

Real Estate Lease-Backed Securities

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ABSTRACT

A recent innovation in real estate finance has been the issuance of securities backed by real estate leases. With loan-to-value ratios $\geq 100\%$ and debt service coverage ratios ≈ 1.00 , this new instrument holds considerable appeal for borrowers. An examination of this emerging market, known as lease-backed securities, is performed to determine the underlying reasons for its existence and assess the potential for its future growth.

Real estate leasing market structure may explain the emergence of real estate lease-backed securities (LBS). We explore the financing and investment merits of LBS and compare LBS to traditional financing techniques. In addition, the thesis analyzes structural, legal, rating, and other issues relevant to LBS. LBS provide a link between the capital and property leasing markets that did not previously exist.

While LBS issued to date have involved single tenant properties, the LBS market may grow to encompass leases on multi-tenant and foreign properties. Major issues for multi-tenant and foreign LBS are identified and discussed. Experiments are performed, to measure the economic impact of the rent review feature standard in many British leases, by simulating a market where spot lease prices evolve stochastically. We find that the rent review feature has significant economic value. Our analysis of foreign markets suggests that property rights and securities law foster or inhibits the development of financial instruments such as LBS.

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REAL ESTATE LEASE-BACKED SECURITIES

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People and businesses consume space in their everyday lives. These entities may either lease or own the space needed to conduct their activities. Leasing is often viewed as a financing alternative for many assets, because residual asset value at the end of the lease term is essentially zero. Real estate, in contrast, is the most durable of assets and has substantial residual value after lease expiration. Consequently, two components comprise real estate asset value: cash flows (service flows in the case of an owner-occupant) and residual value. Traditional real estate financing methods bundle these components together despite the inherent and significant differences between the two. A new financing technique, leased-backed securities, is now emerging that focuses specifically on the cash flow component of real estate asset value. This financing technique often results in greater loan proceeds and lowers debt costs when compared to traditional financing methods. This is because the cash flow component may have more value when separated from the residual component. Significantly for borrowers, LBS have been issued with loan-to-value ratios $\geq 100\%$ and debt service coverage ratios ≈ 1.00 .

Lease-backed securities (LBS) consist of securitized real estate leases. The value of these securities is based on the present value of the underlying lease cash flows discounted at a rate reflecting the credit and other risks (e.g., interest rate and call risk) of the underlying leases. Most LBS transactions to date have used lease obligations of investment grade (i.e. a Standard & Poor's or Moody's credit rating \geq BBB/Bbb) lessees. Recent transactions have included BB lessees and it now appears likely that LBS future transactions will encompass a wide range of lessee credit quality.

Findings

The objective of our research was to explore the emerging LBS market and determine the reasons for its existence as well as assess its potential for future growth. Our research produced several important findings.

Leverage (loan-to-value ratio). Many initial LBS transactions have achieved high loan-to-value (LTV) ratios vis-à-vis traditional financing alternatives. We show that equilibrium LTV ratios are a function of discount rate and lease maturity. Moreover, we believe that the high LTV ratios seen on recent LBS transactions are at least partially due to lease payments being determined in the property leasing markets at discount rates above the capital markets equilibrium level. In other words, some lessees, especially those with high credit quality, pay higher rent than they would in a highly efficient market.

Reasons for Leasing. Firms lease real estate for many possible reasons. We believe the primary reason may be flexibility. Real estate is an intrinsically inflexible asset. From the user's perspective, leasing separates use from ownership thereby increasing the asset's flexibility. We present a number of other possible explanations for leasing. The prevalence of real estate leasing suggests that firms may be willing to pay higher than equilibrium lease payments to achieve the gains from trade that leasing provides. For firms lacking a comparative advantage in buying, owning, and selling real estate, leasing allows them to use real estate without having to invest.

LBS Mechanics & Legal Structuring. Compared to corporate bonds or traditional real estate financing instruments, LBS have a unique *combination* of mechanical and structuring issues. Viewed in isolation, some of these issues are similar to other financing methods. We discuss important LBS mechanical and structuring issues and analyze the potential impact of these issues on the growth of this new market.

Market Maturation & Growth. So far, the LBS market has largely limited to single tenant properties in the U.S. We conjecture that LBS market expansion could come from securitizing leases on multi-tenant properties and/or leases on non-U.S. properties.

Economic Analyses. The LBS market is still in its infancy. Perhaps because of this market's relative youth, market participants—especially the rating agencies—do not appear to be using recent innovations in financial economics. Moreover, the thesis demonstrates how recent theory can be applied to a practical example. We evaluate some of the financial consequences of a key feature from a standard British lease using the basic concepts developed in chapter 2 and by simulating environments where lease prices evolve stochastically and exhibit supply responses.

Potential for International LBS. Expansion of the LBS market may result from securitization of leases outside of the U.S. We identify the major non-U.S. property markets where LBS may have potential. LBS should first migrate to those foreign markets with existing asset-backed securities and clearly defined property rights.

Leasing allows entities to consume space without having to invest in real estate. Traditional real estate finance follows a “package” approach where both disparate components of real estate value remain together. LBS offer a new financing approach that effectively separates the cash flow component of value from the residual value component of real estate.

In a world where capital markets and property leasing markets were closely linked, LBS need not exist. Individual lease rates and loan terms would fully reflect lessee creditworthiness. Arbitrage would drive any anomalies to the correct levels. For example, if the lease rate did not give a firm the full benefit of its credit, then the firm could purchase the real estate by issuing debt that reflected the firm's credit rating. In reality, the real estate market is characterized by informational, regulatory, and other frictions as well as high transaction costs. LBS provide a link between capital and property leasing markets thereby allowing anomalies to be exploited.

In this chapter, we address basic issues underlying LBS. First, we set forth an economic framework for leasing and discuss factors that influence lease credit spreads.¹ Second, we introduce leasing policy as an explanation for the existence of the LBS market. Many firms lease certain assets even when leasing might not be optimal execution. Third, we present a brief analysis of the real estate leasing market. Fourth, we present outcomes of securitization and rating agency processes as explanations for LBS. A security design incorporating a senior/subordinated structure for a pool of underlying loans (or leases) may provide higher liquidation proceeds than the sale of the individual assets. Further, combining leases from different tenants provides diversification benefits and results in a higher average credit rating.

Leasing Economic Framework

Many firms or individuals lease as an alternative to purchasing capital assets. Leasing is a mechanism that sells the use of an asset for a specified period of time with no transfer of

¹ A lease credit spread must be added to the risk-free lease rate to compensate for default risk. This concept is more fully explained later in this chapter.

ownership. Ergo, leasing allows for the ownership of an asset to be separated from its use. The lessee benefits from the use of the asset while the lessor benefits from the lease payments plus the asset's post-lease residual value. A lease specifies the exact pattern of payments over time for the use of the asset and allocates risks between the lessee and lessor. The prevalence of leasing in real estate markets suggests that there must be some "gains from trade" between lessees and lessors. As mentioned in Chapter 1, consumers of space can avoid investing in real estate through leasing.

Risk-Free Leases. From a financial perspective, the lessee's position is equivalent to a financed position in the underlying asset plus a short European call on the asset with a strike price of zero and an expiration date of T = lease maturity date. The lessor's position is equivalent to owning the debt on the underlying asset plus a long European call. Moreover, economic equilibrium requires lease payments to compensate the owner of the asset for the forgone spot cash flows or use of the asset. The present value of a *credit* risk-free² lease, L , with a lease term of T years, a lease payment stream (net of any expenses) of P , a risk-free discount rate of $r > 0$, and a drift (growth) rate of μ can be expressed as follows:

$$L = \int_0^T P e^{(\mu - r)t} dt = \frac{P}{r - \mu} (1 - e^{(\mu - r)T}) \quad (2.1)$$

Most practitioners are accustomed to working with discrete rather than continuous cash flows because virtually all leases are in discrete terms including those in our case study and pricing example. The following equation expresses the present value of a lease for discrete cash flows:

$$L = \sum_{t=1}^T \frac{P_t(1 + \mu)}{(1 + r)^t} = \frac{P}{r - \mu} \left(1 - \frac{(1 + \mu)^T}{(1 + r)^T} \right) \quad (2.2)^3$$

² "Risk-free" means free of credit risk. Other risks (e.g., interest rate) may be present.

³ In the discrete formulations shown here, the periods, Δt , are years and r and μ are annual rates. More frequent periods can be used, but r and μ must be adjusted accordingly. As $\Delta t \rightarrow 0$, the continuous formulations apply.

Rearranging equation 2.1 expresses the equation in terms of a continuous lease payment, P:

$$P = \frac{L(r - \mu)}{1 - e^{(\mu - r)T}} \quad (2.3)$$

Rearranging equation 2.2 expresses the equation in terms of a discrete lease payment, P:

$$P = \frac{L(r - \mu)}{\left(1 - \frac{(1 + \mu)^T}{(1 + r)^T}\right)} \quad (2.4)$$

Let V = the value of the underlying property. A perpetual lease (i.e. as $T \rightarrow \infty$) is economically equivalent to owning the underlying property. For risk-free perpetual leases, therefore:

$$L = \frac{P}{r - \mu} = V \quad \text{present value of lease} = \text{property value} \quad (2.5)$$

$$P = L(r - \mu) = V(r - \mu) \quad \text{lease payment} = \text{property income} \quad (2.6)$$

$$(r - \mu) = \frac{P}{L} = \frac{P}{V} \quad \text{net lease yield} = \text{net property yield} \quad (2.7)$$

Notice that these equations are very similar to the "cap" (capitalization) rate calculation widely used by real estate practitioners. Indeed, equation 2.7 would be the cap rate for perpetual leases where the lessee assumed all operating expenses and real estate risks. If the lessor assumed some expenses, then both P and net operating income would be reduced by the same amount.

One of the touted benefits of LBS is the high loan-to-value (LTV) ratios, including LTVs > 100%, that can be achieved. In the framework shown here for risk-free leases, the maximum loan against future lease cash flows should equal present value of a lease, L. Therefore, the LTV ratio is equal to the present value of the lease, L, divided by V, the property value. Dividing equation 2.1 by 2.5 gives the following result:

$$\text{Loan-to-Value Ratio} = \frac{L}{V} = 1 - e^{(\mu - r)t} \quad (2.8)$$

LTV ratio is a function of $(\mu - r)$, the discount rate (net of growth), and T, lease term. In an

efficient market, LTV ratios would converge to but not exceed 100% as $|\mu - r|$ or $T \rightarrow \infty$.

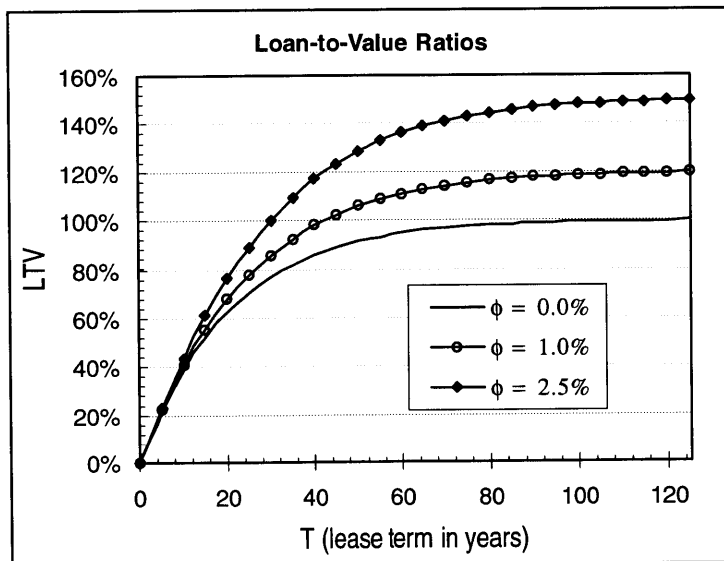
Equation 2.8 implicitly assumes that the risk-free discount rate prevailing in the capital markets is also used to determine risk-free lease prices in the property leasing markets. Because rent is determined in the property markets for space use (DiPasquale and Wheaton 1996), risk-free lease payments may differ from values calculated at the risk-free discount rate. Let ϕ = the amount of frictional spread above or below the risk free rate so that:

$$P = L(r - \mu + \phi) = V(r - \mu + \phi) \quad (2.9)$$

for a perpetual lease. Think of $(r + \phi)$ as the cap rate for properties with risk free lessees; $(r - \mu + \phi)$ is the cap rate net of the drift (growth) rate. Dividing equation 2.1 by 2.9 gives the following result:

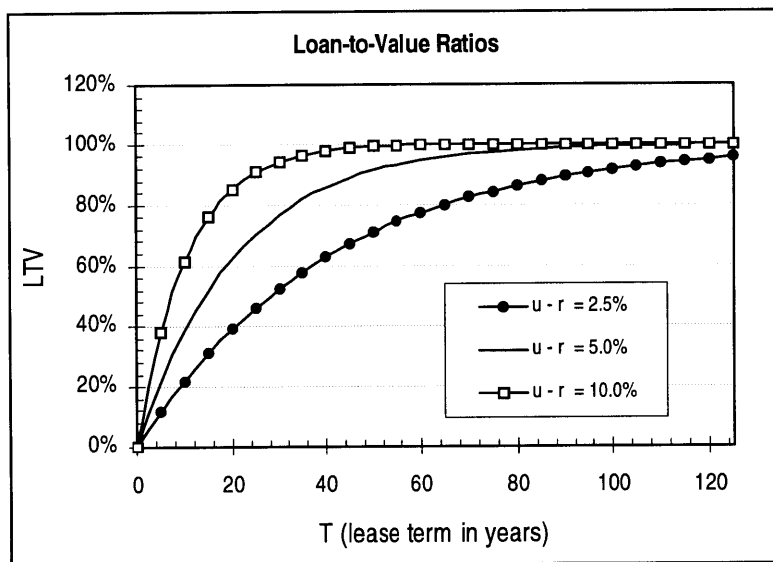
$$\text{Loan-to-Value Ratio} = \frac{(r - \mu + \phi)}{(r - \mu)} (1 - e^{(\mu - r)t}) \quad (2.10)$$

ϕ is not included in equation 2.1 because the present value of a risk-free lease in the capital markets is independent of the property markets. If lease payments determined in the property markets occur at $\phi > 0$, then LTV ratios above 100% are possible. The following chart shows LTV ratios for three frictional spreads (ϕ) at $(r - \mu) = 5\%$:



Keep in mind that LTV ratios increase as $(r - \mu)$ increases. If $(r - \mu)$ were greater than the 5% used to produce the graph, all three lines would shift upward.

LBS provide a link between the capital markets and the property leasing markets that did not previously exist. With a link now in place, we expect the discount rates in the property leasing markets to converge to those in the capital markets for identical leases. The following chart shows LTV ratios for three discount rates over a range of lease terms where $\phi = 0$:



If $\phi = 0$, then equation 2.10 is identical to equation 2.8. LTV ratios converge to, but cannot exceed, 100% as T and/or $|\mu - r| \rightarrow \infty$.

The preceding discussion and equations assume that the lessee has no credit risk. For risky lessees, i.e. all lessees where there is a possibility of default in some period $t \leq T$, a credit spread must be added to the risk-free discount rate, r , in the equations shown previously. If the appropriate credit spread is added to the discount rate, r , to compensate the lessor for the probability and consequences of default, then all of the concepts developed for risk-free leases apply to risky leases.

Lease Credit Spreads. For risky lessees (i.e., those lessees where the possibility of default exists), a lease credit spread must be added to the risk-free discount rate to compensate the owner of the asset for the potential consequences of default. Lessee creditworthiness, or the entity's financial capacity, is the most obvious determinant of lease credit spreads. Longstaff and Schwartz (1995) and Grenadier (1996) model default by assuming that default occurs when a lessee financial state variable, asset value or cash flow for example, fall below a lower threshold level. A number of other factors interact with lessee creditworthiness to determine normative lease credit spreads. A growing body of recent literature addresses these factors.

Lease Maturity. Lease credit spreads may vary with the lease term-to-maturity. A model developed by Grenadier (1996) shows that the term structure of credit spreads for risky tenants is upward sloping under the assumption that both asset value and lease default are stochastic. In other words, because cumulative probability of default increases with time, risky tenants should *generally* pay higher credit spreads for longer-term leases. Childs, et al. (1997) show that spreads may also decline with maturity.

Mean Reversion. The pace of construction of new space will respond to demand shocks. This supply response is in turn likely to constrain lease rates around a long run mean. As unanticipated increases in demand drive spot lease rates higher, the pace of construction will accelerate; this supply response will eventually exert downward pressure on lease spot rates. Unanticipated decreases in demand will suppress spot lease rates and cause the pace of construction to decline. Reduced supply will exert upward pressure on lease rates. By assuming that spot lease rates evolve according to a mean reverting process, Childs, et al. (1997) show that lease credit term structures may be upward or downward sloping.

Correlation. Another factor affecting lease credit spreads, but seemingly ignored in practice and most of the literature, is correlation. Both Childs, et al. (1997) and Grenadier (1996) show the relevance of correlation. Lease credit spreads increase as the correlation between the lessee asset value and the value of the underlying leased asset increases.

Volatility. Grenadier and Childs, et al. demonstrate how volatility (σ) of lessee cash flow interacts with correlation and influences credit spreads. Lease credit spreads will increase as volatility increases when correlation is positive. Conversely, when correlation is negative, credit spreads decline as volatility increases. With a correlation of zero, volatility does not influence credit spread. A lessee with a low or negative correlation between its cash flow and the value of the leased asset requires less of a credit spread than a lessee with higher correlation.

Empirical observation suggests that lease rates do not vary as much by lessee credit quality as perhaps they should. Evans, et al. (1997) indicate that variations in lessee creditworthiness have little, if any, impact on lease rates; they discuss how even the U.S. Government, which should be a risk-free lessee from a credit perspective, pays “market” lease rates. If lessee credit spreads are too wide given a lessee's creditworthiness and other relevant factors, LBS can be a mechanism to exploit this mispricing. Credit ratings, assigned by one of the four rating agencies may not presently exert much influence on credit spreads in the primary lease market. These ratings are a vital factor in determining credit ratings for LBS (see Chapter 4).

Leasing Policy: Why Do Firms Lease?

