1988

A Theory and Empirical Test of Retail and Office Lease Contracting.

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Order Number 8917793

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The Louisiana State University and Agricultural and Mechanical Col., 1988

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A THEORY AND EMPIRICAL TEST OF RETAIL AND OFFICE LEASE CONTRACTING

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

the Interdepartmental Program in Business Administration

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December 1988

ACKNOWLEDGMENTS

I am indebted to a number of people for their support in my preparation of this dissertation. I would like to especially thank C. F. Sirmans, my major professor and dissertation committee chairman, and Pat Park, my typist, for their patience and encouragement. I am appreciative of the helpful comments and suggestions of my other dissertation committee members, James D. Shilling, G. Geoffrey Booth, R. Carter Hill, and Glenn Boyle, along with the participants of workshops at Louisiana State University, the University of Texas at Austin, the Pennsylvania State University, the University of Miami, and the University of Cincinnati, who include John D. Martin, Melvin Jameson, James W. Wansley, and William R. Lane. Additionally, Elvin R. Parks and the directors, officers, and employees of the Starmount Company and Friendly Center Incorporated are recognized for providing important information including tenant leases.

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ABSTRACT

This dissertation describes how retail and office lease provisions can be written to minimize contracting issues between transacting parties. Testable hypotheses regarding the allocation of risks and the reduction of opportunistic behavior, by lease provisions, are proposed. An empirical model which uses Rosen's [1974] well-known theory of hedonic price estimation is developed to test for the economic impact of specific retail and office lease provisions. Two unique data sets are employed which minimize non-provision variation between leased spaces. The first data set contains one hundred and three shopping center leases from neighborhood and community shopping centers which are all of strip design and are located within a three mile radius in the same geographic area of a city. The open air shopping centers are comparable in size, architecture, occupancy, and amenities. The second data set includes three hundred and twenty-two office leases situated in five multitenant buildings that are similarly located in a prominent part of a city and within a quarter mile radius. The office buildings are comparable in size, number of floors, architecture, occupancy, and amenities. The empirical results provide strong evidence that the lessening of contracting problems associated with the retail and office lease process is important in understanding how landlords and tenants structure leases, including provisions.

A THEORY AND EMPIRICAL TEST OF RETAIL AND OFFICE LEASE CONTRACTING

CHAPTER 1

INTRODUCTION

Financial theorists have written extensively about contracting problems associated with financial transactions.[1] These researchers stress the role of resolving contracting problems in shaping the framework of organizations and the structure of contracts employed in transactions. The shopping center and office building leasing processes afford unique opportunities to expand financial contracting theory and present empirical evidence on contracting. In addition, the examination of commercial lease provisions has important implications for the structure of leases, the valuation of leasehold interests, and the design of commercial mortgages.[2]

Shopping centers and office buildings are two major types of real property, and the leases associated with these commercial properties generally contain a diversity of contractual provisions.[3] Although it seems reasonable that contracting problems are important in the determination of lease type and in the inclusion of

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[1]Jensen and Meckling [1976], Myers [1977], Smith and Warner [1979], Barnea, Haugen, and Senbet [1981, 1985], and Kalay [1982] have written about problems that arise from conflicts of interest between contracting parties such as bondholders and stockholders. Costly contracting results. Contracting costs often include expenses for structuring, monitoring, and bonding a set of contracts between two principals or between a principal and an agent. A residual loss to one or both parties can occur because the costs of enforcing contracts may become greater than the benefits.

[2]The economic impact of retail and office lease provisions has important implications for mortgagees or lenders. The mortgagee views himself as a possible successor to the landlord's position. The Report of the Committee on Leases, Section of Real Property, Probate, and Trust Law, of the American Bar Association [1967, p. 411] published a quote that states, "What is good for the landlord is also good for the lender, with few exceptions." Additionally Kuklin [1980] remarks that the lender is the developer once removed.

[3]Single family residential, multi family residential, industrial, and special-use properties are other major types of real property. See Pyhrr and Cooper [1982] for a discussion of real estate property types.

provisions for a landlord-tenant transaction, little empirical research on the subject has occurred.[4] This dissertation demonstrates that the resolution of contracting issues associated with the allocation of risks and the minimization of opportunistic behavior influences the structure of retail and office leases, including provisions.

The dissertation is divided into five chapters. Background literature on shopping centers, office buildings, leases, and prior related work appear in Chapter 2. Contracting issues in retail and office leasing along with a discussion of the resolution of these concerns by lease provisions are presented in Chapter 3. In addition, testable hypotheses regarding the allocation of risks and the minimizing of opportunistic behavior between the lessor and the lessee, by lease provisions, are proposed for both retail and office leases. Chapter 4 introduces a multiple regression equation based upon Rosen's [1974] well-known theory of hedonic price estimation that will determine the economic impact of specific lease provisions on rent. The multiple regression equation will employ two unique lease data sets. The shopping center data set contains one hundred and three retail lease observations. The retail lease data set was selected to minimize the spatial and locational variation among leased spaces. The one hundred and three leases are from neighborhood and community shopping centers which are of strip design and are located inside a three mile radius in the same geographic area of a city. Further, the open air shopping centers are comparable in size, architecture, occupancy, and amenities. Also, Chapter 4 gives the retail lease empirical results which provide strong support to the dissertation's theory that the resolution of contracting issues is important in understanding how landlords and tenants

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[4]Smith and Wakeman [1985] propose that taxes alone do not explain all aspects of corporate leasing policy. They indicate that contracting problems are important in the lease versus buy decision. So, contracting costs appear to affect leasing policy and should also be significant in the selection of an appropriate lease structure.

structure retail leases. The second data set includes three hundred and twenty-two office leases. The office data set was chosen so as to lessen the spatial and locational variation among leased spaces. The three hundred and twenty-two office leases are located in five multitenant office buildings which are situated in a prominent part of a medium size city within a quarter mile of each other and are comparable in size, number of floors, architecture, and occupancy. The five office complexes are all rated class B office space. The office lease empirics indicate that specific lease provisions affect office rental rates. A summary which includes the dissertation's main results and a discussion of possible areas of future research concludes the dissertation.

CHAPTER 2

INSTITUTIONAL BACKGROUND: AN OVERVIEW OF RETAIL AND OFFICE LEASES

I. Introduction

The leases associated with shopping centers and office buildings are varied and generally contain a diversity of contractual provisions.[5] This chapter is divided into five sections and provides an overview of retail and office leases and their standard terms and provisions. Sections II and III contain an introduction to the types of assets being leased -- shopping centers and office buildings. Section IV examines the leasing process by describing rent types, the document, standard terms, and covenants, contingencies, and other special provisions. Section V reviews prior related research on shopping centers, office markets, leases, and the valuation of contractual covenants, contingencies, and special provisions.

II. Shopping Centers: A Description

The Urban Land Institute [1987] defines a shopping center as a group or collection of retail establishment rental spaces that are planned, developed, owned, and operated as a unit and are related by location, size, and variety of stores to

[5]See Friedman [1983] and the American Bar Association [1987] for an indepth commentary on commercial leases and their provisions.

the corresponding trade area.[6] However, Friedman [1968, p. 559] provides a more simplistic definition:

> "The distinguishing factor of a shopping center is that it is not a free-standing store or a cluster of free-standing stores, and if one takes a free-standing store and adds a parking area and other facilities it is still not a shopping center. A shopping center is in essence an ensemble of many stores, with their combined pulling power."

Shopping centers provide onsite parking in direct relationship to the quantity and sizes of stores. Shopping centers range in size from giant "super regional" malls with over a million square feet to small neighborhood shopping centers with less than twenty thousand square feet of rentable space.[7]

Most neighborhood and community shopping centers are strip shopping centers. A strip shopping center is a group of stores connected by a canopy over the sidewalk which runs along the front of the stores.[8] Parking is usually at the entrance of the retail establishments and is commonly composed of one to eight parallel rows of parking spaces. Three different types of merchants are typically found at shopping centers.[9] An anchor tenant is the key tenant that gives the center its stability and drawing power. A national chain supermarket or drugstore is a typical anchor tenant for many strip shopping centers. Another type of

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[6]There exist four types of shopping centers based upon their function: neighborhood, community, regional, and super regional. A neighborhood center caters to daily needs by providing for the sale of convenience goods (e.g. groceries) and personal services (e.g. dry cleaners) while a community center expands upon convenience goods and personal services by supplying a wider selection of soft lines (apparel) and hard lines (hardware and appliances). Regional and super regional centers are usually malls. A neighborhood center contains between 30,000 and 100,000 square feet while a community center has between 100,000 and 300,000 square feet. See Urban Land Institute's *Dollars and Cents of Shopping Centers*: 1987.

[7]The International Council of Shopping Centers (ICSC) estimates that there are over 24,000 neighborhood and community shopping centers in the U.S. See Urban Land Institute, *Dollars and Cents of Shopping Centers*: 1987, p. 335.

[8]The data set of retail leases used in the dissertation are for strip shopping centers.

[9]The Urban Land Institute [1987] provides a detailed overview of the many categories of merchants found within the three merchant types.

tenant is the local chain store such as a ladies apparel shop which feeds off the anchor tenant and has high, stable sales as well as brings more shoppers to the center. A third type of tenant is the single-location or "mom and pop" independent store which usually pays high rent, and has uncertain sales and financial stability. With the numerous variety of stores available within merchant types, shopping center owners try to find a mixture of stores that will maximize total sales and total rents.[10] Thus, shopping center owners attempt to control their exposure to risk through three mechanisms: the store mix, the loan to value ratio of the financed property, and the lease agreement.[11] The retail lease agreement allows landlords and tenants to vary uncertainty through changing the type and amount of rent and contractual provisions to suit their specific risk preferences.[12]

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[10]According to Epley and Rabianski [1986], the successful shopping center owner/manager tries to select tenants that will achieve a positive synergistic relationship with other tenants. The activities of one merchant should increase the flow of customers to other merchants. There exists synergism between such types of tenants as major department stores and specialty apparel shops, apparel shops and shoe stores, jewelry shops and women's clothing stores, etc. Also, see Anderson [1985] for research on the association of shopping center anchors with the performance of a nonanchor specialty chain's stores.

