Turnbull (2001); Seiler, Chatrath & Webb (2001); Pretorius, Walker & Chau (2003); Graff (2001); Gibson & Barkham (2001); Mooradian & Yang (2002); Fisher (2004); Arnold (1999); Stavrovski (2004); Kangoh (1995); Ghyoost (2004); Young & Graf (1995); Garmaise & Moskowitz (2003). However, the existing literature does not analyze some of the following issues:

- a) The choice between a sale-leaseback and borrowing;
- b) Effect on the retailer's cost of funds;
- c) Transaction costs;

- d) The Retailer's probability of bankruptcy,
- e) Optimal conditions for sale-leasebacks;
- f) Optimal conditions for borrowing as an alternative to the sale-leaseback.

However, the structure of the sale-leaseback determines the wealth effects, if any. The economics of leases can be modeled using fuzzy sets. Wang & Parkan (2005); Coban & Secme (2005); Garcia, Berlanga, Molina & Davila (2004); Olson & Bayer (2003); Philpott, Hamblin, Baines & Kay (2004). Homem-De-Mello (2001). On dynamical systems, see: Nelles (2002); Beer (2000); Dellnitz & Junge (1999); Moore (1991); Friedman & Sandler (1996); Evans (1998); Agarwal, Bohner, O'Regan & Peterson (2002); Iacus (2001); Van Gelder (1998); Tucker (1997); Izmailov & Solodov (2001); Iri (1997); Mordukhovich & Shao (1997); Treur (2005); Hojjati, Ardabli & Hosseini (2006); Kaiser & Tumma (2004); Chehab & Lamine (2005); Xu (2005); Vasant, Nagarajan & Yaacob (2005).

Let:

Ls = PV of monthly lease payments under sale leaseback

I = PV of monthly interest payments on loan (amortizing loan)

S = sale price

Rs = implicit interest rate of lease. $0 < R_s < 1$.

Rbb = borrowing cost of the buyer/lessee before sale lease back. $0 < R_{bb} < 1$.

Rba = borrowing cost of the buyer/lessee after sale lease back. $0 < R_{ba} < 1$.

Rts = seller/lessor's tax rate. $0 < R_t < 1$.

Rtb = buyer/lessee's tax rate. $0 < R_{tb} < 1$.

N = state – lease is an operating lease

C = state – lease is a capital lease

D = depreciation from property - applies to capital lease

P = principal amount of loan that will be borrowed instead of sale leaseback. This loan has monthly interest payments and same term as the sale-leaseback lease.

Ra = reduction in company's borrowing cost due to lower leverage – applies only to operating lease

Ri = increase in company's borrowing cost due to higher leverage from borrowing and not doing the sale leaseback

Rr = firm's borrowing cost if firm borrows and does not do sale-leaseback $0 < R_r < 1$.

Rsl = Transaction costs if sale-leaseback, amortized over loan term, and as percentage of sale price. $0 < R_{sl} < 1$.

Rl = Transaction costs if loan; amortized over loan term, and as percentage of loan principal. $0 < R_l < 1$.

DC = company's debt/capital ratio

TC = total Capital

TV = present value of assumed terminal value of property in sale-leasebacks classified as capital leases

Pdss = probability of seller/lessee's bankruptcy after sale-leaseback transaction. $0 < P_{dss} < 1$.

Pdsb = probability of seller/lessee's bankruptcy after borrowing transaction. $0 < P_{dsb} < 1$.

Pdls = probability of buyer/lessor's bankruptcy after sale-leaseback transaction. $0 < P_{dls} < 1$.

Pdlb = probability of buyer/lessor's bankruptcy after borrowing transaction. $0 < P_{dlb} < 1$.

Pt = probability that seller/lessee will have taxable income equal to or greater than periodic depreciation amounts. $0 < P_t < 1$.