Much of the existing literature on leasing policy focuses on tax related reasons for

leasing instead of buying. Smith and Wakeman (1985) contend that taxes provide only a limited explanation for why some assets are leased. Leasing can reduce the total tax expense for lessee and lessor if the two firms face different marginal tax rates. If marginal tax rates for the two parties are the same, then there is no tax advantage to leasing. Investment tax credits may explain some tax related leasing for certain assets, but ITC does not apply to real estate. Smith and Wakeman identify eight nontax incentives influencing the lease or buy decision:

Financial Incentives. Where firms are financed by a combination of debt and equity, there may be conflicts of interest between the debt and equity claimholders. Two common conflicts are asset substitution and underinvestment. By committing the firm to using a certain asset over the term of a noncancellable lease, the ability for asset substitution is reduced. Stulz and Johnson (1985) contend that leasing may also reduce the incentive to underinvest.

Compensation Issues. If incentive compensation is tied to return on invested capital or similar measures, there may be an incentive to minimize capital outlays. Management may wish to lease, rather than purchase, under circumstances where these compensation plans are in place.

Risk Bearing. When an asset is purchased, firm capital is committed to the asset. This capital may be significant in the case of real estate. Leasing permits better diversification of firm capital. Such diversification is most relevant when the firm is closely held and represents a significant portion of the stockholders' wealth (e.g., a sole proprietorship).

Maintenance. Smith and Wakeman argue that assets are more likely to be owned than leased when the asset value is sensitive to maintenance levels. A lessee does not have the same incentive to care for an asset as an owner because the residual value accrues to the lessor. Unless lease provisions internalize the incentive to adequately maintain the asset, the lease payment must be increased.

Firm-Specific Assets. Because firm specific assets have the most value to a particular user, these assets tend to be owned rather than leased. Empirical observation supports the validity of this proposition for real estate assets. For example, office space tends to be very generic and it is normally leased. Specialized manufacturing facilities, by contrast, tend to be owned.

Expected Period of Asset Use. Leasing is often favored over buying when the expected life of the asset exceeds the expected period of use and ownership transfer is difficult or costly. Real estate follows this pattern—it is much more likely to be leased as the expected use period declines. Hotel space, for instance, is more likely to be leased than factory space. Real estate also may be one of the more difficult and costly assets to transfer ownership.

Price Discrimination Opportunities. While leasing may allow a manufacturer with market power to price discriminate by extracting higher rents from lessees which have more elastic demand than purchasers, this analysis does not apply to real estate. According to DiPasquale and Wheaton (1996), a property has little or no market power.

Comparative Advantage in Asset Disposition. A lessor often has a comparative advantage in disposing of or divesting an asset. For real estate, the lessor is likely to have an advantage in selling or releasing a property over most lessees. When the lessor has this comparative advantage, there will be an incentive for firms to lease.

Despite the potential arbitrage suggested by the emergence of LBS, there appears to be numerous reasons for firms to lease real estate rather purchase it. In particular, leasing makes sense for many consumers of space because their future space needs are uncertain and they lack real estate expertise. Long term leasing insulates space consumers from market risk. Leasing increases the flexibility of an inherently inflexible asset by segregating use from ownership.

Real Estate Leasing Market

Of the myriad of assets that firms or individuals now lease, real estate has the longest history. The most logical segmentation of the real estate leasing market for our purposes is by property type because lease provisions, as well as the percentage of properties that are leased versus owned, vary considerably across property type.

Property Type. Many of the nontax incentives for leasing identified by Smith and Wakeman (1985) apply to the various real property types. The following is a brief discussion of the leasing market for major property types:

Hotel. Expected period of use dominates for this property type. The expected period of use for this asset is very short, sometimes as short as one night. Thus, hotel rooms are virtually 100% leased.

Apartments. Virtually all apartment units are leased. While expected period of use certainly influences leasing policy for apartment users, other factors affect whether a residential user leases or buys. Some users may be limited to leasing because they have not accumulated enough funds for a down payment and/or they do not have adequate income to qualify for a mortgage. Typical lease terms for apartments are six months to one year.

Office. Office space is seldom firm specific and expected periods of use are usually shorter than the life of an office building. Accordingly, one would anticipate office space to be leased rather than owned. CB Commercial data from 1991 for 50 major metropolitan areas shows that 32% of office space is owner occupied. The actual percentage of leased space is greater than 68%, however, because 18% of the 32% is occupied by the owner plus other tenants. Office leases tend to have lease terms of three to five year terms (but can often be longer) and often include options to extend the lease.

Retail. Some retail space is leased and other space is owned. Smaller retailers tend to lease their space while larger retailers tend to own. Externalities play an important role for many retail properties-particularly shopping malls. DiPasquale and Wheaton (1996) point out that the single ownership of a shopping center allows the mix of stores to be specifically designed to complement each other. If the stores were individually owned rather than leased from a single owner, it is much less likely that this coordination would occur. Lease terms for retail exhibit considerable variability. While some smaller retailers in malls may have lease terms of two years or less, larger retailers may have leases with very long terms.

Industrial. The previous property types, especially the first three, are commodity-like in nature. The space one tenant occupies is very similar to what other tenants occupy. Industrial space is more firm specific and therefore is less likely to be leased. 1991 CB Commercial data for 50 major metropolitan areas shows 48% of industrial office space to be owner occupied. Only 5% of the 48% is owner occupied with other tenants. Industrial space tends to be highly specialized from tenant to tenant and lease terms vary accordingly.

Residential. Most single family units are occupied by their owners. Expected use influences tenure choice. Mobile households are more likely to rent than own (DiPasquale and Wheaton 1996). A typical residential lease term is one year.

Outcomes of the Securitization & Rating Agency Processes

The market for asset-backed securities has undergone tremendous growth over the past twenty years. Initially dominated by residential mortgage-backed securities, the market now encompasses a variety of assets including commercial real estate loans. The securitization and rating agency process enhances the marketability of real estate debt instruments. Enhanced marketability helps explain the existence of the LBS market.

Credit Tenant Loans. According to Boyce (1997), CTLs (credit tenant loans) are mortgages that are made primarily on the basis of the creditworthiness of the property's underlying lessee as opposed to the standard real estate mortgage underwriting criteria such as LTV and the credit quality of the borrower/lessor. Leases are generally net, meaning that the lessee is responsible for the risks and expenses associated with the property. Except for the reliance on lessee credit quality, CTLs are essentially identical to other commercial real estate whole loans. In 1991, the National Association of Insurance Commissioners (NAIC) adopted regulations favorable to CTLs. CTLs, however, offer no regulatory advantages over standard commercial whole loans for other regulated investors besides life insurance companies.

LBS. The structures of LBS resemble simpler commercial mortgage-backed securities (CMBS) in that they employ a senior/subordinated securities design. LBS certificates are issued such that low rated classes of certificates, or "tranches," support the higher rated tranches by absorbing all credit losses until the principal of the lower rated tranches is exhausted. LBS are collateralized by leases and, in most instances, also include mortgages on the leased properties. Lease payments are used to pay interest and principal on the LBS certificates as well as pay servicing fees and fund reserve accounts.

Leases underlying a LBS transaction may be structured with several types of property and tenancy characteristics. The following table shows the eight basic structures for LBS:

	Lessee / LBS =1		Lessee / LBS >1	
	Lessee / property =1	Lessee / property >1	Lessee / property =1	Lessee / property >1
# of properties = 1	Single lessee / LBS Single lessee / prop Single property	Single lessee / LBS Multiple lessees / prop Single property	Multiple lessees / LBS Single lessee / prop Single property	Multiple lessees / LBS Multiple lessee / prop Single property
# of properties > 1	Single lessee / LBS Single lessee / prop Multiple properties	Single lessee / LBS Multiple lessees / prop Multiple properties	Multiple lessees / LBS Single lessee / prop Multiple properties	Multiple lessees / LBS Multiple lessees / prop Multiple properties

Some of the initial LBS transactions involving K-Mart and Wal-Mart fall into the structural category shown at the bottom left of the table above because: [1] there was only one lessee per LBS transaction (K-Mart or Wal-Mart), [2] there was only one lessee per property, and [3] the LBS transaction included multiple properties.

Securitization Process. Most commercial real estate loans and CMBS do not explicitly consider the creditworthiness of the lessees. A small segment of the investment community, primarily certain life insurance companies, has invested in credit tenant loans. Many investors, perhaps most, lack the expertise and/or the resources to evaluate the investment merits of real estate whole loans—credit tenant or otherwise.

Market Segmentation. Boot and Thakor (1993) and Riddiough (1997) show that asset value is maximized by splitting cash flows into informationally insensitive and informationally sensitive securities when investors are exposed to adverse selection risk. The senior/subordinated structure of CMBS and LBS accomplishes this separation. Informationally insensitive investors, who cannot assess adverse selection risk, are the target market for the senior securities. Besides addressing informationally diverse segments of the capital markets, LBS provide regulatory benefits. The higher rated LBS tranches are subject to less regulatory constraints than whole loans for non-life insurance regulated investors.

Diversification. Another benefit of securitization is diversification. Pool diversification is an important structural consideration in asset-backed security design (Childs, et al., 1996). Diversification lowers cash flow volatility provided that the individual assets are not highly correlated with one another. Investors value decreased cash flow volatility because the lower tail of asset price distribution leads to pricing discounts in an environment of asymmetric information (Riddiough 1997).

Within the realm of LBS, several correlations are important. The most obvious is the correlation between spot lease rates or underlying property value⁴ and lessee financial state variable.⁵ A second important correlation is the correlations between the cash flows of the various lessees within the same LBS. Higher correlations in either case will tend to aggravate the impact of default. Pools containing lessees with low or negative correlations to the underlying real estate, or each other, should be less risky.

Rating Agency Process. Although the rating agency process for rating LBS will be discussed in more detail in a subsequent chapter, one factor explaining the existence of a LBS market is an outcome of the rating process. “By pooling several net lease transactions, and thereby diversifying the credit risk from any one lessee, it is possible to obtain bond ratings above the rating of the lessees (Choe 1997).” The senior/subordinated structure employed by most LBS, including our case study, also drive the distribution of ratings for a particular transaction. A senior/subordinated structure will increase the range of ratings, but will not generally enhance the overall weighted average rating of a pool of assets. Data from the case study presented in Chapter 4 illustrates this phenomenon:

⁴ Property prices are generally a function of spot lease prices and other variables. Because the rate which lease prices are capitalized into asset values fluctuates, the relationship is not static.

⁵ This correlation is, as noted earlier in the chapter, also important when considering a single lease in isolation.

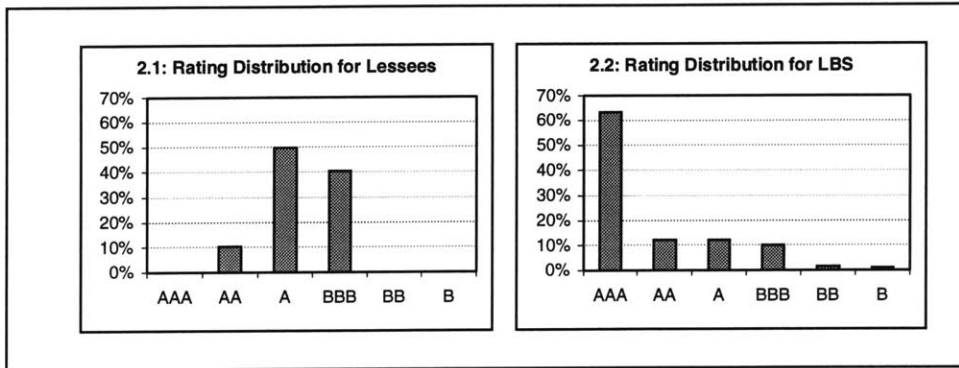


Chart 2.1 shows the distribution of lessee credit ratings for the leases collateralizing a particular LBS. Chart 2.2 shows the distribution of the credit ratings for the LBS certificates for this same transaction. The ratings for the LBS certificates are markedly higher than the ratings for the individual lessee-tenants in this same transaction. Prior to securitization, the weighted average credit rating for the lessees is approximately a BBB+. The weighted average credit rating for the LBS certificates is AA+. Securitization has improved the aggregate credit rating by two full rating categories. Yields decline as credit rating improves *ceteris paribus*. Because of the shift in credit ratings, a LBS will often have a lower weighted average yield than the weighted average yield for similar debt for each of the lessees.

Many buyers in the fixed income markets are limited to certain segments of the credit curve. For example, the Federal Home Loan Banks are limited to AAA securities. An investor limited to AAA could purchase AAA LBS certificates but could not purchase the underlying assets. A buyer limited by investment policy to AA (and without regulatory constraints) could theoretically purchase the entire pool of leases as an alternative to buying LBS if it retained one of the rating agencies to rate the pool. However, many buyers lack the expertise and resources to assemble diverse pools and the resulting investment is probably less liquid than a rated LBS certificate.

Chapter Conclusion

Space consumers and investors often lack real estate expertise. Leasing is the mechanism that separates use from ownership, so that consumers can consume without investing. LBS, of the various real estate investment instruments presently extant, most effectively separate lease cash flows from the residual value of the real estate for the investor. This separation permits the financing for the cash flow related value of the real estate to be financed at attractive interest rates and terms. Empirical facts are consistent with recently developed theoretical models (e.g., Childs, et al.), which indicate that long-term leasing is optimal with low risk tenants. Most of the LBS issued to date involve long term leases and lessees with investment grade credit ratings. Although there may be little reason for LBS to exist in efficient capital markets, we have shown that frictions arising from leasing policy incentives and outcomes of the securitization and rating agency processes provide ample rationale for the existence of these securities.

Though the process of securitizing leases as LBS shares many similarities with other asset-backed securities, it also has some unique requirements. Like other asset-backed securities, putting leases in a securitized form enhances the liquidity of a relatively illiquid asset. LBS allow borrowers and investors to realize the benefits described in the previous chapter.

We address three topics in this chapter. First, we compare traditional real estate mortgages to LBS financing. The chapter begins with a traditional loan collateralized by real estate and moves to one collateralized by leases. Second, we analyze lease contracts to show specific terms and clauses that might disrupt underlying LBS cash flow unless remedied. Potential cash flow disruptions diminish lease value because the lease payment stream, P , could be reduced. Third, we outline the LBS securitization procedure in terms of the major legal steps and vehicles that are required to create an LBS. This should further clarify the distinction between credit tenant loans and LBS.

The reader should note that throughout this chapter our central focus is single lessee-tenant buildings. Moreover, the importance of this distinction will become more evident when we explore multi-lessee-tenant LBS transactions in Chapter 5.

Traditional Real Estate Financing versus LBS Financing

Real estate has traditionally been debt financed by commercial mortgages. Though a few mortgages are made on the basis of lessee credit (see credit tenant loans in chapter 2), most loans are made on the basis of leasing contracts *and* real estate residual value. Commercial

mortgage loan-to-value ratios typically range from 60 to 80% and debt service coverage ratios¹ (DSCR) are typically 1.20 or higher. The following three examples help illustrate the key differences between traditional real estate financing and LBS financing.

Commercial Mortgage: Owner \equiv Tenant (Example 1). The simplest financing transaction involves an entity that purchases real estate for its own use. For example, suppose a firm needs a new manufacturing facility. They make a strategic decision to buy, rather than lease, an existing vacant building. They search the market, find a building, and make an acceptable offer. An appraisal report is done consisting of comparable sales figures, an estimate of what it would cost to replace the building, and a potential cash flow value based on market rental rates. The loan will be made based on the appraised dollar value of the building and the company's financial viability. Lenders lend a percentage (typical LTV ratios = 60 – 80%) of the total appraised value based on lender policy, industry trends, regulations, and deal-specific parameters. Lender LTV is calculated according to following formula:

$$\text{Lender LTV} = \frac{\text{loan amount}}{\text{appraised value}} \quad (3.1)$$

Note that an appraisal-based LTV ratio may diverge from the economic equilibrium approach, which we developed in Chapter 2, and culminated in equations 2.8 and 2.10. The LTV calculated using equation 2.8 or 2.10 uses risk-adjusted, forward-looking discount rates as well as anticipated growth in lease payments. Appraisals are based on *past* property sales and are, therefore, backward-looking.

After the lender's commitment, the purchase transaction is ready to close. The transaction is funded by loan proceeds and borrower equity. A mortgage is attached to the property giving the lender a lien on the real estate. Since most commercial mortgages are nonrecourse, the collateral backing the loan is strictly real estate. This type of transaction

¹ Debt service coverage ratio = debt service \div net operating income.

exposes the lender to risks on two fronts: real estate risk and borrower credit risk. Real estate related hazards could cause the owner-borrower to abandon the property. Because the loan is nonrecourse, the owner-borrower could "walk away" with no adverse consequences other than losing the property to the lender. The owner-borrower could also default on the mortgage for credit reasons unrelated to the real estate (e.g., the business failed). Although the lender might be able to re-lease the property to a new tenant in the second scenario, cash flow is disrupted and the new lease rate may be lower. The lender could attempt to sell the property before or after releasing. Timing and pricing of the default related sale will alter lender cash flows and debt yields.

Commercial Mortgage: Owner \neq Tenant (Example 2). This example is similar to the prior example except for one important change. Here, the owner plans on leasing the building to a separate user in exchange for rental cash flows. From the lender's perspective, his asset's (the loan's) value is now contingent on the building's ability to generate cash in the form of rent. This is markedly different to an owner-as user situation where the building is really an extension of the owner's business. Now the building is the business and the lender is exposed to risk on three fronts: real estate risks, lessee-tenant risks, and owner-borrower risks.

The lender's appetite for the loan will now be more influenced by leasability forecasts and market trends. Under the prior scenario, the loan's collateral was strictly real estate. Thus a loan decision was heavily based on LTV ratio. With a tenant-occupied building, the lender wants to maintain rental income in the event of foreclosure. This implies the lender's recognition of the importance of the "true" debt service payer: the lessee-tenant. Thus, instead of using only loan-to-value ratios, the lender follows debt service coverage ratio parameters (typically 1.20X) that measure the building's net operating income in relation to debt service.