[11]Pyhrr and Cooper [1982] review risks associated with shopping centers and office buildings and their minimization. Pyhrr and Cooper [p. 549] note that ". . . sources of shopping center risk include the possibility of high vacancy rates for non-major tenants, lack of adequate growth in sales to provide overage income, bankruptcy of a major tenant, uncompensated but escalating operating costs due to rising tax and utility bills, and the opening of new shopping centers in the trading area without the concomitant increase in consumer buying power."

[12]Requiring low minimum rent but high percentage rent for retail tenants shifts much of the risk onto the shopping center owner because the tenant pays higher rent when he has higher sales. However, in an agency framework this may be an optimal lease arrangement since the landlord and tenant both have mutual incentives to increase store sales. Additionally, the landlord has an incentive to find the right mix of tenants to maximize overall shopping center sales. See Barnea, Haugen, and Senbet [1981, 1985] for an examination of agency problems and their resolution.

III. Office Buildings: A Description

Office buildings are composed of one or more rentable spaces and range in size from the World Trade Center in New York with millions of square feet of rentable space to small, single tenant office buildings. Typically, office buildings provide janitorial and utility services to occupants along with free parking. Class A office space is a rating for relatively new buildings in prime locations with high occupancy levels and highly competitive rental rates. Class B office space represents new buildings in nonprime locations, older buildings in prime locations, or buildings that have been renovated to modern standards in prime locations. Class B office space has high occupancy and competitive rental rates. Class C buildings, comprised of older, unrenovated buildings in fair condition, have good occupancy and low rental rates.[13]

Building owners can modify their financial uncertainty by changing the loan-to-value ratio of their financing or varying the type and amount of lease rent and contractual provisions. Synergy from the mix of office space occupants is not as favorable as with shopping center tenant mixes.[14] However, as with shopping center ownership the lease agreement for office buildings can lessen the uncertainty associated with being a landlord.

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[13]The Urban Land Institute provides these definitions of office space classes. This terminology closely follows standard industry definitions of office space classes.

[14]Pyhrr and Cooper [1982].

IV. Leases

Shopping center and office leases are usually arranged for medium to long terms and are similar in nature to operating leases.[15] For merchants and small office space users, leases of three to five years are normal. For big retail space tenants such as supermarkets and department stores and large office space occupants, fifteen to twenty-five year leases are common. Commercial leases typically include standard terms for the payment of rent along with negotiated covenants, contingencies, or other special provisions. Retail and office space landlords negotiate contracts that assure a stable tenant tenure, favorable rents, and a beneficial allocation of risks.[16] Transaction, monitoring, and contracting costs must be considered when explaining the lease arrangement.[17]

A. Rent Types

According to Ring and Dasso [1985], retail and office leases extending over one (1) year or more are lengthy documents which contain many landlord-tenant covenants, contingencies, and other special provisions. The straight or fixed lease is generally used in office leases. A straight lease is an agreement requiring fixed rent to be paid periodically throughout the entire life or term.

Unlike the office lease, in which the rental payment is usually fixed, the retail lease can require any of several payment methods. However, the percentage

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[15]Copeland and Weston [1988] observe that there exist three main types of leases: operating (service), sale and leaseback, and strict financial. The operating lease is most similar to the retail space lease because the landlord agrees to provide space and the costs of maintenance of the space are usually included in the lease payment. Additionally, the lease is executed for a length of time less than the asset's life, so that the payments do not fully amortize the cost of the equipment. The lessor recovers his investment through a subsequent new or renewal lease or by an asset sale.

[16]Van Horne [1983] comments that the lessor and lessee can adjust the degree of risk held by participants via varying the term of the lease and/or including options in the contract.

[17]See Smith and Wakeman [1985].

lease based on gross sales is the most common.[18] The percentage lease usually requires a minimum fixed rent ranging from forty to eighty percent of amounts considered fair in relation to property value along with a predetermined percentage of sales rent based upon store type and classification.[19] Specific percentage rent amounts based upon store type and classification have evolved over the past several decades and have been accepted for use by most retail landlords.[20] The percentage of sales rent may range from as low as two percent of gross sales for discount stores or supermarkets to as high as ten percent for jewelry stores. At the sales break-point percentage rent is equal to fixed or base rent. Percentage rent only becomes payable after the sales break-point or the contractually agreed minimum threshold amount of sales per annum has been attained. Thus, a base and percentage rent combination provides the landlord with a stable minimum income along with the potential for increased income as sales volume grows.

B. Document[21]

A lease is an agreement between a lessor (owner) of real property and a lessee (tenant) that conveys to the lessee the right to use and possess the lessor's

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[18]The American Bar Association [1987] observes that percentage rent should be ideally based on a net revenue figure, but that shirking and other opportunistic behavior problems arise when the landlord intrudes into the tenant's business. Furthermore, accounting difficulties result when determining net income. For these reasons, gross revenue percentage rent is almost universally used. The gross revenue percentage rent reflects an anticipated share of the tenant's profits.

[19]Ring and Dasso [1985].

[20]The Urban Land Institute [1987] publishes average percentage rents by shopping center category for the three major store types and over 100 store classifications.

[21]See Friedman [1983], Gibson, Karp, and Klayman [1983], and Lusk and French [1984] for a thorough discussion of leases and the law associated with leasing.

property for a designated time period in return for financial consideration.[22] The terms of the lease such as tenancy period, rental payments, a description of the space to be rented, contingencies such as options to renew and lease cancellations, covenants, and other specific provisions agreed to by the lessor and lessee are described within a lease. Thus, the lease arrangement combines a conveyance of a property interest, which creates a leasehold interest, and a contractual statement outlining the rights and obligations of the landlord and the tenant (e.g. the landlord is obliged to provide space while the tenant pays rent). In determining the validity of a lease, the courts apply the rules governing contracts. The essential elements of a valid contract include offer and acceptance, consideration, capacity to contract, and legal objectives.

The statute of frauds typically requires that leases covering a period of time greater than one year must be in writing. Ordinarily, a commercial or office lease is filed for public record in the county in which the property is situated. However, only a memorandum of the lease is recorded in some states in which case the terms of the lease are not revealed, but public notice is given.

C. Standard Terms

A sufficient retail and office lease may contain a number of standard terms along with standard and non-standard provisions.[23] According to Pyhrr and Cooper [1982], standard terms include a description of the space to be leased, the

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[22]A commercial lease is a legal document that presents the contractual arrangement between a lessor who owns retail or office property and a lessee who is a private business or professional person. Retail leases are written for merchants such as retail stores, restaurants, movie theaters, and gas stations. Office leases are drawn up for office space that is occupied by accountants, attorneys, appraisers, mortgage companies, and other professional individuals.

[23]Pollack [1970] observes that developers try to keep their store and office leases as uniform as possible and usually develop a landlord-oriented form. However, some tenants have their own lease forms, and their ability to use their own forms is dependent on the lessor's needs and the lessee's desirability as tenants.

origination date and length of the lease term, the rental agreement and payment procedures, specific required sales reports (not applicable for office leases), the determination of responsibility for payment of utility bills, repairs, insurance, and tax increases, restrictions on sub-letting space, security deposit requirements, arbitration rules regarding the handling of disagreements in lieu of litigation, and duty to pay for common area maintenance charges.

D. Provisions

Real estate leases contain standard and non-standard contractual provisions such as covenants and contingencies which can allow, restrict, or extend the use or transfer of property or funds. Contractual provisions can be considered conditions to the lease or transfer of assets. Conditions can be either precedent, concurrent, or subsequent to a valid contract.[24]

A covenant is a contractual promise to perform an act or activity or not to perform an act or activity. A breach may subject the defaulting party to dissolution of the lease. Covenants often restrict one contractual participant from engaging in specific activities that are injurious to the other party. A contractual contingency is usually a condition precedent to a valid contract but can also be considered a condition concurrent. A contingency is a provision requiring the completion of an act or the occurrence of a particular event in order for a contract or a provision of an existing contract to be binding.

Contractual provisions such as covenants and contingencies are negotiated by the grantor and grantee and are inserted within a contract. Thus, standard real estate contracts can have significant variations because of the inclusion of many types of negotiated contractual covenants and contingencies. For example,

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[24]Kratovil and Werner [1983] indicate that contractual conditions, including covenants and contingencies, may be either expressed, implied in fact, or implied in law. However, it is possible that the lessor and lessee may devise an unconditional lease contract to allow the property transfer to occur without conditions.

in a retail lease agreement, a covenant may be a provision that restricts a lessee from operating another retail outlet within a certain distance of a leased location.

1. Covenants

The rights and obligations of both the landlord and the tenant are expressed in a written lease. Many of these rights and obligations may be standard lease provisions, but a number of covenants, contingencies, and other special lease conditions are negotiated. Pyhrr and Cooper [1982] emphasize that lease covenants are originated and accorded by the lessor as a means of controlling and maintaining the desired quality and character of a shopping center or office building. Lease covenants address such areas as late payment charges, possession, property improvements and repair, assignment, and use of the premises.

Rental payments must occur in a timely manner. Late payments subject the lessor to increased risk and uncertainty. Covenants insuring prompt rental payments such as late payment charges and security deposits may be advantageous to both the landlord and the tenant, since any decrease in the landlord's monitoring costs should be reflected in lower rent.