If the retailer does a sale-lease back recorded as capital lease, its net position will be:

$$N_{sl} = \{S(1-R_{sl}) + [(L_s \cdot R_{ts}) + (D \cdot R_{ts} \cdot P_t) - L_s + R_a + TV] \cdot (1 - P_{dss})\};$$

And its objective function will be:

$$\text{Max } N_{sl} = \{S(1-R_{sl}) + [(L_s \cdot R_{ts}) + (D \cdot R_{ts} \cdot P_t) - L_s + R_a + TV] \cdot (1 - P_{dss})\}.$$

If the retailer borrows an amount *P*, its net position will be:

$$N_b = \{P(1-R_l) + [(I \cdot R_{ts}) - (R_i)(DC)(TC) + \{(R_{ts})(R_i)(DC)(TC) - I(1 - R_{ts})\} \cdot (1 - P_{dsb})]\};$$

and its objective function will be:

$$\text{Max } N_b = \{P(1-R_l) + [(I \cdot R_{ts}) - (R_i)(DC)(TC) + \{(R_{ts})(R_i)(DC)(TC) - I(1 - R_{ts})\} \cdot (1 - P_{dsb})]\};$$

For the company to choose borrowing instead of the sale-leaseback, then the following conditions must exist:

1. $\text{Max}\{[R_r(1-R_t) + R_l P + R_i(DC)(TC)], 0\} < [R_s(1-R_t) - (D \cdot R_{ts}) + R_{sl} S]$

2. $N_b > N_{sl}$

3. $\text{Max}\{[(R_{ba} - R_{bb}) - R_{sl}], 0\} < [R_i + R_l]$

4. $\partial R_r / \partial DC > \text{Max}[(\partial R_r / \partial DC), 1]$

5. $\partial R_s / \partial S > \text{Max}[(\partial R_r / \partial P), 1]$

6. $\{P(1-R_l) + [(I \cdot R_{ts}) - (R_i)(DC)(TC) + \{(R_{ts})(R_i)(DC)(TC) - I(1 - R_{ts})\} \cdot (1 - P_{dsb})]\} > \text{Max}\{[S(1-R_{sl}) + [(L_s \cdot R_{ts}) + (D \cdot R_{ts} \cdot P_t) - L_s + R_a + TV] \cdot (1 - P_{dss})]\}, 0\}$

The retailer/lessee will be better off doing a sale-leaseback transaction than not doing anything, if:

1. $[S - L_s - R_{sl} S - (L_s R_{ts}) - (R_a)(DC)(TC) + TV(1 - P_{dss})] > 0$

2. $\partial R_r / \partial DC > \text{Max}[(\partial R_r / \partial DC), 1]$

3. $\partial R_a / \partial DC > \text{Max}[(\partial R_r / \partial DC), 1]$

4. $R_s R_{ts} < R_{bb} R_{ts}$

5. $\partial R_{bb} / \partial DC > \text{Max}[(\partial R_{ab} / \partial DC), 1];$

- and $\partial^3 R_{bb} / \partial DC^3 > \text{Max}[(\partial^3 R_{ab} / \partial DC^3), 1];$

6. $\text{Max}[(\partial P_{dss} / \partial DC), 1] < (\partial R_{bb} / \partial DC);$

- and $\text{Max}[(\partial^3 P_{dss} / \partial DC^3), 1] < (\partial^3 R_{bb} / \partial DC^3);$

7. $\text{Max}[(\partial P_{dss} / \partial R_{bb}), 1] < \partial P_{dss} / \partial R_r;$

- and $\text{Max}[(\partial^3 P_{dss} / \partial R_{bb}^3), 1] < (\partial^3 P_{dss} / \partial R_r^3)$

The foregoing analysis applies to capital leases, but in the case of operating leases, the main differences will be:

1. There won't be any reversion of the property's terminal value to lessee.

2. There won't be any depreciation tax benefits

3. The viability of the transaction for both lessee/lessor will depend on the magnitude of the

difference between the seller/lessee's and the buyer/lessor's tax rates.

Conclusion

Leasing remains a major source of capital in the real estate sector. Real estate constitutes a substantial portion of fixed assets (land, buildings/fixtures and lease interests), capital expenditures, loan assets and operating costs (maintainance, insurance, taxes, rents and depreciation) in many industries such as retailing, healthcare, transportation, technology, banking, oil & gas, food processing, agriculture, insurance, and lodging. Although leases and the sale-leaseback transaction are economically viable alternatives to outright purchases (financed with debt or equity), many companies do not use real estate strategically and do not incorporate real estate strategies into their overall corporate strategy and change management processes. The analysis of sale-leasebacks should incorporate transaction costs, bankruptcy probabilities, depreciation tax shields, the borrowing alternative, and taxes.

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