To maintain the rental cash flow, the lender will generally predicate the loan on fulfilling

several requirements. He may require estoppel certificates that act as a guarantee from the lessee that no lessor default currently exists under the terms of the lease. The lender may stipulate in the mortgage covenants lender control of the management of existing and new lease contracts. He may also require an assignment of lease clause, which will allow the lender to directly collect rents in the event of borrower default. These and similar lender requirements protect the lender in the event of default. Furthermore, these requirements limit the ability of the property owner-borrower to impair asset value (e.g., substituting a low credit quality lessee). While this improves the lender's legal position, it does not necessarily improve the accuracy of risk-adjusted loan pricing. Lender pricing and risk assessment relies heavily on appraised value. This pricing policy, which focuses on residual real estate value rather than the value imbedded in leases, seems inconsistent after such extensive legal focus was spent protecting the lender's ability to rely on rental collection.

LBS Financing: Single Lessee-Tenant. Owner \neq Investment Grade Lessee-Tenant (Example 3). In this example, a purchaser wishes to buy a building where the lessee-tenant has an investment grade credit rating. Instead of LTV ratios and DSCRs that set standard mortgage amounts, the loan amount and price is valued as the present value of the promised lease payments. For example, assume that the tenant is the U.S. Government. The appropriate discount rate used to calculate present value of the lease is the risk-free rate because (depending on the nature of the lease contract²) the U.S. Government is a risk-free lessee-tenant. This situation is very different than the two preceding loan examples where the loan was based on the value of the underlying real estate. In this example, the lender views the rental cash flows as a corporate bond-like payment to be valued using standard discounted cash flow techniques such as equations 2.1 or 2.2.

² Even though the U.S. Government is credit risk-free, the lease may assign real estate or other risks to the lessor.

The core concept behind LBS financing is lending based upon lease cash flows rather than real estate. LBS documentation and financing requirements are similar to other income property financing methods in that the lender will require tenant estoppel certificates, assignment of rent clauses, and possibly lease contract management rights. Because an LBS focuses on lease cash flows as an economic basis for financing, more emphasis is placed on lease related issues. This means using the real estate lease as the primary collateral instead of the building. In order to understand this lease focused approach, we need to explore the fundamentals of lease contracts.

Real Estate Leases

We have already emphasized that the main purpose of a lease is separating use from ownership. Another basic lease purpose is to assign property related risk and obligations to either the lessee and lessor. Many lease clauses are easily recognizable and define such basic agreements as the dollar amount due for rent, the term of the lease, and the specific dimensions of the leased space. However, because the lease of a credit tenant is the basis for LBS cash flow, it is important to understand how these clauses can enhance or inhibit LBS financing.

Leases can be classified at a very broad level by lease type. The most desirable lease for an LBS is a "bondable" lease. A bondable lease is a lease where the lessee-tenant is responsible for all of the expenses and risks associated with the property. Triple and double net leases are two other common lease types that obligate the lessor-owner for certain expenses and risks. Leases where the lessor-owner is responsible for some expenses and/or risks may still be used for LBS, but expenses reduce net lease cash flow (i.e. P) and risks increase the discount rate. Obviously, any expense or risk that can be shifted to the lessee-tenant benefits the property owner-lessor. Lease clauses vary tremendously between contracts, and new and complex

clauses are developed continuously to handle individual legal requirements. To understand every possible lease clause would require examining every existing and proposed lease contract in the market. Instead, we discuss those common lease clauses most relevant to LBS financing.

Lease Term. A lease has a primary term of T years that expires on a certain date. LBS offer higher advance rates (i.e. higher loan-to-value ratios) with longer lease terms. Recall that we demonstrated that the LTV ratio was a function of lease term and discount rate in equation 2.8. Although LBS issued to date have used long term ($T > 15$ years) leases, LBS intermediaries are now considering shorter terms with balloon structures.

Rent. The lease dictates rent for the term of the lease. Rental cash flow streams need to be greater than or equal to the debt servicing requirements of the LBS. In terms of cash payments, rent is usually collected on a monthly basis, but actual receipt may vary considerably. Timely collection of rent becomes more important when a lease is included in an LBS. There is an intentional time delay between the payment of rent by a lessee and payment of principal and interest to LBS certificate holders to accommodate lease and LBS servicing. In addition, LBS principal and interest is usually paid semiannually in conformity with other bond-like instruments. Measures to increase rent stability and certainty can be stipulated directly in the lease or through additional estoppel agreements.

Besides basic rent, some leases require the tenant to make additional rental payments in the form of overage rent (related to sales activity) or Consumer Price Index (CPI) adjustments. These other possible cash flows are generally reserved for the owner-borrower because the simple structure of present LBS do not readily accommodate their volatility. As the LBS market matures, however, and security design evolves towards more sophisticated structures, these cash flows may prove useful or even desirable.

Property Expenses. Property expenses vary from year to year and have the potential to disrupt lease cash flows. A bondable lease, where the lessee-tenant is responsible for operating expenses, is the most desirable lease type for LBS. If any property expenses are not borne by the lessee-tenant, then the lessor must take steps to minimize or eliminate potential disruptions to lease cash flow supporting the LBS. The most significant operating expenses are generally taxes, insurance, and maintenance.

Real Estate Taxes. Nearly all privately owned real estate is subject to local real estate taxes in the U.S. These taxes vary across time depending on market assessments and legislative policies. Many leases require the lessee-tenant to pay all real estate taxes and special assessments, which removes this expense volatility from the lease. Other leases place this responsibility on the property owner-lessor. For leases where the lessee-tenant is not responsible for taxes, a reserve account from the rental income to cover potential tax increases needs to be established for these leases to handle cash flow volatility. Paying taxes through the funding of reserve accounts reduces P (lease cash flow) and L (present value of the lease).

Insurance. Buildings can also be damaged or destroyed. Lessor-owners and/or lessee-tenants need to maintain insurance policies that protect against civil suits and destruction of property. Like taxes, insurance expenses have the potential to disrupt cash flows.

Maintenance. Periodic repairs and maintenance keep the property in good working order. Of course, the most favorable arrangement from an LBS perspective is for the lessee-tenant to be responsible for all repairs and maintenance. If the lessor--owner is responsible for maintenance or repairs, reserve accounts or other funding mechanisms must be established for the lease to be acceptable for inclusion in an LBS.

Property Risks. Several real estate related risks are inherent to the property itself. In a bondable lease, these risks are borne by the lessee-tenant. Otherwise, the lessor must mitigate the risks not borne by the lessee. Some of the more significant property related risks are summarized below.

Casualty and Condemnation. The lease may obligate the lessor to restore damaged property. Often these repairs must be completed in a specified time frame or the lessee-tenant will have the right to abate rent or terminate the lease. LBS lenders usually require rental insurance policies that cover reasonable repair time estimates in addition to general building insurance to manage this potential cash flow volatility.

Environmental Contamination. Environmental liability can be extensive and far-reaching. Lenders often require Phase I and possibly Phase II reports documenting that the property is free from such problems. In addition, lenders may prepare for possible future contamination by establishing reserve funds from rental cash flow. Building location and tenant business use affect environmental risks and required reserves.

Borrower Risks and Other Lease Considerations. Potential cash flow disruptions are not limited to just property related expenses and risks. The borrower, which is usually the property owner and lessor, has the potential to disrupt cash flows. Common lease provisions also possess disruptive potential.

Entity. Even though a property may have an investment grade lessee-tenant, few property owners possess the financial position to be considered investment grade. Because the lessor-owner can disrupt cash flows for reasons unrelated to the property or the lessee (e.g., lessor-owner-borrower declares bankruptcy), LBS usually require a bankruptcy remote entity as lessor-owner-borrower.

Subletting. Real estate leases frequently allow the existing lessee to sublet the

space to another tenant. If this is allowed in the lease, it is important that the original rated tenant remain responsible for all lease terms, especially rent.

Delivery of Described and/or Improved Space. A lease will require that space be delivered to a tenant as it is described in the lease. It may also require the lessor to make certain improvements to the space before the lease term. Estoppel certificates signed by the lessee-tenant verify that the lessor has performed these obligations so that potential legal challenges and rent abatement situations are avoided.

Default by Tenant. Leases typically have clauses that prescribe default procedures in the event that a tenant frustrates his lease obligations. This is particularly important in an LBS transaction where the rental cash flow is directly responsible for the lender's debt service. LBS provisions give the servicer (or special servicer) the ability to manage default situations. These provisions enable the lender to implement remedial actions in the event of lessee-tenant default.

Default by Lessor & Tenant's Right to Offset. Default by the lessor-owner under the LBS/loan agreement may create problems for the lessee-tenant even though they are not directly bound to the investor in an LBS. In the event of borrower (lessor-owner) default, the tenant may desire to attorn the lease.

Covenant to Operate. Lessee-tenants may or may not be bound to continue operating their business in the demised premises during the term of the lease. For LBS financing, these clauses usually stipulate that if the tenant chooses to cease operating in the space he is still obligated to make rental payments and, to the extent required, all other expense obligations. This issue is also relevant when a building's rental success is dependent on revenue generating externalities. In a shopping mall, for example, a "lights out" anchor tenant may harm the prospects of other mall tenants. This problem,

which involves multi-tenant-building issues, is further explored in Chapter 5.

Clean Title. The individual loans within an LBS normally include a first mortgage on the properties. Many liens, nevertheless, can be attached at a later date and stand in front of the LBS mortgage (e.g., mechanic's lien, tax lien). Reserve requirements need to be in place so that these liens can be removed, leaving the LBS financing in first position.

Legal Compliance. In some leases, the lessor may incur additional expenses to meet new federal, state, or local governmental requirements. The Americans with Disabilities Act (ADA), for example, required many landlords to make substantial upgrades to their properties. Reserve funds need to anticipate these potential costs and loan clauses should enable the lender enough oversight to stop any unnecessary borrower decisions that may violate statutes.

LBS are designed to isolate lease cash flows. Nonetheless, a lease contract fundamentally ties a lessee-tenant to a particular building. Thus, in order to fully isolate the lease cash flow from the property, the LBS transaction needs to mitigate the real estate and other risks and obligations that may be assigned to the lessor. A bondable lease accomplishes this task most efficiently by assigning all property-related risks and expenses to the lessee-tenant. Moreover, a bondable lease allows the rental stream to exist free from all real estate related cash flow disruptions and will generate a higher P (fixed lease cash flow) and higher LBS sales proceeds. If a lease is not bondable, then mitigating measures must resolve any potential cash flow disruptions. These measures will reduce P, which in turn reduces L (the present value of the lease cash flow = LBS sales proceeds in equilibrium).

LBS Procedure

LBS issued to date have used one of two approaches to create securities. The first

approach involves accumulating conduit-originated mortgages that become part of a larger pool of loans that are later sold as securities. This approach is more commonplace because most LBS deals involve leases that are not individually large enough on a dollar basis to form a successful security issue. The second, less common, approach involves larger LBS deals that are financed in their securities form immediately without the original conduit mortgage.

Securitization of Accumulated Conduit Loans. Suppose a property owner wishes to finance (or refinance) a building that is leased to a credit rated tenant on a long-term basis. The conduit lender's legal counsel reviews the lease to identify any real estate risks and expenses that the borrower (owner-lessor) is responsible for and designs methods to remedy them. A special purpose vehicle (SPV) is usually established as the entity that is property owner, lessor, and borrower. The SPV's corporate charter precludes the SPV from declaring bankruptcy. Using an SPV significantly reduces lessor-owner credit risk. Once the SPV is created and the loan is priced on a discounted cash flow basis, loan proceeds transfer from the lender to the SPV and then to the SPV shareholder(s), (typically the property owner). A note, mortgage, and assignment of rents contract is transferred from the SPV to the conduit lender.

Keep in mind that at this stage, the conduit lender is typically an interim lender that plans on selling the loan as part of an LBS. The conduit transfers the note, mortgage, and assignment of rents to a pool known as the Trust. The Trust is enabled through its bylaws to issue pass through certificates which are ultimately the LBS Security. The Trust generally elects to be viewed as Real Estate Mortgage Investment Conduit (REMIC), which allows it to avoid federal tax liability at the entity level. From a mechanical standpoint, the REMIC plans on issuing pass through certificates after an adequate number of whole loans have entered the pool. Once the pool achieves its desired size, the certificates are rated by a rating agency based on a variety of factors (see Chapter 4 "Rating Agency Process"). The LBS is then underwritten

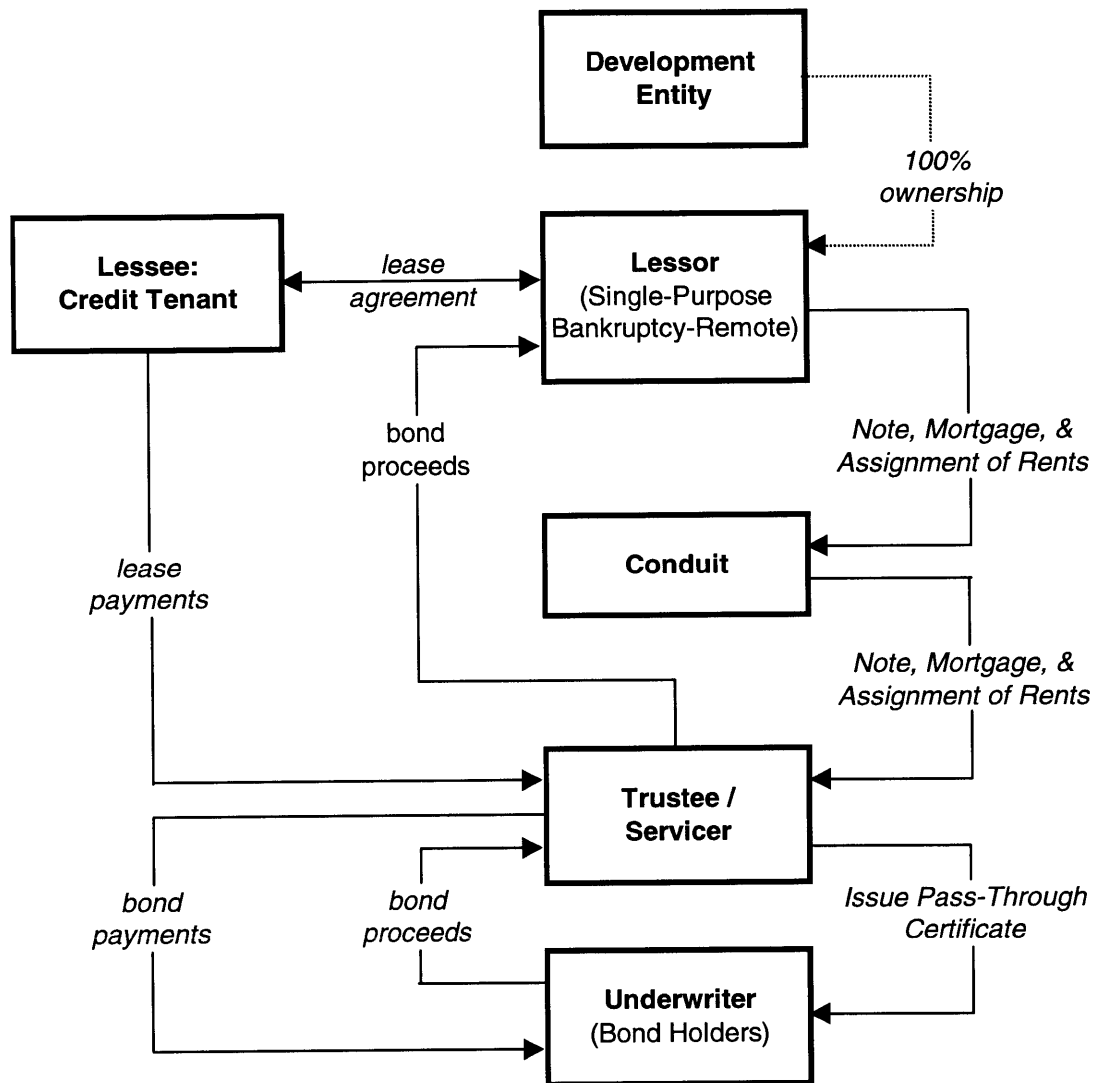
by a securities dealer, and sold to investors at market yields. Generally, LBS certificates have been sold through the private placement market but this is due to the relatively small size of the current LBS market and the novelty of the security rather than any legal constraints.

Rental cash flow and reserve fund infusions are managed by the Trust through a servicing agent (the Servicer) and flow directly from the tenant to the trustee and finally to the certificate holders.

Immediate Securitization. Leases that possess enough value to form their own security can bypass the conduit step involved in smaller leases. Once again, legal counsel reviews leases and other related documents to identify similar property or borrowing entity-related estate related risks and expenses. An SPV is created as the owner, lessor, and borrower. The note, mortgage and assignment of rents are transferred directly from the SPV to the Trustee who transfers them to the underwriter who sells them to the ultimate certificate holders. The loan proceeds move from the certificate holders to the underwriters to the Trustee to the SPV and finally to the SPV shareholders. Again, rent collection, disbursement, and reserve fund infusions are handled by the Trustee through a servicer arrangement.

Both of the preceding approaches have risks and benefits. The use of the conduit mortgages allows lenders to securitize smaller loans by pooling them. However, loans that sit in a pool waiting to be securitized and sold are exposed to interest rate and credit risks. If a lessee-tenant's credit rating is downgraded during the holding period, the dealer or conduit will likely realize reduced sales proceeds. The second procedure, which skips the initial conduit step, avoids these risks, but these deals are uncommon. Both structures create an investor security that is supported by credit tenant lease cash flows.

The following diagram shows a typical transaction structure for LBS under either the accumulation or immediate securitization approaches:



Chapter Conclusion

The process of creating LBS shares many similarities with the process used to create other asset-backed securities. A key difference between the two is that real estate generates many externalities compared to other assets. Many of these externalities have the potential to disrupt lease cash flow if the lessor is legally responsible. As a result, a major focus of creating LBS involves isolating and protecting lease cash flows from the disruptive potential of real estate externalities.

Early LBS, such as the K-Mart transactions, involved a single lessee per LBS, multiple properties, and a single lessee (tenant) per property. Several more recent transactions, such as the case study presented in this chapter, involve multiple lessees per LBS, but only one lessee-tenant per property.