Leases have the implied covenant that the landlord will convey to the tenant possession of the property.[25] A landlord must transfer possession to a tenant for the term of the lease, only subject to lease contingencies.[26] Neither the landlord nor the tenant is expected to make any improvements to the property unless required to do so by the lease. However, a tenant may be granted the right to install trade equipment or fixtures that are necessary for the operation of his business. Under the principle of caveat lessee, a lessor is not bound to make any

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[25]For a good overview of the many covenants, contingencies, and other special lease provisions contained in commercial leases see Stambaugh [1978] and Epley and Rabianski [1986].

[26]In the possession covenant, a provision is usually included which assures the tenant that his right of possession will survive a foreclosure sale or a termination of a ground lease. See Pollak [1970].

repairs to the leased premises. However, the lease usually allows the landlord to enter the premises after notice and make necessary repairs to comply with governmental regulation.[27] Also, the tenant is not required to make repairs but is expected to return the leased space in the same condition as received, with allowances for ordinary use. Most retail and office leases prohibit the assigning of leases in order to allow the landlord to restrict the entry of undesirable tenants. The use covenant is usually narrow and specific and holds that the tenant may only use the space for specific purposes which are designated in the lease. Other lease covenants govern the amount of tenant liability insurance required, hours of business operation, signage, type and quality of merchandise, membership and assessments for merchant associations (not applicable for office leases), and use of common areas such as lobbies, parking areas, stairways, and storage rooms.

2. Contingencies

Negotiated contractual contingencies include the option to renew, lease default contingencies, and the landlord's right to relocate a tenant. Many leases contain an option that allows the lessee the right but not the obligation to renew his lease. The option to renew requires that the lessee provide notice on or before a specific date of his intention to exercise the renewal option. However, there is no separate notice requirement to terminate a lease without a renewal option when it expires, since a written lease for a stipulated period of time stops at the end of that time period. When a tenant defaults on or breaches a lease provision, a landlord may sue to rescind the lease and evict the tenant through court proceedings. Likewise, when a landlord breaks a lease provision, the tenant is entitled to sue the landlord to obtain a judgment to recover rent paid or cure defaults. The parties to a lease can mutually agree to nullify the lease, but a

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[27]State statutes regulate these rights and obligations if they are not explicitly written in the lease.

tenant who abandons leased property remains liable for the terms of the lease, including rent payment.

Office leases sometimes contain the contingency known as the landlord's right to relocate the tenant which allows the landlord to move office tenants into a new space in order to accommodate the spatial requirements of old and new tenants. However, it is usually stipulated that the new space must be similar to the original office space, and any expenses associated with the relocation must be paid for by the landlord.[28] Landlord rental concessions depend on the occurrence of a particular event such as the landlord's failure to have the leased space finished and available for the tenant on time. Other negotiated contractual contingencies consist of overage rent for sales beyond a breakpoint and lease cancellation by the landlord or tenant for low sales or high shopping center or office building vacancy.

V. Prior Related Research

A. Shopping Centers

Although urban economists, geographers, and real estate theorists have analyzed shopping centers, very little work has been done on the economics of shopping center leases.[29] This dissertation breaks new ground because it describes and tests for the economic impact of certain retail lease provisions. First, however, a review of related shopping center research will allow better comprehension of the economics of the lease from both the landlord's and tenant's perspectives. Specific issues in shopping center research include models of

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[28]Friedman [1983] in his treatise on leases indicates that courts have held the landlord's right to relocate the tenant to be legal since it does not abrogate the tenant's right of property use and possession.

[29]Lee [1987] provides a comprehensive review of the literature on shopping centers contained in urban economics, geography, marketing, and urban planning research.

shopper behavior, shopping center existence theories such as central place and agglomeration, rent differentials, merchant mix, store location models which employ regression analysis, and the impact of shopping center development.

1. Models of Shopper Behavior

Models of shopper behavior are important because they permit improved understanding of the demand side of the shopping center supply-demand equilibrium. Models of shopper behavior are based upon the assumption that shoppers are utility maximizers or cost minimizers.

Although purchasers usually prefer buying at the closest store in order to minimize travel time, one-stop shopping provided by shopping centers may be more favorable because it allows for different types of merchandise to be purchased on the same trip. This maximizes shopper utility or minimizes overall shopping costs. Thus, to reduce the cost of time lost to searching and travelling, buyers visit agglomerated stores or shopping centers to purchase different types of merchandise from different merchants on one trip. Therefore, shoppers may bypass nearby individual stores in favor of distant shopping centers to save valuable time and benefit from increased merchandise selection.

Empirical studies such as O'Kelly's [1981] investigation provide evidence that approximately 30-50 percent of all shopping trips are for multiple purchases. However, a problem with most studies of consumer multi-purpose shopping behavior is that they do not have a model which reflects rational human behavior. In an attempt to solve this problem, Narula, Horowitz, and Lentnek [1983a] and Ingene [1984] show that multipurpose shopping is a rational consumer behavior because it reduces travel time and shopping costs.

2. Reasons for Shopping Center Existence

Central place theory and agglomeration economics have been employed by economic researchers to account for the existence of shopping centers. In early

research, central place theory was used to rationalize why shopping centers were supplied. Traditional central place theory stressed that shoppers visited the nearest store. However, agglomeration theories developed after researchers realized that shoppers made a greater number of visits to larger shopping centers. The larger centers had a greater agglomeration of stores with more merchandise choice for the shoppers.

i. Central Place Theory

Central place theory is a normative model which accounts for the spatial distributions of retail facilities and market areas. Central place theory holds that sellers create small dispersed monopolies because purchasers shop at the closest shopping center. Although early spatial theorists such as Losch [1954] developed models for shopping center existence based upon a geometric locational theorem, recent models include competition from other retail firms and seem to better explain retail location. Ghosh [1983] contends that surviving retail outlets are positioned in strategic sites which lessens the ability of competition to enter. However, Ghosh and Craig [1984] note that new stores may find locations that are better adapted to changing market conditions.

ii. Agglomeration

Shoppers prefer larger shopping centers over smaller shopping centers because store diversity improves multipurpose shopping. Agglomerated or clustered retail stores reduce shopping time and costs through decreased travel and search efforts. Eaton and Lipsey [1981] observe that locational clustering facilitates comparison shopping by customers along with information exchange between competitors. Bucklin [1967] emphasizes that shopping centers assimilate different retailers because they provide more attractive shopping through an increased selection of merchandise. Thus, store clustering through shopping centers allows for better merchandise selection, decreased travel costs, and lower

prices (through increased competition). These shopping center benefits translate into a positive economic externality. Rent differentials between big and little shopping centers and among merchants may result from this externality.

3. Rent Differentials

Since larger shopping centers attract more shoppers than smaller centers, higher rents should result at larger centers. Eaton and Lipsey [1982] and Mulligan [1983] find that merchants in large centers have a competitive advantage over small center merchants because of an increased number of multipurpose shoppers. Ghosh [1986] shows that the major benefit of multipurpose shopping goes to landlords and low order retailers.

Landlords and tenants are aware of the valuable economic externality associated with shopping center customer traffic. However, not all merchants pay equally when it comes to compensating the owner for space use. Since store clustering is especially beneficial to a low order retailer or shopper traffic exploiter (e.g. jewelry store), the high order store or shopper traffic generator (e.g. supermarket) may request a share of the created positive externality. Shopping center owners often provide side payments in the form of rental discounts to traffic generators. Thus, the benefits of clustering that accrues to lower order stores returns to the high order stores via rental subsidies.[30] However, merchant mix can also affect rent levels.

4. Merchant Mix

Rent levels and merchant mix are interrelated. The amount of rent charged determines the type of tenant that will locate in a center. Tenant type will affect the tenant mix which then will influence the shopping center rental income. However, the developer and the merchant have conflicts of interest when determining tenant mix. CALUS [1975] explains how the landlord wants to

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[30]Ghosh [1986] determines this level of clustering benefit.

maximize rental income from the entire shopping center and has an interest in an individual store's success only as a contributor to the overall shopping center rental income. In contrast, the tenant is very concerned about his own sales and his interest in the overall shopping center sales is related to how it will affect his store's sales. Nevertheless, there is some middle ground in that both the landlord and the merchant have mutual incentives to promote shopping center traffic which can lead to higher individual merchant and overall center sales. Yet, the owner can allow two very similar stores in the same center much to the distress of the original merchant.

Restrictive covenants preventing entry of similar stores and, thus, the level of price competition are sometimes found in retail leases. Ghosh [1986] discloses that the possibility of additional competition from similar stores within a shopping center should affect a tenant's rent. These restrictive covenants should increase tenant rent because the developer would want to share in the merchant's monopoly.

The number of anchor tenants also influences overall center sales and success. CALUS [1975] finds that the amount of anchor space to overall rental space will affect the viability of a shopping center and rental income. Further, the selection of major tenants defines the focus of the shopping center. Other researchers, such as Anderson [1985], provide additional support for anchor stores serving an unique role in shopping centers.

Anderson investigates the relationship between the performance of a nonanchor specialty chain's store and the number of anchor stores in a shopping center. Anchor stores generate consumer traffic. Nonanchor stores count on the consumer traffic produced by anchor stores and the shopping center's overall marketing. Anderson finds that a nonanchor specialty chain store's profit per square foot is a function of the number of anchors, with or without Sears (perhaps

the greatest anchor of them all), store design, with or without Penney's (another major anchor), and the number of non-anchor stores. Anderson concludes that a chain store situated in a shopping center with many anchor stores and relatively few nonanchor stores has greater profit per square foot and higher rent.