We plan to accomplish four objectives in this chapter. One, we describe the rating process for LBS which differs from the rating process for standard commercial mortgage-backed securities (CMBS). Two, we discuss the financing merits of LBS in comparison to other existing alternatives. Three, we discuss the investment merits of LBS vis-à-vis assets with similar characteristics. Four, we present a case study of a recent LBS transaction.

Rating Agency Process

The rating agency process for LBS begins with a determination of the credit quality of each lessee. Using leases where the lessee already has a credit rating expedites this step. While the rating agencies look primarily to the credit of the underlying lessees in LBS transactions, they remain concerned about real estate and borrower risks much like conventional real estate financing. The rating agencies remain concerned about the residual component of real estate value because of their emphasis on the lower tail of asset price distribution. Real estate risks considered by the agencies are outlined in exhibit 4a:

Exhibit 4a: Real Estate Risks		
• Casualty	• Condemnation	• Environmental
• Zoning changes	• Structural	• Common area maintenance
• Vacant property	• Exclusivity clauses	• Obligation to restore or rebuild

A landlord (i.e. the lessor) assumes real estate risk when lease provisions require him to perform certain obligations or allow the lessee to abate rent or terminate the lease in certain situations. Borrower risks are related to the borrowing entity itself, which is often also the property owner and lessor. For example, unless the borrower was set up as a bankruptcy remote SPV as described in chapter 3, the borrower could declare bankruptcy for reasons unrelated to the property. Typical borrower related risk considerations are listed in exhibit 4b:

Exhibit 4b: Borrower Risk Considerations

- Entity (special purpose bankruptcy remote lessor as borrowing entity is best)
- Ownership transfer (should be disallowed or heavily restricted)
- Assignment of rents and leases (assigned to lender)
- Title to property (should be "clean")
- Lease payments (should fully amortize the debt)
- Debt maturity (should be \leq lease expiration)
- Tenant improvements (should be fully constructed)
- Interest rate risk (fixed is much better than floating rate debt)
- Commencement of lease payments (better if they have started)
- Certificate of occupancy (should have been secured for lessee)
- Tax lot (should be separate)
- Debt service coverage ratio (should be ≥ 1.00)

One of the key variables dictating real estate risk is the type of leases underlying a transaction. A bondable or "hell or high water" lease has no landlord obligation or risk; all of the real estate risk is borne by the lessee. The lessee pays unabated rent under all circumstances and is responsible for every expense and obligation of the leased property. A nearly bondable lease is the same as a bondable lease except that the landlord assumes casualty and condemnation risk. A triple net lease requires the landlord to be responsible for casualty and condemnation risks plus structural repairs and maintenance. A double net lease adds responsibility for certain operating expenses and maintenance to the triple net risks and

obligations. Exhibit 4c summarizes the various lease types and the attendant landlord risks and obligations:

Exhibit 4c: Lease Type Summary	
<u>Lease Type</u>	<u>Landlord Risks & Obligation</u>
Bondable	none
Nearly bondable	casualty and condemnation
Triple net	nearly bondable risks + structural repairs & maintenance
Double net	triple net risks + certain operating expenses & maintenance

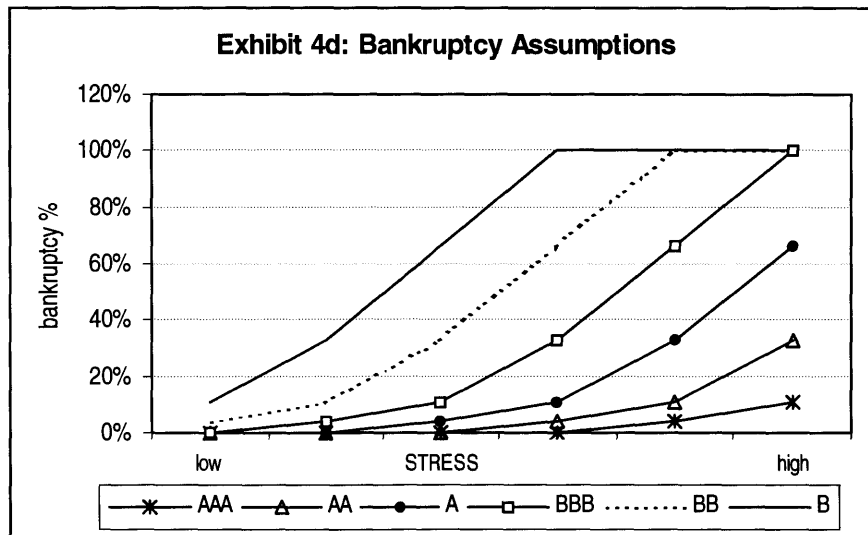
Ideally, lease terms should allow for the accomplishment of several tasks. One, the lease should provide for timely pass through of principal and interest payments to the underlying mortgage loan. Two, the lease term should fully amortize the mortgage loan. Three, to the extent that any lease is not bondable, lease payments should fund the build up of required reserves to mitigate possible cash flow disruptions. Four, lease payments should be adequate to pay trust and servicing expenses after funding principal, interest, and reserves.

Diversity of leases in a LBS deal affects the credit ratings the agencies assign to various classes. The credit rating for each lease is usually assigned by the rating agency's corporate debt group and is usually equal to the lessee's senior unsecured debt rating. In a single-tenant lease deal involving a bondable lease, the *overall* credit rating on the transaction will not exceed the credit rating of the lessee. If the single-tenant transaction is split into separate credit classes, the classes with ratings above the lessee's credit rating must be supported by subordinate classes with lower ratings. In a multiple lease transaction, diversity can increase the rating of the total pool. Fitch, for example, typically issues ratings two categories above the highest rated credits for a pool with 10 or more underlying leases. For pools with 30 or more underlying leases, Fitch often issues ratings three categories above. The mix of underlying lessee credit ratings also affects the assignment of ratings to the LBS.

Rating agencies calculate subordination levels for LBS transactions in a manner similar to the approach used for standard CMBS. The following equation determines the initial required subordination:

$$[\text{Bankruptcy \%} \times \text{Disaffirmation \%} \times \text{Loss \%}] + \text{Add-ons} \quad (4.1)$$

The percentage of a pool projected to file bankruptcy is derived from historical studies of corporate default. Many early LBS lacked the industry diversity inherent in the historical corporate bankruptcy studies. For example, some of the early deals contained leases only for discount department stores like K-Mart and Wal-Mart. Bankruptcy assumptions will be higher than what the historical studies indicate when pools lack sufficient diversity. The bankruptcy percentages for each rating category vary over a range of stress environments. Bankruptcy assumptions are applied to the number (as opposed to the dollar amount) of credits in each rating category because of the binary nature of bankruptcy.¹ Exhibit 4d shows the bankruptcy assumptions for various rating categories over a range of stress environments:



¹ The assumptions are applied to the number of credits (not dollar amount) in each category. Bankruptcy

A bankrupt lessee may either affirm or disaffirm its lease obligations. By disaffirming a lease, the bankrupt lessee is rejecting the obligation. After determining bankruptcy assumptions, the rating agency assigns disaffirmation probabilities. Disaffirmation ratios are based on historical lease rejections in bankruptcy proceedings. These ratios vary inversely with credit ratings and range from 50% to 100%. Higher rated credits are near the lower end of the disaffirmation range and lower credits near the upper end. Disaffirmation rates increase as the stress environment becomes more hostile. The potential value of an individual lease to the lessee is important too. A more valuable lease, with below market rent for example, is less likely to be disaffirmed by a lessee in bankruptcy.

The rating agency assigns a loan loss assumption to disaffirmed leases. Assumed losses normally range from 50% to 60% of the initial loan balance but may go as high as 100% in some instances. Loss assumptions increase as environmental stress increases. Factors affecting loss assumptions include the initial LTV of the underlying loan and the nature of the property. High LTV loans and single-purpose or single-tenant buildings (a discount store for example) will have higher loss severity assumptions. Other loan loss factors include the market location, property location within the market, property age, amortization rate, and current market rent.

Add-ons cover additional risks not reflected in the bankruptcy, disaffirmation, or loss severity variables. Most of these additional risks are associated with nonbondable leases and reflect the real estate or borrower risks discussed previously (and listed in exhibits 4a and 4b). If the additional risks are not adequately mitigated, then the rating agency will increase the subordination level. Exhibit 4e lists common real estate risk mitigation techniques and exhibit 4f shows lease related considerations:

is binary because the lessee either does or does not file bankruptcy.

Exhibit 4e: Real Estate Risk Mitigation Techniques

- Additional insurance
- 3rd party reports (engineering, environmental)
- DSCR > 1
- Escrow accounts and/or asset specific reserves
- Letter of credit provided by rated entity
- Excess spread held in account for Trustee
- Advancing by Servicer
- Credit Subordination

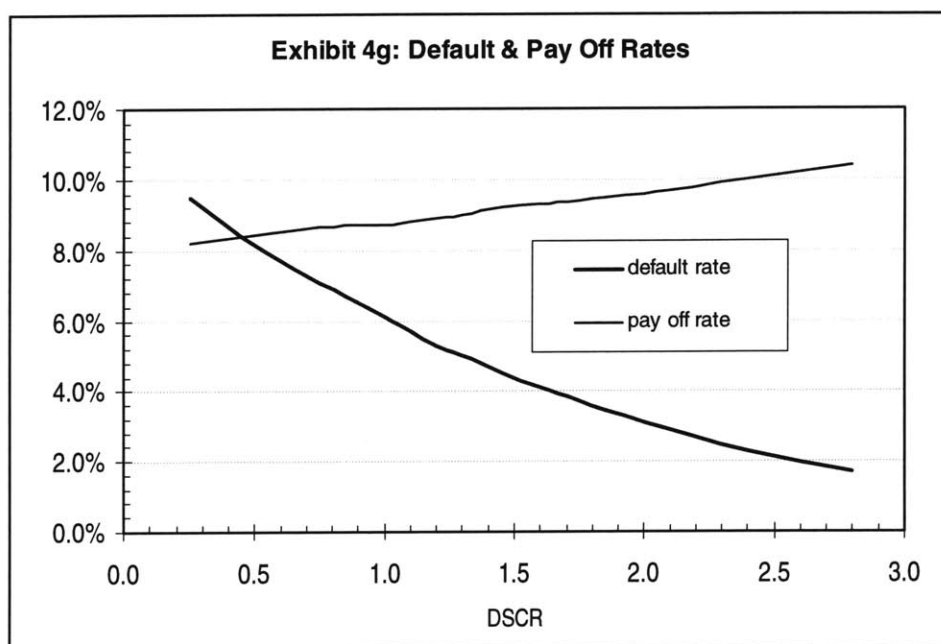
Exhibit 4f: Lease Terms & Considerations

- Lessee indemnification of lessor (for everything related to property if possible)
- Lessee attornment to lessor (agree to be tenant for new owner)
- Lessee estoppels
- Payment method (best for rent to be paid to lock box)
- Rated entity responsible for base rent (even if assigned or sublet)
- Rent level (base rent \leq market level)
- Default notification (lessee requirement to notify lender of any default under lease)
- Cure period (best if lessee gives lessor extended cure period)
- Lease modifications (ideal is none without lender consent)

Using equation 4.1, a subordination level is calculated for each rating category in each stress scenario. The subordination levels are then summed to calculate the subordination level required for the entire pool.

The rating agency process for LBS differs from the techniques used to evaluate standard CMBS. Rating agencies state that DSCR is not a major factor in rating a LBS deal, but plays a key role in rating standard CMBS. Exhibit 4g (see next page) graphs default and pay off rates for 2,229 real estate loans in early CMBS. Though both variables appear to be related to DSCR, the relationship between DSCR and default is particularly pronounced. The graph

demonstrates why the rating agencies emphasize DSCR in standard CMBS. Because LBS are structured differently than CMBS (e.g., bankruptcy remote borrowers for LBS), DSCR is less of a factor. In addition, most of the LBS transactions we have reviewed incorporate prepayment lockouts and penalties.



Financing Merits of LBS

The modern CMBS market began in 1991 with the securitization and liquidation of RTC loans and then progressed in the mid-1990s to the securitization and disposition of seasoned assets held by insurance companies. By late 1994, this market had evolved to encompass the origination of new commercial mortgages. Like CMBS, LBS can be constructed of appropriate seasoned assets (e.g., credit tenant loans) or new assets. LBS issued to date have used new loans because of the inventory of suitable seasoned assets is extremely limited. From the borrower's perspective, LBS have two features that make them potentially more desirable than alternative financing mechanisms: more liberal underwriting criteria and lower debt costs.

Underwriting Criteria. Because LBS receive their ratings on the basis of lessee credit quality, Borod (1995) notes that LTVs can be much higher and DSCRs much lower than comparable financing using traditional underwriting criteria. Instead of an LTV < 80% and a DSCR > 1.2 borrowers are often able to achieve LTVs in excess of 100% and DSCRs as low as 1.0. For example, DSCRs for Dillion, Reed 1994 K-1 was only slightly in excess of 1.0.

Debt Costs. LBS credit yields spreads, the amount of extra yield a borrower pays to compensate investors for credit risk, may be very tight for transactions where the lessee has an investment grade credit rating. For a single lessee transaction (the K-Mart and Wal-Mart LBS are examples), the LBS normally trade at spreads of $\leq .50\%$ ² over comparably rated corporate bonds. In a multiple lessee transaction, spreads might be tighter because of the diversification benefits described in chapter 2 and in the "Rating Agency Process" section above.

Investment Merits of LBS

In contrast to many real estate related assets, LBS should appeal to a wide range of investors. The LBS structuring process creates a range of credit and maturity tranches that is broader than the underlying assets. Within the fixed income market, LBS are most similar to commercial mortgages (whole loans), CMBS, and corporate bonds.

Commercial Whole Loans. Life insurance companies, banks, and thrifts have traditionally been the largest investors in commercial mortgages. Credit tenant loans represent a distinct segment within the commercial real estate whole loan market and, therefore appeal to an even more limited spectrum of investors. The reasons that LBS may have at least as broad, and perhaps even broader, investor audience than whole loans include the following:

Expertise. Commercial mortgages are almost always nonrecourse. As a result,

² There is an inverse relationship between credit rating and spread.

unlike other fixed income investments, whole loans require significant expertise with respect to the underlying real estate collateral. Riddiough (1997) and Synderman (1991) point out that there is a dearth of historical data on commercial mortgage performance and that very little literature exists on the investment economics of this market. Higher rated tranches of LBS will appeal to investors lacking knowledge of, or experience with, real estate. Investors possessing real estate expertise and desiring high returns may prefer the lower rated and/or unrated tranches.

Range of Maturities. Whole loans lack the range of maturities of competing investments. Average whole loan maturities averaged over twenty years prior to the early 1980s. Initial maturities now range from 3 to 10 years. LBS can be structured to create a wider range of maturities than is feasible with whole loans.

Range of Risk/Return Opportunities. LBS allow a wider range of risk/return investment opportunities than whole loans. For example, there are very few AAA entities and, consequently, credit tenant loans of (CTLs) AAA credit quality are not generally available. Most LBS contain large tranches of AAA securities. At the other end of the credit spectrum, LBS typically have tranches that possess higher expected returns and much higher risk than whole loans.

Regulatory Constraints. In the early to mid 1990s, regulatory pressure has reduced participation in the whole loan market by insurance companies and depository institutions (Quigg 1993). According to Wurtzebach (1995), thrifts are out of the commercial mortgage market and banks and insurance companies operate under new risk-based capital requirements that make whole loans less attractive. As noted in chapter 2, NAIC recently relaxed regulatory requirements for CTLs. For regulated entities other than insurance companies, CTLs offer no regulatory benefit over whole loans. Securities generally receive

more favorable regulatory treatment. The quest for yield in the current low yield (and low yield spread) environment has recently drawn some regulatory-constrained investors back into the market.

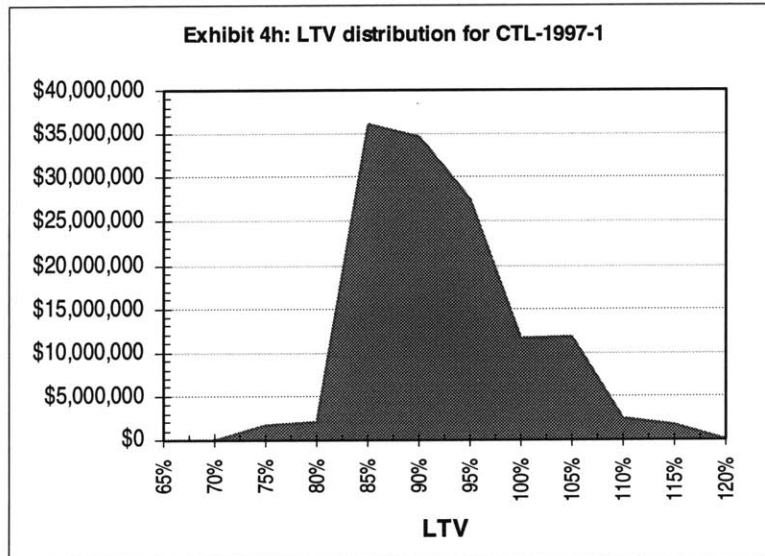
Commercial Mortgage Backed Securities (CMBS). CMBS are pools of commercial mortgages. From a structural perspective, LBS most resemble CMBS. CMBS appeal to a wide range of investors for the same reasons described above for LBS. The primary difference between CMBS and LBS is the credit perspective for the underlying assets. The commercial loans underlying a CMBS are underwritten using traditional real estate loan underwriting criteria such as LTVs and DSCRs. Assets underlying an LBS (leases and/or mortgages) are underwritten primarily based on the creditworthiness of the lessee(s).

Corporate Bonds. In some respects, LBS are more similar to corporate bonds than CMBS. LBS are generally designed to eliminate most real estate risks either by the lessee taking on these risks and/or through other mitigating measures. Like corporate bonds, the financial health of the lessee(s) is the fundamental determinant of LBS performance. The underlying assets for some LBS (the case study presented here is one example) include both leases and mortgages on the properties. While the leases have similar credit characteristics to corporate bonds, mortgages provide additional security for the LBS. If a lessee defaults, the real estate can be sold or re-leased.