5. Store Location Models

Store location regression models usually have store performance as a dependent variable, and location, spatial attributes, market characteristics, merchandise price, and competition as independent variables. The regression models that have been developed have generated conflicting results. Lord and Lynds [1981] show that a store's performance increases with distance from a competitor, while others observe better merchant performance with stores located nearby. However, these studies do not include specific lease information.

6. The Impact of Shopping Center Development

Municipal governments, developers, merchants, and researchers have been concerned about the environmental, social, and economic impacts of shopping centers on local governmental services, consumers, and pre-existing retailers.[31] Rogers [1979] reports changes in shopping patterns, consumer costs and benefits, merchant competition, traffic flows, and travel patterns arising from new retail developments. Alexander and Dawson [1979] find that new shopping centers increase employment in the local community. Their results indicate that floor space per worker is positively related to store size and is greatest in small shopping centers.

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[31]Lee [1987] observes that there exist varied interests among the business and governmental participants involved in the shopping center development process. When a developer attempts to construct a new shopping center, he may confront certain business groups who want to protect existing shopping areas, city planners that address the traffic problems and service expenditures associated with new centers, and a local government that wants the additional tax and employment base.

Shopping centers often replace downtown areas to the dismay of existing downtown stores and local governments. Bennison and Davies [1980] point out that merchants often relocate from town centers to new shopping areas, and therefore the number of existing town center businesses decreases. Although new shopping centers create additional needs for municipal improvements such as increased traffic control, sewage, water, and roads and services such as fire and police protection, they also generate greater municipal revenues through sales and real property taxes.

7. Summary

Shopping centers create a valued externality through the grouping of retail stores. The valued externality is multipurpose and comparison shopping. Developers/landlords select tenant mixes and plan store locations so as to maximize the externality.

B. Office Markets

First of the three historic branches of office market research is an investigation into the spatial patterns of office employment.[32] Second, hedonic modeling is applied to better understand the determinants of office rents. A third branch concerns an examination of office market cycles and the forecasting of changes in supply and demand for office space.

1. Spatial Research on Office Employment

Spatial layouts of office employment have been researched by geographers in order to gain understanding about how office markets are affected by relative employment location. The opportunity for a variety of face-to-face meetings has been offered by researchers as the strongest rationale for office space clustering and the existence of central business districts (CBD's). Wabe [1966] observes that

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[32]Clapp [1985] provides a thoughtful review of these areas of office market research.

office location in a CBD facilitates professional interactions, including meetings with business people from outside of the area. Thorngren [1970] reports that executives need to interact with a wide variety of people and services and this is achievable in a central office area. Long, Witte, Tauchen, and Archer [1984] employ the desire for face-to-face interactions as a foundation for creating a theoretical model of spatial use. Their findings indicate that office locations are positively related to the ability of professional employees to conduct face-to-face meetings, available amenities, provision of bus service, and fire and police protection, but are negatively associated with property taxes and traffic congestion.

In addition to facilitating face-to-face meetings, external economies can emerge from the centralization of many experienced workers and the availability of a wide variety of services. Robbins and Terleckj [1960] comment that external economies come from the accessibility of a wide variety of specialized services that are concentrated in metropolitan office areas and central cities. Burns [1977] also observes that a diversity of specialized services are obtainable in central cities and this gives rise to office space demand.

However, suburban office markets do have some advantages. Burns points out that suburban office markets offer better access to less costly clerical workers and reduced commuting time. Wabe [1966] finds evidence to suggest that office worker costs are lower in the suburbs. Wabe also reveals that turnover for office jobs may be less frequent when the costs of personal commuting decrease. Clapp [1980] and Archer [1981] empirically observe that CBD offices relocate to the suburbs. However, Pye [1977], Code [1983], and Clapp [1983] stress that rent differentials between central and suburban office markets must be large enough to justify relocation to the suburbs.

2. Hedonic Office Rent Studies

Office rent hedonic studies typically employ Rosen's [1974] theory to show that structural and locational characteristics affect rent.[33] The first hedonic office rent study was done by Clapp [1980]. Using a sample of 105 office buildings in Los Angeles, Clapp finds that there is an implied tradeoff between lower rents and face-to-face business contacts. Rental charges decline as distance from the CBD increases, but there is also a corresponding decrease in the opportunity for face-to-face encounters between business persons since the density of land use declines. However, suburban office areas may permit enough face-to-face meetings to serve as a replacement for a CBD. Other office rent hedonic studies have examined the effects of property taxes, quality of architecture, and CBD location on nominal rent.

Wheaton [1983] investigates whether or not owners of office structures capitalize property taxes into rental rates. Utilizing data collected from office leasing agents in Boston, he shows that property tax, building size in square feet, and number of floors have a positive affect on rent, while building age influences rent negatively.

Hough and Kratz [1983] examine the effect of quality building architecture on office rent through a hedonic equation. Employing the average dollar rent for office space as a dependent variable, they show that a proxy for high quality architecture has a significantly positive coefficient.

Brennan, Cannaday, and Colwell (BCC) [1984] develop an explanatory rent model for the Chicago CBD. In their hedonic analysis, BCC employ rigorous empirical methodology. They use a Box-Cox transformation to select the best

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[33]Rosen [1974] explains how a market for a single commodity with many characteristics operates and indicates the nature of the price function that clears the market. The office market is analogous to other markets for differentiated products such as housing. Therefore, Rosen's methodology can be used to estimate the implicit prices for various characteristics or attributes associated with office space.

model and an affiliated Box-Tidwell [1962] transformation to determine the correct form for each of the included explanatory variables. They demonstrate that base rent is a negative function of distance from the CBD's center of activity, square footage of the leased office space, and greater tenant responsibility for increases in building operating costs while being a positive function of building square feet and vertical position in the building. With vertical position in the building, it is believed that rent rises as office location becomes higher due to upper floors having better views. However, a high floor number may indicate location in a prominent office building since tall structures are the most well known edifices. The lower rental rates per square foot predicted as square footage expands may result from the negotiating strength of the tenant increasing with lease size.

3. Office Demand Forecasting

Office demand forecasting is sufficiently developed to enable accurate prediction of changes in office space demand. Kelly [1983] comments that the risks connected with office development can be lowered by understanding cycles and trends in office employment. He discusses how new office space absorption can be predicted from new construction and changes in vacancy rates. Although many office space forecasting models have been created, perhaps the most interesting is that of Wheaton and Torto [1985] who provide a macro forecasting model of office space demand. Employing a series of five equations, they are able to model existing vacancy rates. The model can then be used to predict future vacancy rates based upon changes in the independent variables such as new construction and office absorption rates. They also note that finance, insurance, and real estate activities, along with other service oriented businesses, are the primary users of office space.

C. Research on Lease Provisions

Financial theorists have developed substantial literature on leasing.[34] However, the bulk of their efforts concentrate on the lease versus own decision.[35] Contractual covenants, contingencies, and other provisions are taken to be exogenous to this financing decision. Nevertheless, Smith and Warner [1979], Myers [1977], and other researchers indicate that contractual provisions in different types of contracts such as bond indentures do affect nominal contracting costs (e.g. interest rates). Further, Smith and Wakeman [1985] suggest that contractual provisions in leases help determine rental rates.[36]

Empiricists have neglected the leasing process. Copeland and Weston [1988, p. 632] observe that there is "scant" empirical literature on leasing or leasing-related issues. According to Schallheim, Johnson, Lease, and McConnell [1987], theoretical research on leasing has proceeded more rapidly than empirical work because data on leasing arrangements is not easily obtainable. However, the authors point out that the role of transaction, information, and search costs, along with default risk must be considered when valuing leases. In support of this

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[34]Ang and Peterson [1984], Bower [1973], Brealey and Young [1980], Copeland and Weston [1982], Franks and Hodges [1978], Lewellen, Long, and McConnell [1976], McConnell and Schallheim [1983], Miller and Upton [1976], Myers, Dill, and Bautista [1976], Schall [1974, 1985, 1987], Schallheim, Johnson, Lease, and McConnell [1987], Smith and Wakeman [1985], and Weingartner [1987] are some of the researchers who have analyzed leasing practices.

[35]These authors commonly employ net present value analysis in order to determine whether or not there is a net advantage to leasing when making a lease versus own decision.

[36]Smith and Wakeman [1985] investigate the nontax determinants of the lease structure. They observe that lessees have little incentive to maintain their leased property because they have no claim on the residual asset's value. They suggest that assets which have specific uses create contracting costs. These contracting costs arise from conflicts between the lessor and the lessee and cover negotiation, administration, and enforcement costs.

realization, the researchers show that their proxies for transaction and search costs are statistically significant, while default risk proxies have mixed outcomes.[37]

D. Agency Theory

Information asymmetry and monitoring or auditing problems can arise from the conflicts of interests that occur between contractual participants involved in a cooperative activity.[38] Conflicts of interest may be present because contractual participants behave according to "me first" rules and choose actions that maximize their own personal welfare.[39] Jensen and Meckling [1976], Myers [1977], Smith and Warner [1979], Barnea, Haugen, and Senbet [1981, 1985], Kalay [1982], and others have analyzed the conflicts of interest and wealth expropriation that can occur between a firm's stockholders and its bondholders who are participants in indenture contracts. These researchers indicate several methods by which shareholders can expropriate bondholders' wealth. Stockholders can issue additional liability claims and excessive dividends to lessen bondholders' collateral. Further, stockholders can expropriate bondholders' wealth by "risk shifting" or investing in higher risk projects (Barnea, Haugen, and Senbet [1981]) and "underinvesting" or avoiding investments that increase collateral for bondholders (Myers [1977]). However, bondholders are assumed to be rational in anticipating information asymmetry and monitoring problems associated with

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[37]Schallheim, Johnson, Lease, and McConnell [1987] test the hypothesis of Miller and Upton [1976] and McConnell and Schallheim [1983]. They investigate whether or not the yields of financial leases are a function of the risk-free interest rate and the discounted value of the non-diversifiable risk of the asset's residual value. Using a sample of 363 financial leases originated from 1973 through 1982, the authors find results consistent with their hypotheses.

[38]Barnea, Haugen, and Senbet [1985] provide extensive coverage of the financial theory of agency which concentrates on the relationships among security holders and includes the relationship between bondholders and shareholders in the context of optimal firm financing.

[39]Fama and Miller [1972] call the priority agreement between security holders that control wealth transfers "me first" rules.

indenture agreements and would impose restrictive bond covenants to reduce the contracting costs between bondholders and stockholders.

A conflict of interest frequently arises between the lessor and the lessee in leasing.[40] This conflict of interest is analogous to the conflict of interest that occurs between a firm's stockholders and its bondholders.[41] However, in leasing, management and shareholders are combined together as one principal known as the lessee (tenant), while bondholders are represented by the lessor (owner). With leases outstanding, the lessee (tenant) may have incentives to operate his business and personal financial structure in ways which benefit himself, to the detriment of the lessor (landlord). For example, the lessee can open additional retail locations that compete with the landlord's location after the business becomes established, thus, reducing sales that may have developed in part due to the landlord's advertising and reduced rent.

The tenant's actions are similar to a management's actions which, when acting in the stockholder's interest, has incentives to design the firm's operating characteristics and financial structure in ways which benefit stockholders to the detriment of bondholders. Information asymmetry and monitoring costs arise from both conflicts of interest. The minimization of these contracting costs through the use of contractual provisions such as covenants affect nominal bond and lease costs. For example, a lease could contain a covenant prohibiting the lessee from operating another store within a specified geographic area. If real estate markets are efficient, then specific contractual covenants should be capitalized into lease prices because these covenants aid in monitoring the activities of the contract's participants and, thus, reduce contracting costs.

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[40]There are a variety of contracts such as mortgages where there exists similar conflicts of interest between the grantor and the grantee. See Benjamin, Frankfurter, and Sirmans [1988].

[41]Copeland and Weston [1988], Martin, Cox, and MacMinn [1988], and others indicate that long-term leases are similar to debt.

Therefore, contractual conditions may be valuable in a Smith and Warner [1979] framework because they increase the expected value of the leased asset (by decreasing the lessor-lessee conflicts) and decrease the contract leasing rate.[42]

E. Other Contracting Research

The influence of contractual provisions such as covenants or contingencies on the determination of nominal contract prices including lease rates has been the subject of limited research by financial theorists and empiricists, real estate appraisers, housing researchers, legal theorists, and other researchers.

Financial Researchers. Although there is research by financial theorists and empiricists on the valuation of bond covenants, most of these researchers furnish only indirect evidence on the effects of covenants. Black and Cox [1976], Ho and Singer [1982], and other financial theorists demonstrate the expected effects on bond values of seniority and security covenants via option pricing models. These researchers indicate that senior debt should have a greater price than subordinated debt. However, no estimates of the price premiums or yield differentials are developed. In contrast to the theorists, the empiricists present some support for the existence of bond covenant values.

Smith and Warner [1979], Kalay [1982], and Thatcher [1985] find consistent patterns in the use of covenants with bond indenture agreements, but furnish only indirect evidence on covenant values. Nevertheless, Brauer [1983], Roberts and Viscione [1984], Malitz [1986], and Boardman and McEnally [1981] test whether the value of bond covenants is reflected in the market price of firm debt.

Brauer offers evidence that "me-first" rules affect market values of bonds. However, he only examines the market performance of two bonds issued by the

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[42]Smith and Warner [1979] explain how debt contracts are written to lessen stockholder-bondholder conflicts. They provide evidence that protective covenants contained in debt indenture agreements lessen borrower-lender conflicts and lower the nominal lending interest rate.

same company and similar except for differences in collateral. Having a data set of two bonds from one company cannot supply strong proof that nominal debt prices reflect the value of "me-first" rules or covenants.

Roberts and Viscione employ matched pairs of nonconvertible bonds which are issued by the same company but contain different seniority and security covenants in order to provide support for rational covenant pricing. Although Roberts and Viscione indicate that bonds with seniority or security covenants have lower yields than bonds without protective covenants, the value of the individual covenants are not estimated.

Malitz applies discriminate analysis to identify a firm's selection of covenants based on its leverage, size, and relationship with the capital market. His work supports the hypothesis that covenants affect nominal bond rates, but he does not show the value of individual covenants.

Finally, the study by Boardman and McEnally finds either insignificant or negative coefficients for security covenants in regressions estimating debt yields. These authors explain their contrary findings by the inclusion of bonds within a similar rating category but which have apparently different risk.

In contrast to these authors, Benjamin, Frankfurter, and Sirmans [1988] find a direct value for several security and seniority covenants. Unlike Roberts and Viscione [1984], who study matched pairs of nonconvertible bonds which are issued by the same company, their model employs over 1450 mortgage offerings for loans backed by similar assets. The mortgage offerings are for single family residences that were extended on the same date, with the same maturity, and with the same coupon. Using a cross sectional regression that does not rely on borrower ratings as does Boardman and McEnally [1981], estimates for the value of specific covenants are developed.

Real Estate Appraisers. The appraisal industry has long acknowledged that sales contingencies or provisions may influence the selling price of real estate. Minaya [1969] and other practitioner oriented real estate writers note that the conditions or provisions surrounding the contractual sale of property can affect the appraiser's estimate of value. However, there has been little empirical work to support appraisers' beliefs that contractual provisions have worth.

Housing Researchers. The hedonic housing literature has given inadequate consideration to the connection between contractual provisions and nominal contract prices.[43] Clapp [1980], Hough and Kratz [1983], Brennan, Cannaday, and Colwell [1984], Rosen [1984], and Cannaday and Kang [1984] all develop hedonic models that explain the variation of office rents in a market. In addition, Guntermann and Norrbin [1987] employ regression analysis to explain the variability in apartment rents. These authors, however, fail to include contractual provisions in their rent models. Brennan, Cannaday, and Colwell [1984, p. 246] note: "While it appears to be generally accepted that physical and locational

[43]Many researchers have employed the hedonic approach to obtain measures of household willingness-to-pay for particular housing characteristics. Their research includes valuations of housing age, corner lots, location near parks and schools, type of neighborhood, racial composition of neighborhood, time on the market, financing, building and housing codes, air pollution, airport noise, zoning, property taxation, income taxation, transportation, rent control, public housing, location near nuclear power plants, fuel prices, crime, type of broker employed to sell property, energy conservation, greenbelts, housing quality regulations and other issues. The annotated bibliography by Follain, Gross, Jimenez, and Malpozzi [1984] contains a summary of empirical and theoretical studies concerning household willingness-to-pay for particular housing characteristics.

characteristics are important determinants of rental rates for office space, very little has been done with features of the lease contract other than rent."[44]

Legal Theorists. Legal writers have analyzed the role of risk allocation in contracting. MacCaulay [1963], Cheung [1969], Hirsch [1979], and Shavell [1980, 1984] investigate optimal risk allocation in breach of contract situations. These researchers examine the effects of contractual provisions that encourage grantees to complete their promises or default. Shavell notes that most contracts contain provisions such as a mutual set of promises or covenants to be performed (or not performed) and contingencies along with remedies such as payment of damages if one or both parties fail to perform their obligations. In addition, contracts with conditions such as a contingency occurring require contractual performance after the occurrence of the stated event. The failure of the stated event to occur discharges the contract and subjects the contracting parties to no liability. According to Shavell, the presence of an increased number of provisions such as covenants and contingencies to which a contract is subject would make the contract less valuable.

Other Researchers. Other authors investigate the effects of contractual covenants and contingencies in other types of contracts. Dunn and Spatt [1985] investigate prepayment contingencies and due-on-sale clauses in mortgage contracts. Allen, Shilling, and Sirmans [1986, 1987] examine the relationship between provisions in purchase contracts for single-family house prices and the actual agreed upon sales price. They hypothesized that there exists a connection

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[44]Brennan, Cannaday, and Colwell (BCC) [1984] model the variation in office rent for a sample of twenty-nine Chicago office lease transactions. Although BCC include lease features such as the date of lease execution, rental rate in dollars PSF, term of the lease, the "work letter" cost in dollars PSF, rental abatement, CPI escalation, inclusion of a "stop" or "base year escalation," and the amount of the stop, other lease provisions such as renewal options and cancellation clauses were not given consideration. Further lessee characteristics such as credit worthiness were excluded from the model. Thus, certain lease provisions and lessee characteristics may have a significant impact on office and retail rental rates.

between single-family house prices and contractual contingencies since the presence of contractual contingencies create uncertainty and, therefore, the uncertainty causes a price premium.[45] The authors develop a model of contractual contingencies based on expected utility. Using a sample of house transactions, their results indicate that provisions such as contingencies contained in contracts for property rights affect the actual house purchase price in anticipated directions.

F. Summary

Extensive work on a number of topics relating to shopping centers and office buildings has occurred. In addition, leasing researchers have developed substantial theoretical and some empirical literature. However, virtually none of the literature on shopping centers, office buildings, or leasing examines lease provisions and their relationship to rent. Nevertheless, Smith and Warner [1979] and other contracting investigators indicate that contractual provisions may minimize contracting costs so as to affect nominal contract prices. Also, financial theorists and empiricists, real estate appraisers, housing researchers, legal theorists, and other researchers indicate, in varying degrees, that lease provisions will influence nominal rental rates.

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[45]The contingencies are in the form of contractual provisions that discharge the contract if they are not met. An example would be "purchase subject to buyer obtaining financing."