Case Study: Capital Lease Funding, L.P. 1997-CTL-1

CLF's (Capital Lease Funding) 1997-CTL-1 transaction, from the first quarter of 1997, illustrates many of the features of this emerging financing vehicle. CLF, which originated the mortgage loans (secured by both the leases and the property) underlying this transaction, has pursued a market niche by refinancing over-leveraged properties with investment grade tenants.

This transaction is collateralized by 30 mortgages with a weighted average LTV \approx 95% and maturity \approx 20 years; see exhibit 4h for LTV distribution:



Although two of the properties are vacant, both lessees are still making lease payments.

Interestingly, the private offering memorandum makes no mention of DSCR.

This transaction resembles standard CMBS structures and incorporates a range of credit and maturity tranches. The following table summarizes the basic structure and pricing:

Class	Rating Duff/Fitch	Class Size	% of Total	Credit Support	Exp WAL (years)	Repayment Window	Spread over Treasury	Reference Treasury
A-1	AAA/AAA	\$23,939,902	18.50%	36.50%	3.1	mos 1 – 75	.52%	3 yr
A-2	AAA/AAA	40,439,024	31.25%	36.50%	10.0	75 – 157	.79%	10 yr
A-3	AAA/AAA	17,793,170	13.75%	36.50%	14.3	157 – 186	.87%	Curve
IO	AAA/AAA	129,391,938	NA	NA	12.7	1 – 305	2.50%	12.7 yr
B	AA/AA	15,528,585	12.00%	24.50%	16.6	186 – 210	.87%	30 yr
C	A/A	15,528,585	12.00%	12.50%	18.8	210 – 242	1.05%	30 yr
D	BBB+/BBB	6,146,731	4.75%	7.75%	20.9	242 – 262	1.45%	30 yr
E	BBB/BBB-	6,793,756	5.25%	2.50%	23.0	262 – 288	1.75%	30 yr
F	BB/BB	1,941,073	1.50%	1.00%	24.3	288 – 295	Would not disclose.	
G	B/B	1,294,052	1.00%	0.00%	24.8	295 – 305	Would not disclose.	
Total		\$129,404,878			12.7			

Principal payments, including those triggered by default, are sequentially applied to each class. Characteristics of the 30 loans and leases underlying the transaction are shown in exhibits 6b and 6c. Note that 97.5% of the class have an investment grade rating and that over 75% of the deal is rated AA or higher even though the highest credit rating for any of the underlying lessees is A. The loans incorporate a prepayment lockout for the first 8 years and a yield maintenance penalty (calculated flat to Treasuries) thereafter. Security includes first liens on all properties, absolute assignment of all leases and rents, estoppels on all properties, subordination and non-disturbance agreements, and property reserve accounts for certain loans. All borrowers (i.e., lessors) are special purpose, bankruptcy-remote entities. CTL-1997-1 was distributed as a private placement and sold to Qualified Institutional Buyers and Institutional Accredited Investors. Resales are limited to the same universe of buyers.

Of the 30 leases underlying 1997-CTL-1, only 22% were bondable leases. The remaining 78% of the triple and double leases left real estate with the borrower. As a result, a number of risk mitigation measures were implemented. The following table summarizes the major risk mitigation measures by lease type:

Lease Type	Abatement/Termination Event	Mitigating Action(s)	Lease as Enhanced
Bondable	None	None	No change
Triple net (NNN)	Condemnation or casualty Hazardous material, restrictive use	Non-cancelable policy from AAA insurer AA backstop to Servicer's lease support action	Bondable
Double net (NN)	Same as NNN above Structural repairs & maintenance	Same as NNN above 125% escrows	Bondable

Although we were unable to review the Servicing Agreement, the Servicer's ability to modify the loans appears to be limited. Extensions are generally limited to 12 months or less. Unlike some CMBS, the Servicer (which is also the Special Servicer) does not seem to be controlled by the lower

rated classes. All classes have voting rights.

The offering memorandum argues that this security compares favorably in certain respects to alternative investments. 1997-CTL-1 employs a senior-subordinated structure similar to standard CMBS. Unlike most standard CMBS, however, all of the tenants are investment grade. The risk mitigation measures further increase the reliability of the monthly payments. Because risk from voluntary prepayments is reduced with the lockout and yield maintenance provisions, these securities may have less prepayment risk than CMBS that include loans with voluntary prepayment provisions. The CLF securities are similar to corporate bonds in that both represent unconditional promises of a corporation to pay a stream of cash flows. In contrast to unsecured corporate debt, these securities have the additional security of liens on real estate. The reserve funds might enhance recoveries in the event of default. Despite the advantages outlined in the offering memorandum, we believe that prospective investors should keep in mind the high amount of leverage employed for the loans underlying this deal. Most standard CMBS have much lower LTVs than 95%. And, most corporate bonds are issued by companies operating with debt to equity ratios lower than 19 to 1.³ This transaction involves much higher leverage than the securities used as comparisons in the offering memorandum.

Conclusion

All investors are concerned with credit ratings and many investors are restricted to credit rating categories. In chapter 2, we described how rating agency process could enhance the overall credit rating of a pool of leases. Because of the importance of credit ratings, we provided additional detail in this chapter.

LBS appear to offer advantages over traditional real estate financing alternatives while, at

³ A 95% LTV equates to a debt-to-equity ratio of 19 ($.95 \div .05 = 19$).

the same time, expanding the market for real estate debt instruments. Since LBS are attractive from both a borrowing and a lending perspective, we expect this market to continue to grow.

“The free standing Kmart or WalMart box lends itself to securitized lease financing because of the absence of the real estate complexities involved in multi-tenanted shopping centers and because the certificates can be rated on the basis of a single credit tenant (Borod 1995).” Although we have discussed the U.S. leasing market and leasing economics in broad terms, our treatment of LBS has been limited so far to LBS with single lessee-tenant properties. Many commercial properties have multiple lessee-tenants. We now turn our attention to LBS transactions involving properties with multiple lessee-tenants. As the Borod quotation suggests, the real estate complexities of multiple lessee-tenants add new challenges in creating LBS. The inclusion of multiple lessees in a single LBS may have positive economic and rating benefits as described in Chapter 2 and shown with the Chapter 4 case study. Multiple lessees may alternatively pose problems when one or more lessees lack a credit rating. Before the LBS can be rated, the rating agency must know the credit quality of all lessees. A related problem may arise if more than a few lessees have poor credit ratings.

In this chapter we achieve three tasks. First, we explore the real estate and lease consequences that multi-lessee-tenant properties may have LBS transactions. This section will identify the structural problems in the LBS transaction and show that the complexities of multi-lessee-tenant properties may require layered ownership structures in order to isolate lease cash flows from the real estate. Second, we explore the different lease contract scenarios that might inhabit an LBS pool¹ and shed light on the importance of lease clauses to multi-tenant properties. Third, we use the rationale introduced in the first two sections of this chapter to hypothesize on property types and real estate markets that contain the appropriate leasing

fundamentals and market attributes for successful LBS transactions with multi-tenant buildings.

Structure and Lease Contracts

The economic essence of LBS rests upon the risk adjusted present value of the lease cash flows. A mortgage on the property and an assignment of rents provides additional security in the event of default. Certificate investors look to the mortgage and assignment of rents as a pledge of security. In a single tenant building, the mortgage and the lease refer to the same premises and behave as dual claims on the property. Should default occur, the investor is clear on what his rights are and the best course of action to cure.

In a multi-tenant building, the mortgage and assignment of rents clause are complicated by the existence of multiple lease contracts at the real estate level. Whereas a single tenant building has only two ownership claims on the property—the fee ownership and the lease right to use—a multi-tenant building expands the number of claims and intertwines with one another. Two or more leases divide a building into multiple units with spatial claims that are different from the mortgage claim on the entire property.

Thus, if multi tenant LBS transactions followed the same structure as single tenant transactions, investors would rely on the security of multiple lease cash flows and a single mortgage. However, suppose that only one of the tenant cash flows were interrupted and caused a default on the debt, while the other rent obligations were still performing. In this situation, it seems impractical to seize the entire building when the true default situation needs to be corrected by seizing one individual leased space. The underlying legal problem,

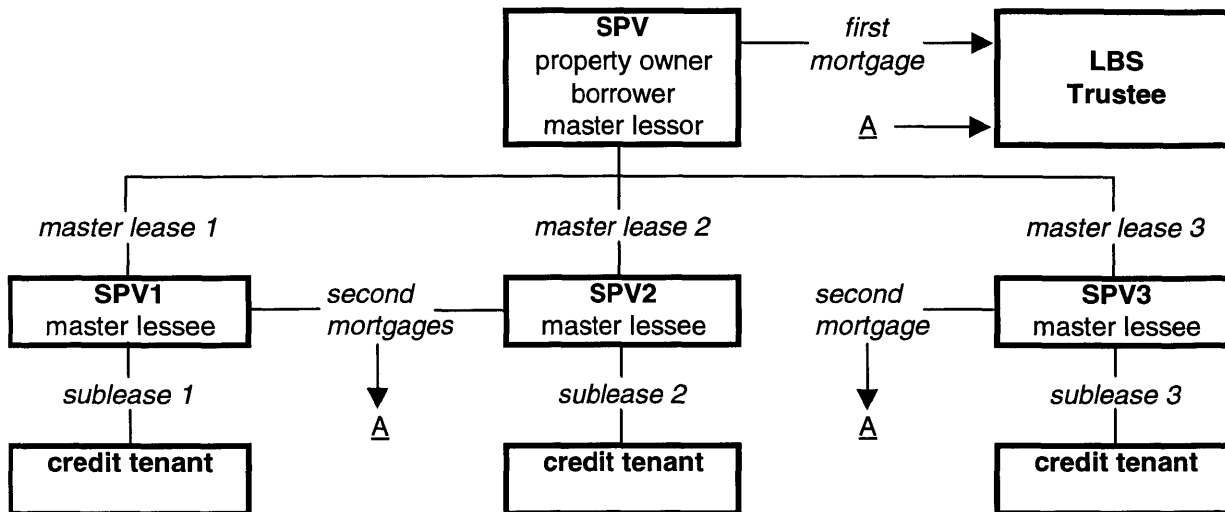
¹ Recall from the matrix presented in chapter 2 that there are 8 basic LBS transaction scenarios.

therefore, for multi-tenant LBS is the method used to separate the individual leased spaces in the building so that they stand alone and can be attached in a mortgage form separately.

One method of separating the leased spaces employs the use of condominium structures. Individual condominiums create described premises that can be recorded as separate real estate parcels and owned in fee. In commercial LBS transactions, condominiums allow leased space to coincide with mortgage space clarifying the legal claim. Essentially, condominium use creates a number of single lessee-tenant LBS transactions in a multi-tenant building. LBS investors are clear about their foreclosure rights and capabilities and lease default or performance because leases are matched with mortgages.

Condominium structures work well with buildings that are physically divided naturally like retail strip centers or industrial facilities. In these buildings design and construction center around physical division of space in a prescribed format. In buildings that are less formulaic like offices, condominium separation of space is also feasible but much less practical. These buildings are designed and built to allow internal flexibility of use in an inflexible outer building shell. They rely on leases to form short-term claims that make the division and redivision of space easy. The use of condominiums to divide space, while feasible, is much less flexible than a lease because of the legal steps involved in condominium formation and modification.

A better solution that divides tenant spaces from one another without impairing spatial flexibility might be the use of a "stacked" lease format. The borrower is established as an SPV for bankruptcy remoteness. New "master" leases are created for the different leased premises. This creates individual lessor/lessee positions within the building and separates space. Each individual leased space is then subleased to the "true" credit tenant. The leases are "stacked" in the following format:



The credit tenant is the sublessee to the individual “master” sublessors who in turn are lessees to the SPV lessor.

A first mortgage is attached to the property and is reserved as a means of last recourse. Each lease is then lent against in a subordinated ground lease like position. For default purposes, this allows the success or failure of each leased space to be recognized individually and work out or foreclosure procedures to be handled separately within each leased unit. If one sublessee (i.e. the credit tenant) defaults, the LBS servicer can take remedial action on that sublease alone without foreclosing on the entire property. One of the available remedies is foreclosing on the second mortgage, which is a lien on the master lease. Any losses associated with the individual lease default are first passed to the junior certificate holders. In a worst case scenario, when many sublessees default and the level of potential losses threatens the senior tranches, the servicer could foreclose on the entire property using the first mortgage and deliver residual proceeds to the senior certificate holders first.

The advantage of this stacked lease approach, in comparison to the condominium approach, is that it allows the LBS servicer to act on individual leased spaces without creating

an inflexible real estate division system like condominiums. As subleases mature and expire, they simply vanish as property claims until new (sub)leases were signed under the master lease. In the event of lease default, the LBS special servicer could more accurately manage the leased space in question without being obligated to acquire the entire building through foreclosure.

As with single tenant buildings, the nature of lease contracts can affect multi-tenant LBS transactions. In Chapter 3, we outlined many of the relevant lease clauses and described why they may prove problematic and how they can be remedied. We now expand this analysis to multi-tenant buildings.

Lease Term. It is unlikely that different tenants will have the same base lease term in a multi-tenant building. While this complicates the financing of multi-tenant buildings, it does not limit LBS application. Once the building is separated into compartments (using the condominium or stacked lease approaches), each lease term can be viewed as a single cash flow term that would be pooled in the LBS securitization process as if the cash flows came from independent buildings.

Term length is a more serious issue for multi-tenant LBS. Many multi-tenant buildings have a mix of short and long leases which will effect the loan proceed amount for each lease cash flow. The weighted average lease term and/or the weighted average lease credit quality may be insufficient to produce the desired level of leverage. Recall that lease present value and LTV are a function of term and risk-adjusted discount rate (net of growth). Lease credit quality affects discount rate and, in an equilibrium absent the frictions we outlined in Chapter 2, lease payment. If the building is not capable of being fully financed from the leases, then a more traditional "real estate like" financing piece may need to be added. This does not, however, preclude an LBS component in the transaction. The most valuable lease contracts (i.e. those

with long lease terms and/or high credit quality leases) may receive the highest loan/sales proceeds through LBS execution.

Rent. Base rent amounts tend to vary across tenants, but this does not create problems because each lease is viewed as a separate asset to be valued. Overage rent, though potentially valuable as LBS collateral, is more problematic because it generally depends on the success of all the building's tenants. Shopping center overage rent, for example, relies on the success of the anchor tenants. If the anchors are unsuccessful then it is unlikely that the landlord will receive overage rent from any tenants. This reliance on the anchor tenants indicates that centers, with the right tenant mix, need to be successful in terms of their location to generate overage rent. It is more likely, therefore, that the base rent element of a multi-tenant property be LBS financed and the overage rent retained by the property owner. Another alternative is to create a special "IO"² type LBS tranche to pass through overage rent collections. The property owner could retain the overage rent tranche until enough information emerged for the security to trade without the adverse selection discounts described by Riddiough (1997).

Real Estate Taxes. When more than one tenant inhabits a building, the real estate taxes are generally shared on a pro-rata basis. Demised premises need to be described precisely so that tax obligations are clearly defined. Multi-tenant buildings may also have significant common areas, which may be the responsibility of the landlord. Lease valuation should adjust to these potential cash flow disruptions and provide for sufficient funds to cover them.

Subletting. As with single tenant buildings, lessees need to be bound to all lease terms in the event that they sublet their space. However, subletting may raise a more serious concern in a multi-tenant building where the mix of tenants is important. Shopping centers, for example, can suffer financially when tenant changes damage the center's revenue generating

² An IO is an interest only security that can be created from "excess" cash flow.

capabilities. In these situations, the LBS should ideally include a management function that allows the investor to monitor subletting and have input on the situation.

Delivery of Described Space. This clause is more confusing in a multi tenant LBS transaction because the building is separated into multiple leased units. Originators need to be clear about the description of leased spaces so that lessee claims are neutralized.

Insurance. Building insurance becomes more complicated by multiple tenants. If every tenant operated similar businesses, then insurance could be paid on a pro-rata basis. However, business uses tend to vary within a building and frequently premium rates will increase or decrease depending on the individual uses in the building. Policies should be in place that reflect the building's insurance needs as dictated by the business uses. If possible, insurance cost breakdowns should dictate the amounts attributable to each tenant's use.

Insurance issues may also be extremely important in multi-tenant industrial buildings where specific uses heavily influence insurance expenses. Ideally, leases will covenant that the tenant is responsible for insurance premium increases. Leases that do not place this obligation on the tenant will need to be remedied with a reserve fund that anticipates potential premium increases.

Default by Tenant. In a multi-tenant building, the LBS servicer should be able to seize individual leased units in the event of lease frustration. As we discussed earlier, the use of condominiums or stacked lease arrangements permit the LBS servicer to concentrate on the lease in question without having to foreclose on the entire building.

Covenant to Operate. Lessees may not be bound to continue operating their business in the demised premises during the term of the lease. As with single tenant buildings, leases must ensure that, if the tenant "shuts the lights off," rent will continue to be paid. Multi-tenant

buildings that rely on tenant mix, however, need to be more sensitive to this clause because of the wider reaching effects that a “lights out” tenant may have on the entire building.

Operating Expenses. Operating expense responsibility is a frequent headache in multi-tenant buildings because it is usually not as clearly defined as it is in a single tenant building. In single tenant properties the lone tenant is responsible for the operating expenses depending on the type of lease (bondable, triple net, etc.) In a multi-tenant property, operating expenses are generally shared by the tenants on a pro-rata basis. Other factors like common areas and structural repairs further complicate the picture. LBS securities clearly define these potential obligations and plan financially for them.

Operating expenses are also problematic for multi-tenant buildings in the event of tenant default. In default situations, operating expenses (particularly the more serious ones like structural repairs) can become difficult as the question of responsibility is now clouded by a missing party. Multi-tenant LBS should include insurance provisions that bear this potential risk thereby minimizing cash flow concerns.

Cross Lease Clauses. Many retail leases contain clauses that allow tenants to vacate the premises if a substantial portion of the center becomes vacant. These clauses make leases that contain them undesirable from an LBS perspective.