CHAPTER 3

LEASE CONTRACTING ISSUES AND THEIR RESOLUTION

Chapter 3 discusses why shopping center and office lease contracting issues develop from the existence of risks and opportunistic behavior and how these lease contracting issues are resolved. Chapter 3 is composed of four sections. Contracting issues in retail and office leasing are introduced in Section I. Section II gives an analysis of the resolution of retail leasing concerns by lease provisions. Testable hypotheses regarding the allocation of risks and the minimization of opportunistic behavior between the lessor and the lessee, by retail lease provisions, are proposed. Additionally, testable hypotheses concerning the base and percentage rent trade-off are presented. Section III examines the resolution of office leasing concerns. Testable hypotheses are also set forth which indicate how office lease provisions allocate risk and minimize opportunistic behavior between the contracting parties. A summary completes the chapter.

I. Contracting Issues in Leasing

A. Basic Provisions in a Retail or Office Lease

The retail or office lease is usually an extensive and complex document filled with many provisions.[46] Table 1 provides an outline of the basic provisions of commercial leases for retail and office space. The important commercial lease provisions include a description of the demised premises, the term of the lease, rent, obligations of the landlord, obligations of the tenant, subletting and

[46]Virtually all retail and office leases analyzed in this dissertation exceeded thirty legal pages in length. Some of the leases were as long as one hundred pages. However, most of the leases contained "boiler plate" sections based upon the International Council of Shopping Centers and Building Owners and Managers Association model leases.

TABLE 1

Basic Commercial Lease Provisions for Retail Shopping Center and Office Leases*

I. The Demised Premises
   A. Area
   B. Condition of Demised Premises

II. Term of the Lease
   A. Generally
   B. Duration; Statute of Frauds
   C. Commencement Date
   D. Renewals
   E. Termination
   F. Persons Deriving Rights through the Tenant

III. Rent
   A. Fixed Rent
      1. Increases in Fixed Rent
      2. Rent Abatements and Offsets
   B. Percentage Rent (only applicable to retail leases)
      1. Generally
      2. Definition of "Gross Sales"
      3. Tenant's Conduct of Business
      4. Frequency of Payment
      5. Statement of Sales
      6. Negation of Partnership
      7. Noncompetition/Radius Restrictions
      8. Prepaid Rent; Security Deposit
   C. Additional Rent
      1. Utility Charges
      2. Real Estate Taxes
      3. Common Area Charges
      4. Operating and Maintenance Expense

IV. Obligations of Landlord
   A. Maintenance of Premises
      1. Free-standing versus Multi-tenant Structures
      2. Shopping Centers
   B. Tenant Expansion Options
   C. Contribution to Merchants' Associations

V. Obligations of Tenant
   A. Maintenance of Leased Premises
      1. Structure
      2. Landlord's Failure to Make Structural Repairs
      3. Nonstructural Repairs

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*American Bar Association [1987].

TABLE 1
(continued)

- B. Compliance with Laws
  - 1. General
  - 2. Limitations
- C. Use Clause
  - 1. General
  - 2. Legality of Use
  - 3. Exclusive Use Rights
  - 4. Abandonment

VI. Subletting and Assignment
- A. Consent to Assignment
- B. Liability of Original Tenant
- C. Assignment to Related Entities
- D. Assignments to Affiliates
- E. Assignment of Subtenant Rent
- F. Involuntary Assignment
- G. Recapture of Profits or Space

VII. Insurance and Condemnation
- A. Insurance
- B. Kinds of Insurance
- C. Condemnation

VIII. Defaults

IX. Options
- A. Options to Modify the Leasehold Interest
  - 1. Option to Expand Term
  - 2. Option to Lease Additional Space
  - 3. Option to Terminate
- B. Options to Acquire the Landlord's Interest
  - 1. Option to Purchase
  - 2. Right of First Refusal Option

X. Subordination
- A. General
- B. Foreclosure
- C. Lender Considerations
  - 1. Quiet Enjoyment
  - 2. The Nondisturbance Agreement

XI. Estoppel Certificates

assignment, insurance and condemnation, defaults, options, subordination, and estoppel certificates. This dissertation reviews only those basic provisions which allocate risk, minimize opportunistic behavior, or can be demonstrated to significantly affect the nominal rent charged by the lessor. Friedman [1983] provides an excellent overview of the existence and legality of the commercial lease provisions that are not analyzed in this research.

A number of contracting issues relating to allocation of risks and minimization of opportunistic behavior arise in the retail and office leasing process.[47] Among the different types of risk associated with the lease contracting process are default, portfolio, and geographic. Opportunistic behavior consists of free rider issues and quasi-rent appropriation.

B. Allocation of Risks

In the ex-ante lease contracting process, the landlord and the tenant may hold different investment portfolios and therefore may have different preferences toward several types of risk associated with leasing.[48] These types of risk include default, portfolio, and geographic risk. Default, portfolio, and geographic risk determine how much the lessor or the lessee needs to be compensated to bear a particular risk. Thus, the risk preferences of the landlord and the tenant along with the amount and type of rent charged help determine how leases are structured. A review of each type of risk is necessary in order to understand how and why lessors and lessees value the different risks.

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[47]This analysis of contracting issues in retail and office leasing follows Brickley and Dark's [1987] examination of franchising related contracting problems.

[48]Although capital market theory suggests that everybody holds the market portfolio and a risk free asset, the lack of divisibility and hedging opportunities with real estate and small business ownership along with greater transaction and search costs may necessitate landlords and tenants holding different non-market portfolios.

1. Default Risk

In setting lease rental rates, the landlord makes ex-ante judgments about the credit worthiness of the tenant.[49] If the credit worthiness of the tenant is good, so that the probability of the tenant defaulting is low, then the landlord is less uncertain about receiving the rental cashflows due him under the lease accord. However, if the credit worthiness of the tenant is poor, so that the probability of the tenant defaulting is high, then the landlord is more uncertain about receiving the rental cashflows due him under the lease accord. The uncertainty about receiving the rental cashflows can affect the lease rental rates charged by the landlord. If lower (higher) default risk through higher (lower) credit worthiness leads to decreased (increased) uncertainty about the landlord's receiving rental payments, the landlord can be expected to charge lower (higher) lease payments to lessees with lower (higher) default risk, all else being equal.

2. Portfolio Risk

In cases where a tenant has limited resources so that a large proportion of his personal wealth and income rely on the performance of his business, then his

[49]Even though a lessor can regain possession of his retail space within a few weeks in the case of lessee default, there exist costs of default such as releasing expenses, space downtime, attorney's fees, etc.

investment portfolio may lack diversification.[50] This can create problems.[51, 52] First, the undiversified merchant or office space occupant may require higher than normal rates of return from his business in order to justify holding an undiversified portfolio.[53] Second, an undiversified tenant will be less likely to desire the same lease term or make the same investment decisions as a tenant who holds a well diversified portfolio.

An undiversified tenant may prefer a shorter lease term so as to reduce the present value of rental payments that he guarantees in the lease since this amount could be due in full or remain payable in the case of business failure or other financial distress.[54] The lease guarantee is similar to a contingent debt and would

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[50]Although the tenant is referred to as an individual, the tenant may be either a corporation, partnership, or individual.

[51]It is assumed that the undiversified tenant is unable to diversify or hedge at reasonable costs all the risks associated with his business, including the risks associated with a unique location. The inability to diversify or hedge occurs because there exist little, if any short sale possibilities for stock or other assets similar to his business and/or business location. Also, applicable options and futures are not available for most businesses and their location and insurance does not fully cover business operating and default risks. Fama and Jensen [1983], Rubin [1978], and Shavell [1979] review the incentive problems with holding undiversified portfolios.

[52]Difficulty arises in testing for the effects of tenant portfolio diversification on investment choice and lease structure. Nevertheless, approximately 30 out of 103 retail tenant financial statements were available. These financial statements, which mostly represented independent tenants, indicated that most of the independent tenants had a net worth of less than $200,000.

[53]Alternately, the tenant may have private information that explains why he owns a business which makes his portfolio more undiversified.

[54]The retail and office lease usually contains provisions which prevent a tenant from subleasing or assigning his space to a third party without the prior written permission of the landlord. If a sublease or assignment is allowed, then the lease normally requires that the new tenant be in the same trade or business so as not to alter the tenant mix. However, finding a new and/or similar tenant entails search, legal, remodeling, space downtime, and other costs (especially for retail tenants). In addition, the original tenant may still remain liable for the new tenant's lease payments.

affect the diversification of his portfolio.[55] For the undiversified merchant or office tenant, a longer term lease is not merely more contingent debt which allows movement outward along the capital market line (CML) for his holdings, but also represents greater investment concentration in his business or one asset. Therefore, an undiversified tenant may choose to minimize his lease term in order to reduce the contingent debt's potential impact on his personal portfolio.[56] In addition, an undiversified tenant has reduced incentive to invest additional wealth in his store or office space because his portfolio may become even more undiversified. Further, the undiversified retail merchant may be less willing to undertake costly activities such as extensive advertising to promote his business and, indirectly, the shopping center and would prefer percentage over base rent.

An undiversified merchant may not want to pay as much base rent for a leased premises, preferring to pay higher percentage rent since the latter system allows the merchant to share some of his non-diversification risk with the landlord. The landlord, in most cases, will be better able to handle the non-diversification risk of the merchant's operations because the landlord has more wealth and is better diversified. The landlord owns the lease space for many stores. By holding varied investments and/or leasing to retail tenants with less

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[55]Jensen and Smith [1985] indicate that a lease is a substitute for secured debt because it accomplishes the same objective. However, with a lease the lessor or lender keeps title to the asset and the lessee (borrower) has use of the asset provided default does not occur. Furthermore, Chiang, Lai, and Ling [1986] report that a lessee's fixed monthly rental payments paid to a lessor are similar to payments made by corporations to investors who hold their debt. Thus, a lease can be valued by Merton's [1974] contingent claim framework.

[56]Although the contingent debt's present value is determined by the tenant's probability of default, holding a large negative contingency could force the undiversified lessee to alter the contents of his wealth portfolio so as to lessen the potential impact of the liability. If the undiversified tenant chooses not to reallocate his portfolio, he may be forced to hold an even more undiversified portfolio. Nevertheless, if the undiversified tenant alters his personal portfolio to lessen the lack of diversification problem associated with guaranteeing leases, there exist portfolio reallocation costs. These reallocation costs could be substantial if it means selling an illiquid asset such as a house.

than perfect positive correlation in terms of profitability/returns, a landlord is able to reduce the variance of investment cashflows and/or rental payments. Thus, higher percentage rents and lower base rents are expected for financially undiversified merchants.[57]

3. Geographic Risk

Geographic non-diversification increases the risk of the tenant who has a single unique location. By not diversifying geographically, the single location tenant has to rely on the fate of one economy and a unique location versus having exposure to many local economies and locations. By contrast, the geographically diversified tenant with many different business sites benefits from the economic stability of multiple economies and locations.[58] Thus, by having numerous store or office locations with less than perfectly positive correlations in terms of local economies which impact retail sales activity, a geographically diversified tenant is

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[57]By contrast, the financially diversified tenant enjoys the economic advantage of a diversified investment portfolio. If a tenant is a major chain store, large office space user, or is otherwise wealthy, then its portfolio may be large enough so that a lease payment guarantee would not impact its portfolio's diversification. Therefore, the national chain store, large office space user, or wealthy tenant would be less concerned about the base and percentage rent combination (for retail tenants only), the term of the lease, and the amounts and kinds of investments put into the leased space.

[58]An example would be a tenant who has store locations in an economically booming city or area of a city and in an economically suffering city or area of a city. His retail sales and cashflows would be more stable (assuming they were less than perfectly positively correlated) than a store owner with only one location.

able to reduce the variance of possible returns.[59] Therefore, the geographically diversified tenant may enjoy reduced risk.[60]

In addition, a geographically undiversified merchant may not wish to pay as much base rent for leased space as a geographically diversified tenant, preferring to pay higher percentage rent since the latter system allows the merchant to share some of his geographic non-diversification risk with the landlord. The landlord, in most cases, will be better able to handle the geographic non-diversification risk of the merchant's operations because the landlord owns the lease space for many stores. By leasing to compatible retail tenants with less than perfect positive correlation in terms of profitability/returns, a landlord is able to reduce the variance of possible rental payments. Therefore, higher percentage rents and lower base rents on average are expected for geographically non-diversified merchants.

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[59]The reduction in risk from geographic diversification is evident when one explores the implications of

$$\sigma = \sqrt{\Sigma_j \Sigma_k A_j A_k \rho_{jk} \sigma_j \sigma_k}$$

where σ is the standard deviation of the returns generated by the portfolio of store locations, A_j is the proportion of the total area of all stores in location j, A_k is the proportion of the total area of all stores in location k, ρ_{jk} is the expected correlation between returns from store location j and k, σ_j is the standard deviation about the expected return of location j, and σ_k is the standard deviation about the expected return of location k. In a similar manner, reduction of risk may also occur by diversifying across property types. See Hartzell, Shulman, and Wurtzebach [1987] for an analysis of reducing risk through geographic diversification and Hartzell, Hekman, and Miles [1986] for an analysis of reducing risk through diversification across property types.

[60]Since his risk adjusted return is lower, then the geographically undiversified tenant should diversify geographically if he wants to increase his risk adjusted return. However, owning additional businesses in more locations may be financially and managerially impossible so that the undiversified tenant bears this risk.

C. Opportunistic Behavior[61]

1. Free Riding by Tenant

Free riding by a tenant occurs when a tenant defaults on his obligations to the landlord and other tenants. For example, a shopper is less likely to return to a shopping center after purchasing low quality merchandise or not being able to purchase an item because the store is closed. An office tenant could use his office space for manufacturing or as a warehouse which could negate the quality of the building as office space. These costs are borne primarily by the shopping center or office building landlord and by other tenants. Retail lease provisions requiring standards of operation, such as the sale of quality items only or maintaining minimum business hours, lessen the merchant free rider problem. Office lease provisions requiring standards of operation, such as restrictions on the use of the premises, lessen the office tenant free rider problem. In addition, minimizing advertising expenditures allows a merchant to free ride on the advertising dollars spent by the landlord and other merchants.[62] However, merchants' associations, common in many community, regional, and super regional shopping centers, lessen this problem by undertaking joint advertising for the shopping center with other tenants and the landlord.[63] Additionally, one explanation for retail and office tenants finishing out their own space is that it serves as a bond to the landlord. Once the refurbishing occurs, the merchant or office space occupant has a greater

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[61]Restriction of opportunistic behavior can also be thought of as writing contracts whereby participants bear the full costs of their unwanted actions.

[62]Also, a merchant has a decreased incentive to advertise if benefits go to other shopping center tenants.

[63]A merchants' association is an organization whose purpose is to improve cooperation among tenants and between the landlord and the tenants. In addition, the organization can regulate activities of the shopping center and tenants that are not covered by lease provisions. However, joint advertising and promotion is the primary function of the group. Tenants are required by lease provision to join the association and pay a proportionate share of the organization's expenses. However, the landlord contributes to the costs of the group. Kuklin [1980] observes that a merchants' association usually takes the form of a corporation, with by-laws and a board of directors, so as to limit liability.

incentive to maintain the worth of the shopping center or office building because the market value of his leasehold interest would be low in the case of shopping center or office building failure.[64]

2. Free Riding by Landlord

The shopping center landlord/developer assumes responsibility in assuring the attractiveness and viability of the shopping center and tenant space. Furthermore, the landlord provides maintenance and advertising and creates an optimal tenant mix. The office building landlord/developer also assumes responsibility in assuring the attractiveness and usability of the office building and the tenant spaces. In addition, the landlord provides maintenance and signage as well as creates an optimal tenant mix. Since these responsibilities are costly, and many of the benefits are included in the leasehold value of the retail or office tenant's space, the shopping center or office building owner has an incentive to skimp on his obligations. Thus, opportunistic behavior by the landlord occurs when the landlord fails to satisfactorily maintain common areas, tenant space, or tenant mix. Improperly maintained common areas, tenant facilities, or tenant mix effectively increases the tenant's cost of leasing.[65]

3. Quasi-Rent Appropriation by Tenant[66]

A tenant can engage in quasi-rent appropriation. Suppose that a shopping center or office building landlord/developer leases a custom space. If the lessee does not pay the contracted rent, but instead offers a lower amount, then a lessor may find it in his interest to accept less rent if the costs of enforcing a contract

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[64]Although the landlord can finish the space exactly the way the tenant likes it and the landlord can amortize the cost over the lease term so that the tenant pays an otherwise higher rent, the tenant would not be obligated to pay this amount with a shopping center or office building failure. Whereas, if the tenant owned his leasehold improvements he would lose his investment.

[65]In addition, improperly maintained common areas, tenant facilities, or tenant mix would increase tenant turnover and releasing costs for the landlord.

[66]The portion of a space's value above the value given to the best alternative use is the appropriable quasi-rent.

are greater than the benefits of the higher rent possibly received. However, most leases include late charges, security deposits, and guarantees to protect the landlord from this quasi-rent appropriation.

Bargaining costs between the landlord and the tenant arise when there is a likelihood for post-contractual opportunistic behavior. Klein, Crawford, and Alchian [1978] comment that the costs of contracting increase as assets become more specific in their use by the lessee. Therefore, when assets are more specific, more appropriable quasi-rents are created.[67]

4. Quasi-Rent Appropriation by Landlord

When a merchant or office space occupant changes his location, he could lose the goodwill with his customers that has been developed. The loss of customer goodwill occurs because a business' ability to serve a given trade area is linked to its location. A landlord can appropriate a tenant's customer base and goodwill when a tenant has a short term lease and the landlord refuses to release the space to the tenant.[68] The landlord can then release the space to a similar new tenant at higher rent and capture the customer base and goodwill that had been developed by the original tenant. Alternatively, the landlord can raise the rent when releasing to the existing tenant so as to appropriate the tenant's success.

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[67]Klein, Crawford, and Alchian [1978] observe that more contract reneging occurs when there are more appropriable specialized quasi-rents. However, certain lease provisions can reduce the possibility of gains from such opportunistic behavior.

[68]It is noted that it would be difficult for a landlord to appropriate the customer base and goodwill of some anchor or draw merchants whose customer bases would follow in the case of relocation. A Sears or McDonald's would be examples of tenants which would be difficult for the landlord to expropriate their customer bases and goodwill. However, most retail tenants can be considered to have competitors who would quickly replace them. Dry cleaners, drug stores, supermarkets, video rental stores, etc. are examples of such merchants.

Examples of an office tenant's customer base that can be appropriated are service oriented tenants such as banks, tax preparers and processing services, and discount stock brokers. However, most office tenant customer bases are independent of location and the customers would choose to follow the tenant to a new place of business.

A retail or office landlord can appropriate another type of quasi-rent by deliberately delaying the completing of a tenant's space. A tenant encounters considerable costs when opening a new store or office. These costs include attorneys' and architects' fees, commitments for the purchase of fixtures, equipment, furniture, and/or inventory, tying up working capital, etc. In a lease, the landlord typically agrees to deliver space to a tenant by a specific date. Therefore, if the deadline for construction completion and premises delivery to the tenant is not met by the landlord then the tenant is exposed to additional expenses. These additional expenses, such as lost advertising and forgone business, effectively increase the tenant's rental rate and are a quasi-rent appropriation by the landlord.