Property Sectors

Clearly, multi-tenant buildings fit with LBS transactions, but the process is more complicated. Multiple tenants complicate the structure of the LBS at the real estate level and the collection of additional lease cash flows which support the building’s operating expenses. However, careful lease and/or loan structuring can remedy many of these problems. For example, if a building has a significant portion leased to a high credit tenant, that portion can

be separated from the rest of the building through a condominium or stacked lease structure, allowing that tenant's credit to be properly valued and realized in the loan proceeds.

Industrial. In terms of property type, multi-tenant industrial property space may be the easiest for LBS transactions. These buildings are frequently separated in the design and construction process and minimize common area responsibility and shared expenses. This allows multiple tenants to exist in their own prescribed "unit." Industrial space tenants also tend to enter into long term lease agreements and also frequently undergo "sale-lease back" transactions or 1031 exchanges, all of which fit naturally with LBS financing.

Retail. Retail power centers and regional malls lend themselves to multi-tenant LBS as well, but the lease structuring and real estate aspects associated with the property may be difficult to overcome. Power centers and malls typically have a mixture of credit rated and unrated tenants. The viability of the LBS will depend therefore on the varying mix of tenant types and the prevalence of shared expenses. The risk associated with these expenses can be very great to the lessor if non-credit tenants default on their lease terms. There may also be inherent risks within the strategic design of power centers and malls. These centers rely on the drawing power of a few major tenants, which often have strong, rated corporate credit. In the worst case, the mall's anchor tenants might default, destroying the cash flow of the entire center.

Office. Office buildings may prove more difficult to LBS finance. This property type generally has a broad selection of tenants, many of which are not credit rated. The short-term nature of office leases results in frequent tenant turnover, greater vacancy fluctuations, and expanded cash flow volatility. Office buildings often require

considerable tenant improvement expenses, which can be difficult to estimate in advance and can create cash flow uncertainties. Most office buildings contain significant common areas, some of which can be expensive to maintain (like elevators). These expenses could be problematic if tenants defaulted on their leases and left these common area maintenance risks to the LBS borrower.

Apartments. Apartment buildings may fit well with LBS financing because of well-established methods of measuring consumer credit quality (e.g. "FICO" scores³), one can ascertain the appropriate discount rate of apartment lease cash flows. The short-term nature of these leases, however, presents serious hurdles to LBS securitization. One possibility for jumping the term hurdle may be to employ the "revolving" structure used with credit card securities. As apartment leases within the LBS reached maturity, new leases would be substituted in. Previously, this revolving real estate debt mechanism was impossible to structure in a tax-free vehicle. This will no longer be the case in August 1997 when the Financial Asset Securities Investment Trust (FASIT) comes into law and allows a non-taxable entity to continue to buy debt instruments over the time. More importantly, the development of revolving lease cash flows in the form of a security would expand the concept of valuing buildings strictly from a cash flow perspective and move credit lease financing from its current definition to a more commonly applied lease valuation system.

Hotels. Hotels are undoubtedly the most difficult property type for LBS financing. Hotels are by nature multi-tenant buildings with extremely short leases. Building cash flows are extremely volatile and real estate risks belong solely to the landlord. It is unlikely that an LBS application could efficiently separate the "lease"

cash flows from the hotel rooms and create a transaction that would simultaneously appeal to borrowers and investors (lenders). A revolving structure like that used for credit card securities, should work in theory, but the practicalities of rapid (daily) turnover and non-rent revenue (e.g., restaurant, exhibition) may inhibit the future of LBS for hotels.

Chapter Conclusion

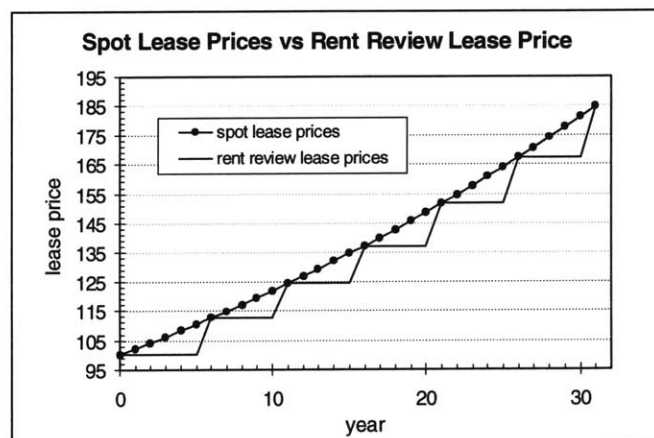
In this chapter we have explored new LBS financing possibilities for multi-tenant buildings. To date, most LBS transactions have involved single tenant buildings. Single tenant buildings make for easier lease valuation because lease space is clearly defined and uncomplicated by multiple spatial claims. In theory, multi-tenant buildings can also be LBS financed by separating the different leased spaces in the building through a condominium or stacked lease structure. The success of LBS financing in multi-tenant buildings is governed largely by the nature of real estate property types. Certain property types, like industrial, tend to have the right mixture of long leases and buildings that are naturally separated into leased units.

³ “FICO scores” is an industry term used for values calculated using one of Fair Isaac’s predictive models for consumer credit behavior.

Besides expanding the LBS market to encompass leases on multi-tenant properties, as we explored in the last chapter, non-U.S. lease markets may hold promise. We examine the economic consequences of a standard British lease feature in this chapter by using some of the basic economic concepts from Chapter 2. In Chapter 7, we survey LBS prospects and barriers in some of the larger non-U.S. property markets.

Leases in other countries often diverge from practices in the U.S. For example, while U.S. leases exhibit considerable heterogeneity, The Law Society (the primary professional association for lawyers in the U.K.) dictates standard British lease formats for a variety of property leases. A condition of use for the forms is that “no amendments are to be made to the text but all amendments are dealt with by entries on an attached continuation page.” Because of the standard formats, British leases are more homogeneous than those in the U.S. leasing market. The standard lease formats in the U.K. are conducive to securitization.

A feature of standard British leases, which has economic consequences, is “rent review.” In Precedent No. 13 (Law Society’s Business Lease – Whole of Building) for instance, “On each rent review date, the rent is to increase to the market rate if that rent is higher than the rent applying before that date.” Rent review may be a favorable feature from an investor’s perspective because it allows the lessor to capture increases in rent prices while being protected from decreases. The accompanying chart



depicts a spot lease price with a drift rate of 2% and a rent review lease price with five year rent review intervals ($\sigma = 0$).

We could use the discrete (the standard formats call for discrete rather than continuous rent) present value equations developed in Chapter 2 to value a British lease, except that these equations implicitly assume no volatility in spot lease prices. Because actual leasing markets exhibit volatility and dynamic supply responses, we now introduce a stochastic process for lease prices. The spot cash flow (i.e. instantaneous spot prices for lease payments) from a lease is equal to the value of its service flow. Spot cash flows are denoted as S_t and evolve according to the following stochastic process:

$$dS = \mu S dt + \kappa(S^L - S) dt + \sigma S dz \quad (8.1)$$

where μS is the instantaneous expected drift rate, σS is the instantaneous volatility, and dz is an increment of a standardized Wiener process. A mean reversion term is included to reflect supply responses; $\kappa > 0$ is a speed of reversion parameter and $S^L = S e^{\mu t}$ is the long-term spot cash flow to which S_t reverts.

The difference in present values for fixed lease payments for a lease with rent review may differ significantly from an identical lease without rent review. This difference can be thought of as the rent review feature's option value. We utilized a standard numerical technique (Monte Carlo) to evaluate the impact of rent review on the present value of a lease. Since many British leases have lengthy terms, the T (maturity) of our example lease is 30 years.

To model the rent review feature, we use the parameters introduced in Chapter 2 and in equation 8.1 above. We must add two additional parameters, Ψ = rent review interval and L' = present value of lease with rent review feature. Following are the parameters for our model:

Model Parameters

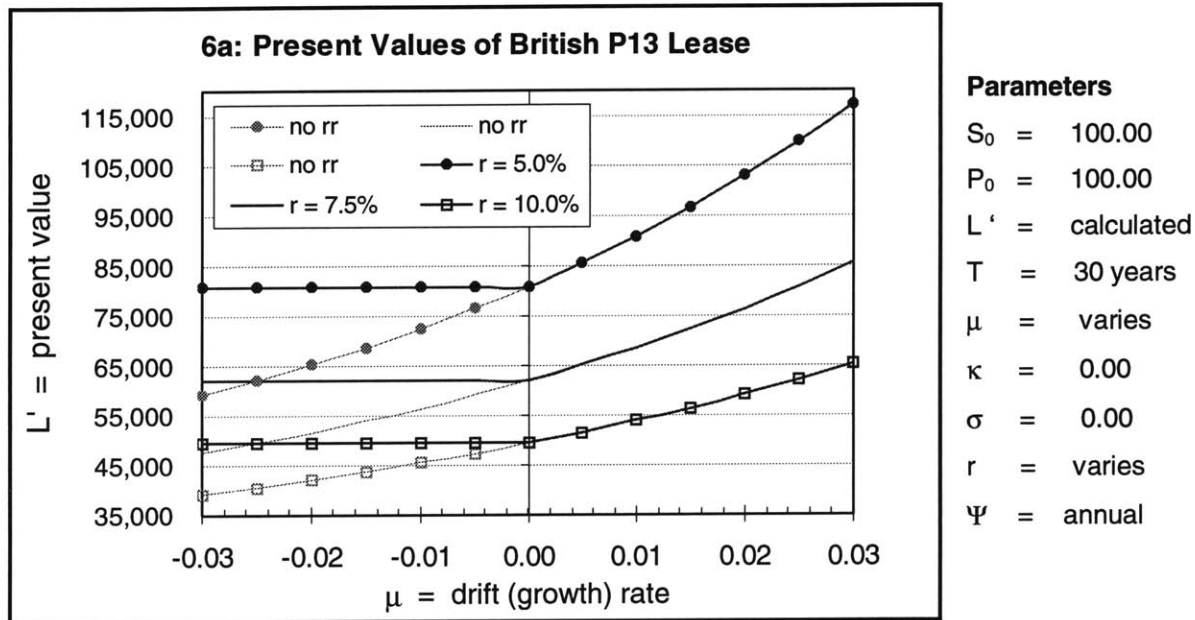
S_0	=	initial spot lease price at $t = 0$ expressed as a weekly rate
P_0	=	initial fixed lease price at $t = 0$ expressed as a weekly rate
L	=	present value of spot lease cash flows (no rent review)
L'	=	present value of lease cash flows with rent review
T	=	lease term
μ	=	spot lease price drift (growth) rate
κ	=	speed of reversion
σ	=	volatility
r	=	risk free rate
Ψ	=	rent review interval

Because of rent review, the fixed lease payment, P_t , may adjust upward at each rent review date; the feature also precludes downward adjustments. For most of the simulations presented in this chapter, we specify the initial fixed lease payment, P_0 . Option value is calculated as $L' - L$ and expressed as a percentage of L . Another method of calculating option value is to solve for the equilibrium P_0 where $L' = L$ and then calculating the present value of the difference between the two payment streams. Our approach was less computationally intense and generated virtually identical results to the alternate method.

In the remainder of this chapter, we present summaries of several Monte Carlo simulations. Rent review represents a significant component of lease present value given a set of realistic parameter values. In equilibrium, the lessor would have to “rebate” this value back to the lessee in the form of an up-front payment or by setting the initial lease price, P_0 , low enough so that $L' = L$.

Impact of Discount and Drift Rates on Lease Present Value in Environment where $\sigma = 0$

We begin the analysis with a very simple example with no volatility and (by definition¹) no mean reversion. Chart 6a shows the present value of a lease for three discount rates over a range of drift rates:



We do not need to employ Monte Carlo analysis for this simple example. Instead, we use equation 2.2.² The light gray lines show present values for negative drift rates if there was *no rent review*; rent review protects the lessor from negative drift rates. Conclusions from this simple example include:

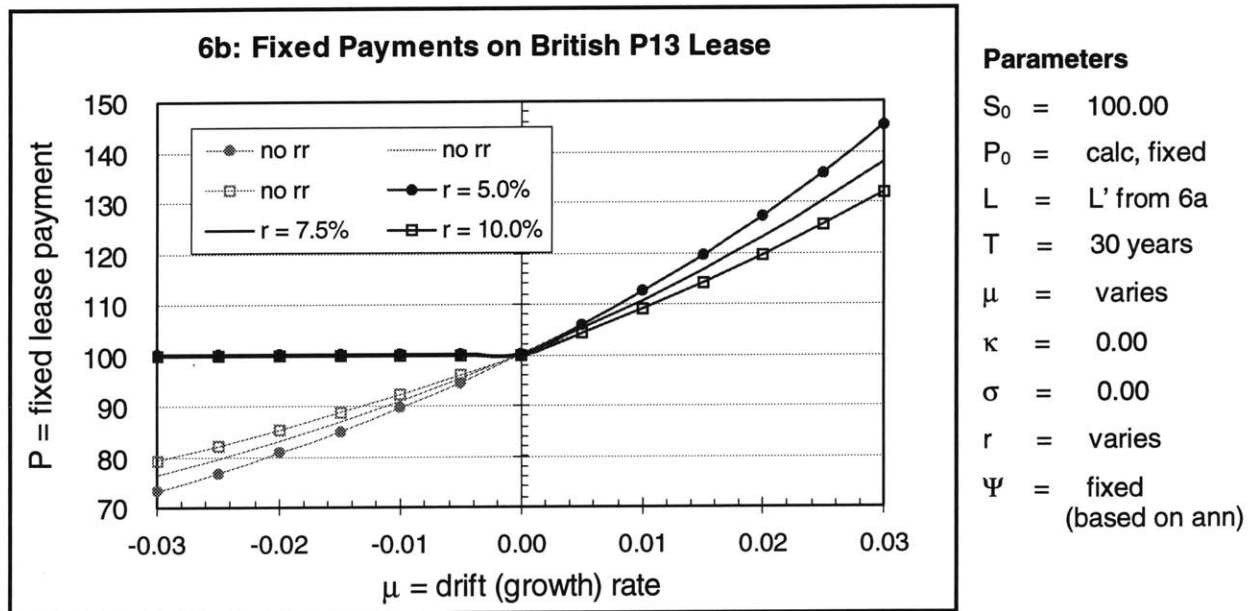
- [1] Lease present value increases as a convex ($\frac{d^2 L'}{d\mu^2} > 0$) function of μ ; the function becomes steeper and more convex as discount rate declines.
- [2] Present values obviously and predictably increase as the discount rate decreases.
- [3] Because the rent review feature allows the lease price to adjust up but not down, an imbedded call-like option is created.

¹ Without volatility, the spot rate would never be above or below S^L in the stochastic process we defined.

² Even if the lease payments were continuous, we could not apply equation 2.3 because Ψ , the rent review interval, is not continuous.

Impact of Discount and Drift Rates on Fixed Lease Payment in Environment where $\sigma = 0$

This is basically the same example as the previous except that we are showing a *fixed* lease payment (as opposed to one that may increase each year) amount based on the present values calculated in 6a:



These payments are fixed over the entire lease term and can be calculated using the formula:

$$P = \frac{L r}{1 - \frac{1}{(1+r)^T}} \quad \text{where } L = (2.2) = \frac{P}{r - \mu} \left(1 - \frac{(1+\mu)^T}{(1+r)^T} \right).$$

The light gray lines show fixed payments for negative drift rates if there was *no rent review*. This example illustrates several points:

[1] As before, higher drift rates lead to higher present values and higher fixed payments.

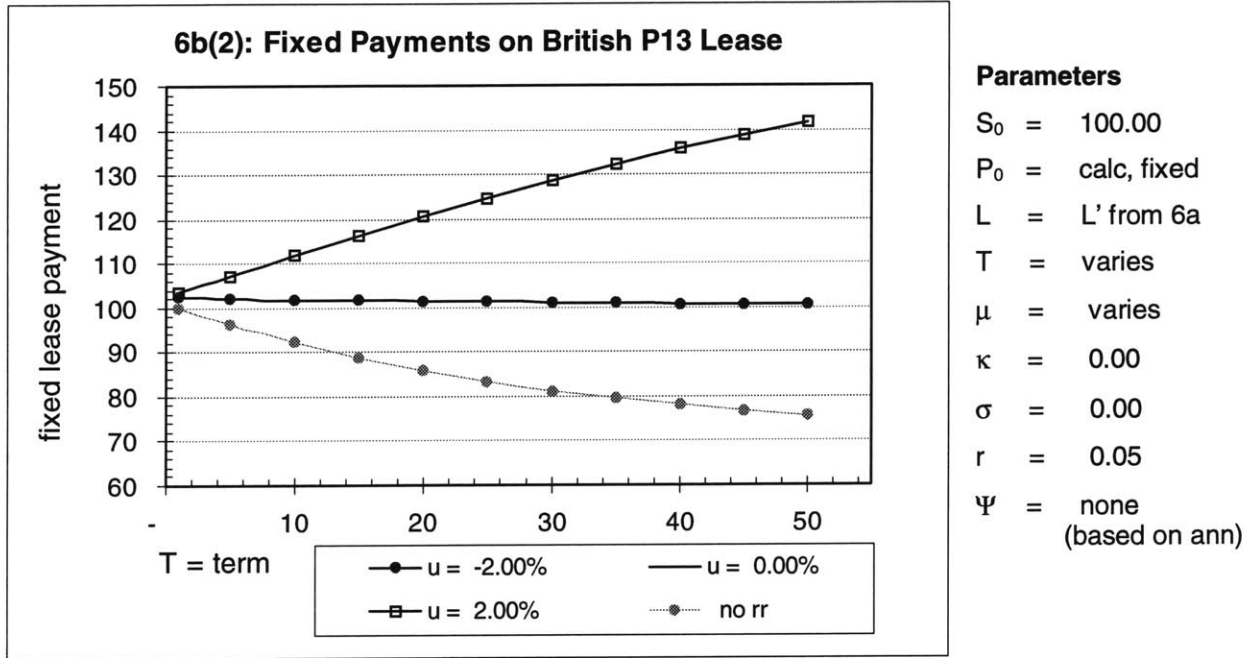
[2] As drift rates increase past zero ($\mu > 0$), higher discount rates lead to *lower* fixed lease payments. Keep in mind that discount rates affect both the fixed lease calculation shown above *and* the present value calculation that is an input to the fixed lease calculation. Here the effect of discount rates on the present value dominates the effect of discount rates on fixed lease payment.

[3] As discount rates decrease, the slope and the convexity of the fixed lease payment function increase.

We also ran simulations with volatility ($\sigma > 0$) for leases with and without rent review. We found that fixed lease payments were essentially the same as those shown here.

Impact of Term and Drift Rates on Fixed Lease Payment in Environment where $\sigma = 0$

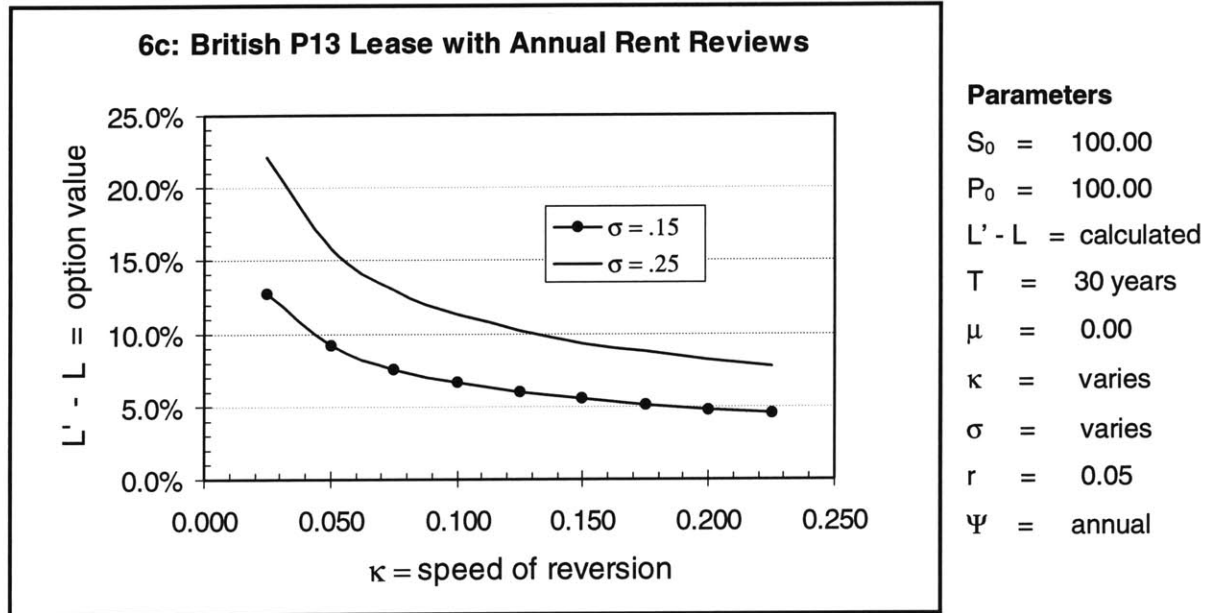
In this third example, we calculate present values in the same manner as the first example (6a) except that we vary the term. Fixed lease payments are then calculated in the same way as the second example (6b).



This graph shows some possible term structures for fixed lease prices at several drift (μ) rates in an environment with no volatility. The light gray line shows fixed payments at negative drift rates if there was *no rent review*. As mentioned for the previous example, fixed lease payments for an environment with volatility are very similar to an environment without volatility. Therefore, this graph is a close approximation of representative term structures for the stochastic process we employ.

Impact of Speed of Reversion on Option Value in an Environment where $\mu = 0$

This simulation shows option value in a zero drift market environment over a range of mean reversion speeds for two levels of volatility:

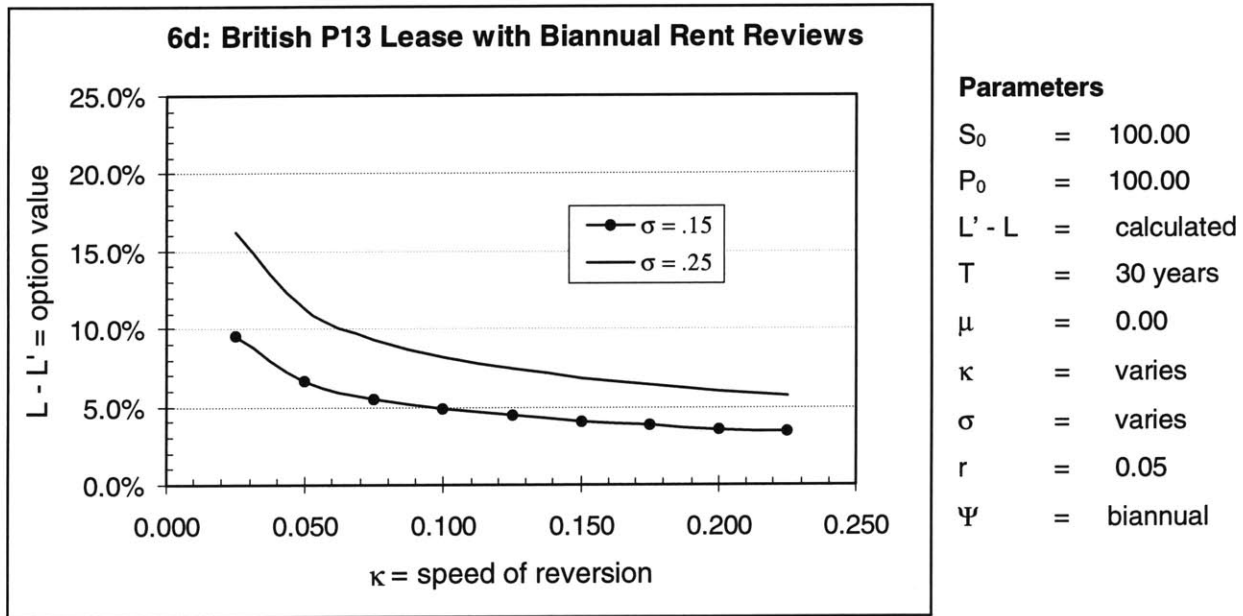


Now that $\sigma > 0$, mean reversion becomes an issue. One might expect spot lease prices to exhibit mean reversion because of supply responses. When spot lease prices move above the long-term mean, new supply (construction of space) pulls the spot price back down towards the mean. The opposite response occurs when the spot price is below the mean; supply is reduced pushing spot prices up. Some conclusions here include:

- [1] Option value increases as volatility increases.
- [2] Mean reversion dampens the impact of volatility at a decreasing rate.
- [3] Although the rent review feature appears to be very valuable, it is impossible in equilibrium (and improbable even in a less than efficient market) that a lessee would accept an initial lease price, P_0 , that was the same as the current spot price, S_0 , unless the lessor offered some concession (e.g., tenant improvements). The value of the concession = the option value in equilibrium.
- [4] One would expect supply responses to exert considerable influence on leasing markets.

Impact of Speed of Reversion on Option Value in an Environment where $\mu = 0$ with Biannual Rent Review

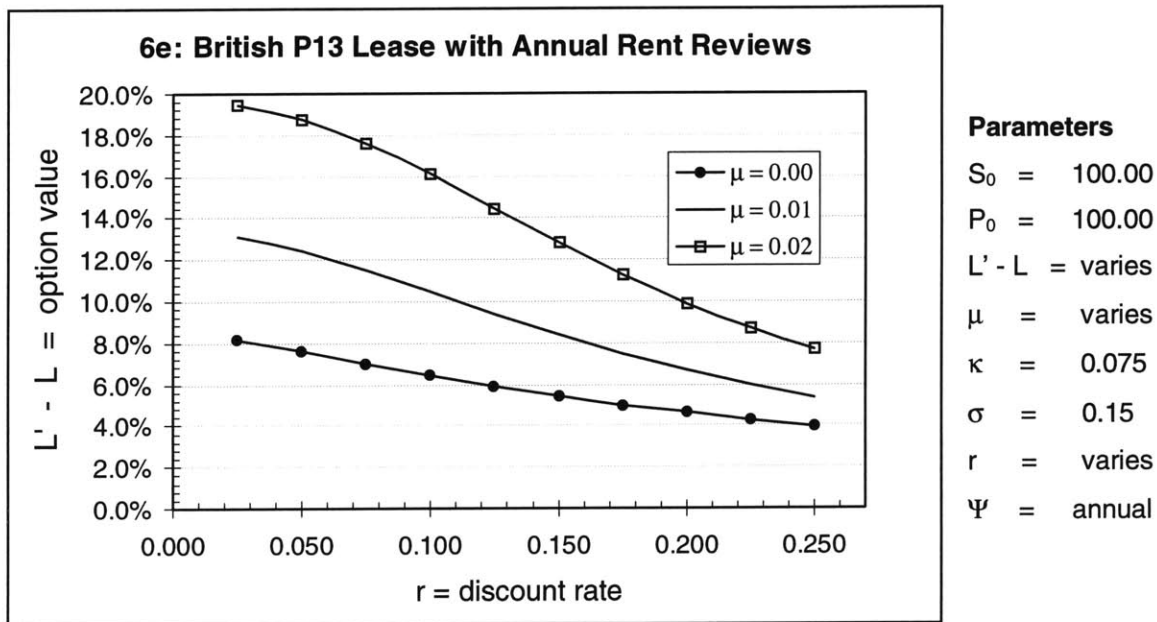
This is the exact same simulation as the previous, 6c, except that the rent review interval, Ψ , is now every two years rather than every year:



The purpose of this simulation is to show the affect of changing the rent review interval from one year to two years. This change reduces option value because there are fewer opportunities for the lease payment to adjust upward.

Impact of Discount Rate and Drift on Option Value

This chart shows the affect of discount rate on option value for two drift rates:

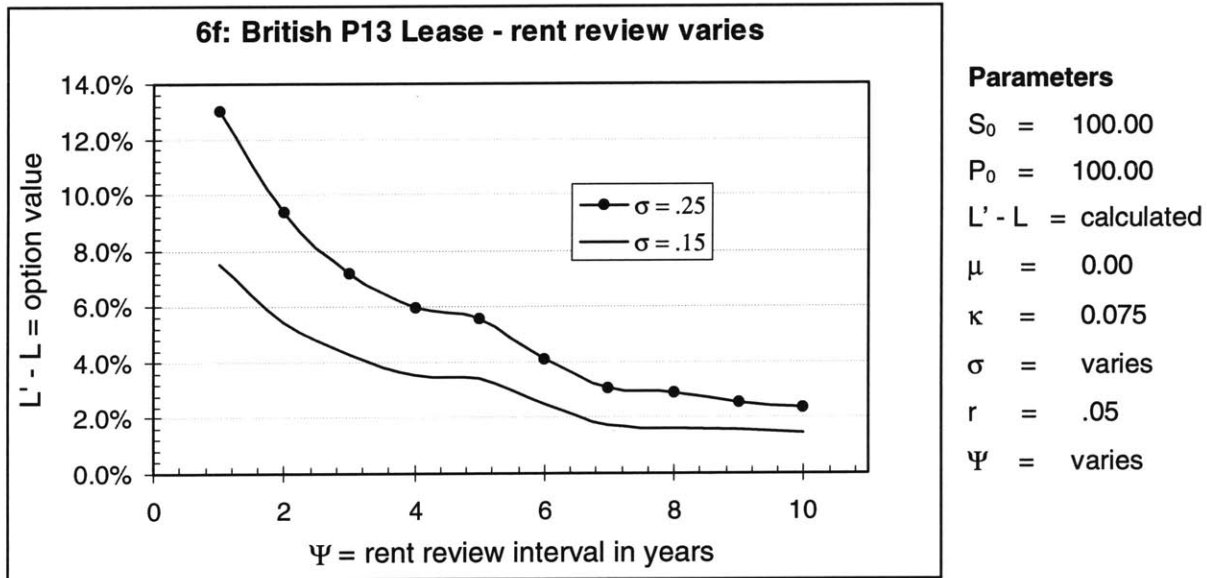


Increasing interest rates have two effects on call options. As interest rates increase, the present value of any future cash flows are reduced. At the same time, the expected growth rate of asset prices tends to increase with rising interest rates. The second effect (increasing asset price growth rates) usually dominates the first so that call options generally become more valuable as the discount rate increases (Hull 1997).

For each of the lines shown on the graph above, the asset growth rate (μ) is being held constant. Moving 1% in growth rate (i.e. from line to line) generally has a bigger impact on value than moving 1% in discount rate (i.e. along a line). Since asset price growth rates do not always move in conjunction with interest rates, we wanted to show the impact of discount rates while holding drift constant. We feel compelled to caution the reader that it is unlikely for drift rates and interest rates to become as "disconnected" as the chart above implies. One expects drift rate and discount rates to have a positive correlation.

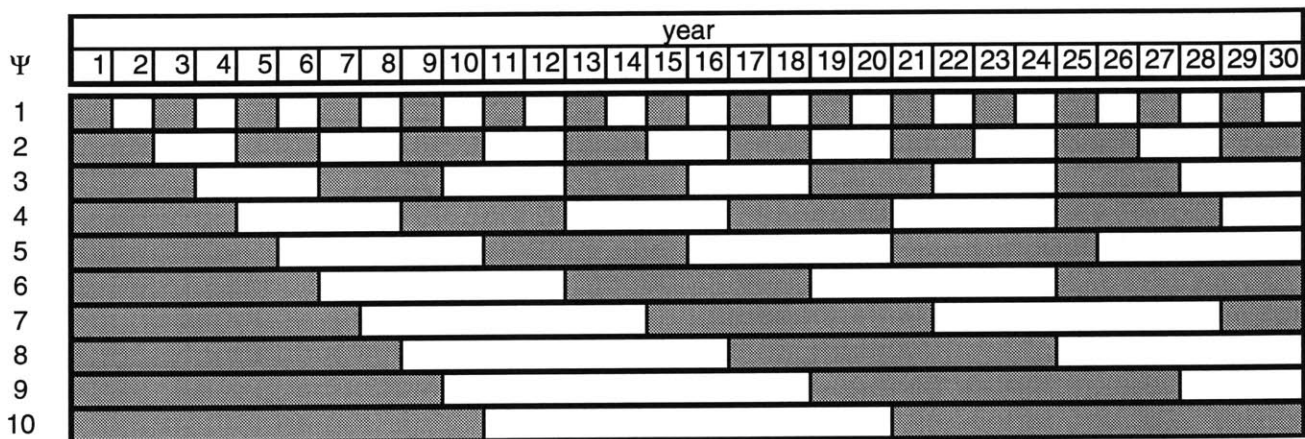
Impact of Rent Review Interval on Option Value

This simulation shows the impact of rent review:



As the length of the rent review increases, option value declines. Notice that the function is quite convex; option values accelerate as the rent review period becomes smaller.

Rent review interval determines the timing of the lease price adjustments and the period of time for which the prices are in effect. The diagram at the bottom of this page illustrates the rent review intervals. Moreover, the “bumps” in the graph occur because the timing of the first adjustment and the number of cycles differ (i.e. some of the intervals have partial cycles).



Chapter Conclusion

The analysis presented here demonstrates that the rent review feature has significant economic value, which can vary widely depending on exogenous (e.g., economic conditions) and endogenous (e.g., rent review interval) factors. Given the upward bias that rent review imparts to lease cash flows, British leases may be particularly valuable when securitized as LBS.

In this concluding chapter, we introduce a number of non-U.S. countries that we feel have many of the securities and real estate characteristics that will make LBS transactions possible. In general, we find LBS will be more successful in countries that have developed a real estate securities market with the appropriate legal vehicles and structures. It is also likely that countries which follow Anglo-Saxon or Napoleonic law codes (as most of our suggested nations do) will develop LBS markets similar to the U.S.

We realize that the complexities of real estate law and LBS securitization would require a more comprehensive research project that approached each country in depth, as our thesis concentrates on the U.S. market. We are also aware that to date there have only been LBS transactions in the U.S., U.K., and France. This makes a country by country LBS case study perhaps less useful than an exploration of real estate securitization and property rights in general. Our discussion, therefore, is focused somewhat differently on broader securitization concerns in non-U.S. countries and advancements to date that make LBS transactions viable financing alternatives in respective countries. In discussing these issues, rather than exploring more specific legal and economic issues with respect to international LBS, we leave the reader with a simplified summary of which countries are furthest along in real estate securitization and hold the most promise for LBS financing in the future.

LBS transactions in the U.S. are possible because of the advanced regulatory framework that allows LBS and other asset securitizations to exist. For example, the Real Estate Mortgage Investment Conduit (REMIC) allows cash flows from real estate debt securities like LBS to pass through a non-taxable entity to investors. The Real Estate Investment Trusts (REIT) allows cash flows from real estate equity securities to pass through a non-taxable entity as well.

Without these and similar legal mechanisms, real estate securitization would likely be hindered because of adverse tax consequences and limited corporate entity flexibility.

LBS are also fostered in the U.S. by a secure and clearly defined set of property rights that facilitate the normal course of real estate business. The U.S. legal system is based on Anglo-Saxon law principals. Real estate ownership is clearly defined and organized in levels of claims around a central registry function and legal property rights framework. Individual ownership, leases, transfers, and debt claims are governed by legal statutes that dictate both parties' rights and responsibilities in individual binding contracts. Disputes are handled by courts of laws, which pass judgement based on local, state, and federal laws and regulations.

LBS securitization is more difficult in non-U.S. countries. Many nations do not have advanced securitization procedures in place, which allow the structuring of complex transactions to mature. Until recently for example, countries like Brazil and Argentina, which are founded on the principals of Roman Law, did not allow property debt or equity to be owned in any trust format unless the individual trust was established by legislative vote at the statute level. This differs from U.S. practice where individual trusts are simply formed under the guidelines of existing legal statute. Without a trust-like vehicle, securitization is extremely difficult. Securitization, which involves multiple ownership claims of a single asset, requires a trust-like vehicle that allows a bankruptcy remote entity to divide an asset's value in the form of securities. A trust-like ownership also allows an objective third party to act in a responsible manner that protects each of the individual security investors.

In terms of property rights, many nations do not manage real estate in a defined real estate legal framework like the U.S. Many countries do not have lease contracts, recognized mortgage claims, standard transfer procedures, or central registry functions, all of which facilitate real estate business in the U.S. In Korea, for example, residential real estate is

“leased” using a form of “lease financing” called Chonsei. Chonsei financing requires the property user to make a lump sum payment to the property owner equal to the real estate value. This collateral is returned to the “tenant” over time in exchange for periodic use payments. Clearly this type of exchange, which uses a large security deposit to enforce tenant performance, presents a less efficient real estate transfer than the standard U.S. residential lease contract which legally spells out both parties rights and responsibilities in binding format.

United Kingdom

The United Kingdom has advanced real estate securitization further than any other non-U.S. country. This is due in part to the London capital markets, which are only slightly behind Wall Street in terms of understanding the developing relationship between property markets and capital markets. The U.K. also has an established and straightforward legal system that approaches property rights in much the same way as the U.S. Trust ownership, mortgage claims, and leasing contracts are recognized as binding at the legal level and disputes are handled by courts of law.

Since the early 1990’s there have been an increasing amount of U.K. mortgage-backed security issues, though not on the scale of the U.S. This is probably due to the lack of government residential mortgage guarantees (like the U.S.) and the tendency for floating rate mortgages. Floating rate mortgages reduce the interest rate risk associated with fixed rate mortgages and means that mortgage originators are less inclined to remove the loans from their balance sheets.

There have also been British Commercial Mortgage Backed Security (BCMBS) issues and a few British LBS issues. British LBS issues take advantage of the U.K. cultural anomaly that tends to use long term, bondable commercial leases (see Chapter 6.) In terms of the

securitization process, British LBS transactions are structured as Special Purpose Eurobonds and are originated from a tax-haven country (usually the Channel Islands) to avoid British withholding tax on interest and value added tax (VAT) on profits. Eurobond classification achieves the same result as U.S. pass through certificates by allowing debt claims, rather than equity, to pass to the security investor.

Historically U.K. debt investors have been very risk averse and preferred to invest in only investment grade securities. While British investor conservatism has softened, the U.K. market is still far more cautious than the U.S. market as evidenced by the lack of a viable British junk-bond market. LBS, which uses rated tenant credit and diversification to create investment grade hybrid-bonds, should therefore become a more highly sought after investment in the U.K. because it delivers a secure, investment grade product. These advantages, the ability to securitize real estate assets, the long and bondable British commercial lease, and the conservative investor profile, point to an expanding LBS market in the U.K. that may rival the U.S. in the future. A desirable securities tranche could be created using the rent review feature examined in the last chapter .

France

France is behind the U.K. in terms of real estate securitization but has made recent advancements. Until recently French banking law required that French credit institutions originate and own all French loans including real estate. These debt claims were non-transferable. The inability to assign loan assets made debt securitization nearly impossible because securitization requires the transfer of a debt claim to the proper securitization vehicle. This law was changed in 1993 when debt claims became freely assignable. Now securitization

law in France is straightforward and manageable. France also has a firm and legally binding set of property rights that govern real estate ownership, leasing, and mortgage claims.

The securitization vehicle, known as a Fonds Commun de Creances (Fund), is a tax exempt entity that is allowed to purchase almost any asset receivable as long as the asset is not currently in default and has a defined set of principal and interest payments. The fund is allowed to purchase receivables in a revolving fashion like the newly created U.S. Financial Asset Securitization Investment Conduit (FASIT, see Chapter 5). This may allow LBS transactions with short-term leases to use a “revolving” security structure similar to that used by credit card securities in the U.S..

While French authorities still require that a French bank or company be involved in the transfer and management of cash receivables to the fund, the new developments in French securitization law have created a growing mortgage backed security market there. There have also been a few commercial mortgage backed security issues and one significant LBS transaction.

Germany and Switzerland

Germany has a substantial and sophisticated mortgage banking system that is similar to the U.S. system in that the German Federal Government indirectly insures residential mortgages. Commercial mortgages have also been securitized, but these fall outside the German residential mortgage banking system. The pervasive presence of Germany’s central bank hinders the development of securities markets.

There are no legal impediments restricting the securitization of other cash receivables in Germany. Structuring vehicles are similar to U.S. vehicles and involve a bankruptcy remote entity that issues pass through certificates to investors. German tax law is such that the special

purpose entity would probably be taxable if it remained a domestic concern. This issue is avoided by situating the securitization vehicle in a foreign, tax exempt nation, thereby creating a vehicle that is tax transparent to the German authorities.

Switzerland also uses a government insured residential mortgage market to allow Swiss financial institutions to liquidate residential mortgage portfolios. Unfortunately, the Swiss form of Government, which enables a number of independent states (Cantons) to virtually govern themselves, fractures the real estate legal system in Switzerland. This means that securitization will have to develop within each (individual) Canton and cannot be effectively attacked as a Swiss development.

Australia, Belgium, South Africa

Australia, Belgium, and South Africa allow for equity security structures that resemble the U.S. Real Estate Investment Trust (REIT). These are called the Australian Listed Property Trusts (ALPT), Belgian Closed-End Real Estate Investment Companies (SICAFI), and South African Property Trusts (SAPT) respectively. These vehicles are tax exempt at the entity level and allow investors to own real estate in the form of liquid, equity shares. The Australian market is the largest of the three and has grown to a capitalization of A\$12 billion since its inception in 1970. While the Australian, Belgian and South African securitized real estate equity debt markets are much smaller, the ability to hold real estate equity in a securitized format suggests that securitized real estate debt may become more commonplace in the future.

Argentina and Brazil

Until recently, Argentina and Brazil were far behind in the development of securitization structures. Many recent legal events, however, suggest that these countries will

lead the way for South American securitization in the not too distant future. Prior to 1993, Argentina and Brazil did not have any trust form of real estate ownership which was defined by legal statute. Both countries' legal framework were also equally unclear about real property rights. Since 1993 Argentina and Brazil have taken on a number of ambitious legal reforms with the express purpose of expediting the process of securitization, or *titulizacion* as it is known in Spanish. These reforms embrace the basic fiduciary tenets of trust ownership and responsibility, expedite the assignment of real estate contracts, and allow for tax transparent entities to structure securitization offerings. While little securitization has occurred in Argentina and Brazil yet, the dramatic legal changes required at the outset of securitization developments demonstrate the need for basic and simple real estate legal parameters, like those found in the U.S. and U.K., in order for real estate securitization to prosper. This need for a clear legal framework and property right definitions at the basic real estate level will be a major policy issue for less developed nations which desire the economic benefits of real estate securitization.

Conclusion

The international market possesses considerable potential for LBS securitization. Because foreign capital markets are typically less sophisticated than the U.S., the disparity between discount rates in capital markets and property leasing markets may be especially large; ϕ (the frictional spread discussed in Chapter 2) could be well above zero. However, a foundation of property rights and other legal constructs are vital precursor to successful securitization efforts.

Variables. The following variables were used in the thesis and/or in the simulation of a British lease with a rent review feature:

Δt	=	a discrete interval of time expressed as a fraction of a year
dt	=	interval of time as $\Delta t \rightarrow 0$ (continuous time)
dz	=	increment of a standard Wiener process
κ	=	speed of reversion
ϕ	=	“frictional” spread in property lease market
μ	=	drift rate for spot lease prices
σ	=	instantaneous volatility
Ψ	=	rent review interval
L	=	present value of a credit risk-free lease
L'	=	present value of credit risk-free lease with rent review feature
P	=	fixed lease payment stream (net lease cash flow)
r	=	risk-free discount rate
S_t	=	spot lease cash flow (spot lease price) at time t
S^L	=	long-term spot lease price to which S_t reverts
t	=	time period “ t ”
T	=	lease term (i.e. lease maturity)
V	=	property value
$ x $	=	absolute value of x

Abbreviations. Although abbreviations and acronyms were generally defined in the text, following is a list used in the thesis:

ADA	Americans with Disabilities Act
BCMBS	British commercial mortgage-backed security
CB	Coldwell Banker
CLF	Capital Lease Funding, L.P.
CMBS	commercial mortgage-backed security
CPI	Consumer Price Index
CTL	credit tenant loan
DR	Dillon Reed
DSCR	debt service coverage ratio
FASIT	Financial Asset Securities Investment Trust
FICO	Fair Isaac Company
IAI	institutional accredited investor
IO	interest only (security)
ITC	investment tax credit
LBS	(real estate) lease-backed securities
LTV	loan-to-value (ratio)
NAIC	National Association of Insurance Commissioners
NN	double net
NNN	triple net
QIB	qualified institutional buyer
REMIC	real estate mortgage investment conduit
REIT	real estate investment trust
SPV	special purpose vehicle
U.S.	(the) United States
U.K.	(the) United Kingdom

CHARACTERISTICS OF LEASES UNDERLYING CTL-1997-1

A3

Tenant/ Guarantor	Prop type	Square feet	Lease type	Mon lease rate start	Mon lease rate end	Ann rents/SF start	Ann rents/SF end	Condem Cas risk	Op res	Lock box	Appr val/SF	Impl cap rate start	Impl cap rate end
Blue Cross & Blue Shield	office	517,244	NNN	380,290	185,043	8.82	4.29	yes	no	yes	54.13	16.30%	7.93%
Circuit City	retail	28,554	bondable	26,813	26,813	11.27	11.27	yes	no	yes	115.57	9.75%	9.75%
Circuit City	retail	18,716	bondable	22,750	22,750	14.59	14.59	yes	no	yes	160.29	9.10%	9.10%
Circuit City	retail	32,571	bondable	39,813	39,813	14.67	14.67	yes	no	yes	147.37	9.95%	9.95%
Circuit City	retail	23,342	bondable	25,188	25,188	12.95	12.95	yes	no	yes	128.52	10.08%	10.08%
Circuit City	retail	42,600	bondable	44,688	44,688	12.59	12.59	yes	no	yes	131.46	9.58%	9.58%
Food Lion	retail	40,500	NN	24,500	24,500	7.26	7.26	yes	yes	yes	71.60	10.14%	10.14%
Food Lion	retail	35,936	NN	23,683	23,683	7.91	7.91	yes	yes	yes	77.92	10.15%	10.15%
Columbia/HCA	office	19,221	NNN	23,228	23,228	14.50	14.50	yes	no	yes	110.56	13.12%	13.12%
Revco	retail	12,608	NN	14,972	15,760	14.25	15.00	yes	yes	yes	142.77	9.98%	10.51%
CVS	retail	77,000	NN	179,667	211,750	28.00	33.00	yes	yes	yes	331.17	8.45%	9.96%
NY State Elec & Gas	office	68,000	bondable	46,572	41,447	8.22	7.31	yes	no	yes	91.18	9.01%	8.02%
The Pep Boys	retail	8,960	NNN	11,208	13,979	15.01	18.72	yes	no	yes	161.83	9.28%	11.57%
The Pep Boys	retail	10,977	NNN	10,450	13,108	11.42	14.33	yes	no	yes	116.61	9.80%	12.29%
The Pep Boys	retail	8,000	NNN	13,333	17,747	20.00	26.62	yes	no	yes	241.25	8.29%	11.03%
Rite Aid Corporation	office	15,396	NN	19,194	23,352	14.96	18.20	yes	yes	yes	142.89	10.47%	12.74%
Rite Aid Corporation	retail	10,120	bondable	11,667	13,750	13.83	16.30	yes	no	yes	136.86	10.11%	11.91%
Rite Aid Corporation	retail	11,196	NN	26,849	30,071	28.78	32.23	yes	yes	yes	276.88	10.39%	11.64%
Rite Aid Corporation	retail	19,073	NN	27,922	31,273	17.57	19.68	yes	yes	yes	167.78	10.47%	11.73%
Rite Aid Corporation	retail	8,052	NN	6,207	8,260	9.25	12.31	yes	yes	yes	105.56	8.76%	11.66%
Rite Aid Corporation	retail	10,004	NN	13,697	13,697	16.43	16.43	yes	yes	yes	164.93	9.96%	9.96%
Rite Aid Corporation	retail	10,004	NN	9,513	12,662	11.41	15.19	yes	yes	yes	129.95	8.78%	11.69%
Tandy Corp	retail	184,000	NNN	25,000	65,588	1.63	4.28	yes	no	yes	30.98	5.26%	13.81%
Tandy Corp	retail	20,000	NN	31,667	39,717	19.00	23.83	yes	yes	yes	200.00	9.50%	11.92%
Royal Ahold	retail	78,000	NNN	39,000	39,000	6.00	6.00	yes	no	yes	67.95	8.83%	8.83%
Walgreen	retail	13,500	NN	20,250	20,813	18.00	18.50	yes	no	yes	200.00	9.00%	9.25%
Walgreen	retail	14,820	NN	18,933	18,933	15.33	15.33	yes	yes	yes	168.69	9.09%	9.09%
Winn Dixie	retail	44,788	NNN	34,027	34,027	9.12	9.12	yes	yes	yes	96.01	9.50%	9.50%
Winn Dixie	retail	44,780	NNN	37,217	37,217	9.97	9.97	yes	no	yes	103.84	9.60%	9.60%
Rite Aid Corporation	retail	11,180	NNN	<u>12,626</u>	<u>13,005</u>	<u>13.55</u>	<u>13.96</u>	yes	no	yes	<u>150.27</u>	<u>9.02%</u>	<u>9.29%</u>
		1,439,142		1,220,924	1,130,862	10.18	9.43				96.03	10.60%	9.82%

Using reported lease rates and appraised values, we calculated implied gross capitalization rates. Gross cap rates appear to be \approx 300 basis points over 30 year Treasuries. This spread appears to be significantly above the spreads (see text) at which LBS initially traded.

Tenant/ Guarantor	Location	Bond Rating	Primary industry	Interest rate	Original term	Maturity Date	Initial loan	Appraised value	Initial LTV
Blue Cross & Blue Shield	Richardson, TX	A (CP)	insurance	7.980%	213	8/7/14	24,619,140	28,000,000	87.9%
Circuit City	Killeen, TX	IG	retail - elec	7.160%	264	11/15/17	3,548,660	3,300,000	107.5%
Circuit City	Merced, CA	IG	retail - elec	7.160%	264	11/16/17	3,101,983	3,000,000	103.4%
Circuit City	Portland, OR	IG	retail - elec	7.160%	264	11/17/17	5,269,220	4,800,000	109.8%
Circuit City	Salisbury, MD	IG	retail - elec	7.160%	264	11/18/17	3,333,587	3,000,000	111.1%
Circuit City	Winston-Salem,NC	IG	retail - elec	7.160%	264	11/19/17	5,914,430	5,600,000	105.6%
Food Lion	Covington, VA	A-	grocery	6.770%	239	1/15/16	3,100,179	2,900,000	106.9%
Food Lion	Danville, VA	A-	grocery	6.830%	240	2/15/16	2,880,227	2,800,000	102.9%
Columbia/HCA	Layton, UT	A-	healthcare	7.780%	173	10/15/10	2,404,230	2,125,000	113.1%
Revco	Clay, NY	BBB-	retail - drug	8.400%	234	3/15/16	1,576,163	1,800,000	87.6%
CVS	Skokie, IL	A-	retail - drug	8.225%	302	1/15/22	23,118,049	25,500,000	90.7%
NY State Elec & Gas	Lancaster, NY	BBB+	utility	7.730%	300	12/15/21	6,194,643	6,200,000	99.9%
The Pep Boys	Deer Park, NY	BBB+	automotive	7.840%	177	8/15/11	1,328,461	1,450,000	91.6%
The Pep Boys	Huntington Beach, CA	BBB+	automotive	6.630%	177	11/15/10	1,292,030	1,280,000	100.9%
The Pep Boys	Irvington, NJ	BBB+	automotive	7.880%	240	1/15/17	1,670,394	1,930,000	86.5%
Rite Aid Corporation	Summit, NJ	BBB+	retail - drug	7.350%	158	5/15/09	1,820,098	2,200,000	82.7%
Rite Aid Corporation	Dearborn, MI	BBB+	retail - drug	7.012%	294	6/15/20	1,658,260	1,385,000	119.7%
Rite Aid Corporation	Floral Park, NY	BBB+	retail - drug	7.860%	179	7/15/11	2,816,987	3,100,000	90.9%
Rite Aid Corporation	North Bellmore, NY	BBB+	retail - drug	7.860%	179	7/15/11	2,922,524	3,200,000	91.3%
Rite Aid Corporation	Philadelphia, PA	BBB+	retail - drug	8.330%	226	7/16/11	772,346	850,000	90.9%
Rite Aid Corporation	Salem, NJ	BBB+	retail - drug	8.090%	235	5/15/16	1,586,337	1,650,000	96.1%
Rite Aid Corporation	Wrightstown, NJ	BBB+	retail - drug	8.140%	239	9/15/16	1,219,716	1,300,000	93.8%
Tandy Corp	Sandy, UT	A-	retail - elec	7.920%	300	7/15/21	5,385,281	5,700,000	94.5%
Tandy Corp	Springfield, NJ	A-	retail - elec	7.140%	174	10/15/10	3,533,150	4,000,000	88.3%
Royal Ahold	Batavia, NY	IG	grocery	7.000%	263	2/15/18	5,221,932	5,300,000	98.5%
Walgreen	Orange, NJ	A+	retail - drug	7.710%	237	4/15/16	2,424,237	2,700,000	89.8%
Walgreen	San Carlos, FL	A+	retail - drug	7.720%	224	3/15/15	2,045,798	2,500,000	81.8%
Winn Dixie	Slidell, LA	A-1	Grocery	7.680%	236	4/15/16	4,124,595	4,300,000	95.9%
Winn Dixie	Slidell, LA	A-1	Grocery	7.540%	238	6/15/16	4,575,458	4,650,000	98.4%
Rite Aid Corporation	Standish, MI	BBB+	retail - drug	<u>7.700%</u>	<u>307</u>	<u>6/15/22</u>	<u>1,675,908</u>	<u>1,680,000</u>	<u>99.8%</u>
				8.129%	249	3/29/17	131,134,023	138,200,000	95.6%

The offering memorandum discloses LTVs using projected “cut-off “ balances (the amortized balance at issue date). We calculated the initial LTV and show it above. The Blue Cross & Blue Shield rating is its claims paying ability. IG = “investment grade” (an “Internal Private Classification” from Fitch).

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