A solution to risk-bearing imbalances and the threat of opportunistic behavior by lessors and lessee is an economically enforceable commercial lease.

II. Contracting Issue Resolution in Retail Leasing

Covenants, contingencies, and other special provisions and the base and percentage rent combination are employed to lessen or reduce contracting problems associated with retail leasing.[69] Stambaugh [1978, p. 23] observes that lease provisions are not without value because they protect both the landlord and the tenant and "ensure the survival of the (shopping center) species." In addition, the landlord incorporates his ex-ante judgment of a tenant's default risk and shopper drawing potential into rental payments.

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[69]Klein, Crawford, and Alchian [1978] point out that contractual provisions which reduce opportunistic behavior can be either (1) an explicitly written and legally enforceable guarantee or (2) an implicit contractual guarantee enforced by the threat of the contracting party or other market participants withdrawing future business.

A. Provisions in Retail Leases[70]

Term of Lease. The American Bar Association [1987] defines the term of a lease to be the period of time during which the tenant has the exclusive right to possession of the premises along with the corresponding obligation to pay rent.[71] Retail leases with long terms can reduce the problem of landlord quasi-rent appropriation as well as decrease the landlord's risk.[72] Frequent contract renegotiation from the use of short term leases could allow the retail landlord to appropriate the merchant's customer base or space improvements. Thus, long term contracts lessen the chance of quasi-rent appropriation by the shopping center landlord. However, long-term leases are large investments for some merchants and may lead to greater imbalances in risk bearing, if the merchant holds an undiversified portfolio or is geographically non-diversified. Consequently, as the lease term lengthens, the risk of the retail tenant increases while the risk of the landlord decreases since he has guaranteed rental revenues to cover mortgage payments and operating expenses.[73] Additionally, tenant turnover costs such as new tenant search expenses, forgone rent, and reletting and renovation charges may also be significant to the landlord, therefore inducing the landlord to offer

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[70]Explicit long-term contracts can reduce opportunistic problems but may be costly to write and enforce. Costs of writing include specifying possible violations while enforcement costs involve policing and litigation.

[71]The term of the lease usually begins the earlier of a certain number of days after the premises have been delivered to the tenant (for finishing work) or when the tenant opens to the public for business.

[72]Also, if two parties are undertaking a joint activity, then they are less likely to create ill will if the relationship must continue for years.

[73]The lease term can also adversely affect the landlord if he underestimates inflation, and vice versa. However, if the landlord chooses not to include a rent escalation provision in the lease he may have already decided to bear the inflation risk.

long-term tenants rental discounts.[74] Shear [1983] uses the rental housing market in the Los Angeles-Long Beach area to show that landlords provide long-term tenants with rental discounts to reduce turnover. Thus, shopping center landlords offer retail tenants rental discounts dependent on "length-of-stay" because they receive most of the risk shifting benefits of long-term leases and enjoy reduced tenant turnover and reletting expenses.

HYPOTHESIS 1: Landlords offer long-term retail tenants "length-of-stay" discounts.

Rights to Renew. A short-term lease with a right or option to renew can be superior to a long-term contract for a lessee. A right or option to renew grants the tenant the right but not the obligation to lease space for a specified period of time at a designated price. For most retail leases, the option to renew modifies or extends the leasehold interest created by the original lease. The option to renew generally subjects the lessee to the covenants and agreements contained in the original lease. In addition, the option to renew is usually valid only for a certain period of time such as the time period when the original lease is in existence.[75]

McConnell and Schallheim [1983] develop a framework for modeling the valuation of asset leasing contracts which contain a renewal option. They indicate that an operating lease with an option to renew is similar to a long-term operating lease of length equal to the original base period plus the term of the renewal period. Assuming perfect capital markets and equal access to information by all

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[74]In the presence of significant tenant turnover costs, offering rental discounts may be a positive net present value decision for a landlord. The present value of the expected tenant turnover costs would be greater than the present value of rental payment discounts that serve as incentives for the tenant to remain.

[75]However, the American Bar Association [1987] notes that in fixing a time period for an option's validity, a balance arises between the landlord's desire for sufficient time to find a new tenant and the tenant's wish to keep his economic choices open as late as possible into the lease term.

participants, McConnell and Schallheim develop a compound option model to value the lease renewal option.

Options for the lessee to extend the lease at the current lease rate and terms can reduce the uncertainty of quasi-rent appropriation by the landlord and lower the risk associated with holding a poorly diversified portfolio and having little geographic diversification. The threat of a landlord quasi-rent appropriation of a tenant's customer base and goodwill is reduced because the tenant can exercise the option and extend the lease. Having an option to renew the lease reduces business investment by the tenant by not having to guarantee a longer term lease. Further, an option to extend the lease reduces transaction costs associated with releasing or leasing a new space. Thus, if a tenant's wealth portfolio is undiversified or the tenant does not benefit from the stability of multiple locations, then holding an option versus greater investment with a longer term lease will reduce the nondiversification problems. Thus, a short-term lease with an option to renew should be used when the potential for a client's business development is great, but a long-term obligation to pay rent would create risk bearing problems.

Although lease renewal options reduce lessee risk of quasi-rent appropriation, poor portfolio diversification, and no geographic diversification, the use of an option to renew provision exposes the lessor to greater risk. At the original lease's expiration date, the landlord is not free to lease the space to a tenant at the market rate, but must charge a predetermined contract rate. In addition, the contract rate may not adequately reflect the effect of inflation.[76]

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[76]However, without an option to renew, a "lame-duck" tenant may follow a certain pattern of opportunistic behavior whereby he doesn't restock his store, arry the latest inventory, or maintain the premises. This could decrease the landlord's receipt of percentage rent, increase renovation expenses for releasing, and impact the sales of other merchants located in the shopping center. See American Bar Association [1987].

Robbins and Schatzberg [1986] and other researchers suggest that when there is an option attached to a financial instrument stockholders [or parties to the contract] pay at the time of contracting an amount which reflects the full value of the option.[77] A similar argument can be made for the inclusion of a renewal option in a lease. If a renewal option is effective in reducing risk to a tenant, then the inclusion of a renewal option should be priced at the time of contracting. Thus, the value of an option for a lease extension should be reflected in rental payments.

HYPOTHESIS 2: Lease renewal options reduce lessee risks, but expose the lessor to increased risk, so a rental premium should be charged to the tenant.[78]

Standards of Tenant's Operation. To insure a proper tenant mix, the shopping center landlord requires that the tenant use the leased premises for specified retail purposes only. Furthermore, the lease usually insists that the tenant maintain its retail space and conduct its business in a manner consistent with the other tenants. Provisions are ordinarily specific and demand that the store be open for certain hours, sell only specified types of merchandise or render particularized services, have quality merchandise, and have adequate personnel.[79] In addition, the lease usually contains a provision which requires that the business operate continuously throughout the term of the lease during standard shopping

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[77]Robbins and Schatzberg make this observation when discussing the valuation of call options attached to corporate bonds. The authors note [p. 935] that, ". . . the incremental compensation provided to bondholders should exactly offset the value of the call provision retained by equity holders. Indifference should obtain."

[78]This is equivalent to stating that there is "no free lunch." If the renewal options are valuable then they should sell for positive prices.

[79]The American Bar Association [1987] observes that a landlord benefits from provisions restricting a tenant's use of the premises. For example, if a landlord loses a tenant in a shopping center with a certain tenant mix and seeks to replace the tenant with a merchant of the same variety, then a standard of operation's clause would guarantee that the new tenant would sell the intended merchandise.

center hours and not be closed. A tenant's unauthorized abandonment of the premises is a default. In a shopping center, a merchant's failure to operate will impact the store mix and the overall center's gross sales. Furthermore, empty retail space presents an undesirable appearance. However, a clause is normally included which excuses the tenant from standards of operation because of strikes, acts of God, etc.[80]

Standards of Maintenance. Tenants have less incentive to maintain assets than do owners.[81] Lessors are aware of this and write covenants to insure maintenance and upkeep. Therefore, many retail leases stipulate the standards of space use that a tenant must meet. Explicit remedies for default which are often written into leases include lease termination and/or the loss of security deposits. As the probability of tenant opportunistic behavior occurring increases, more detailed property maintenance covenants should be incorporated into a lease.

Minimum Level of Inputs. Some merchants will free-ride on the landlord by deliberately under-advertising and purchasing inadequate insurance. Lease covenants usually require minimum expenditures on advertising and insurance so as to lessen this free-rider problem.[82] Thus, lease covenants regarding advertising and insurance force a tenant to face the full economic cost of his behavior.

Security Deposit and Late Payment Charges. Contractual provisions requiring security deposits or late charges, which can penalize the lessee for unwanted opportunistic behavior, reduce lessor uncertainty and are alternatives

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[80]The court system through case rulings has narrowly defined acts of God. The rulings have deemed hurricanes, tornadoes, and other major catastrophes as acts of God. See Friedman [1983].

[81]It is important to note that tenant selection may also affect operating costs. Careful tenant selection usually means lower costs for maintenance and renovations. Thus, a landlord who specializes in a certain type of property and tenant may be able to reduce default costs as well as maintenance and management expenses.

[82]In addition, Mayers and Smith [1981] note that requiring tenants to purchase their own insurance allows for increased tenant monitoring by an insurance company.

often used to economize on litigation expenses.[83] Late payment charges are owed when rental payments are overdue. Since most retail leases contain provisions which require unpaid rent to incur interest at the prime rate or better then a late payment charge serves as a penalty.[84] Thus, the late payment charge or penalty is separate from, and is in addition to, the accrued interest on the rental payment not received. Late payment charges discourage the untimely payment of rent and effectively serve as additional security that rental payments will occur in a timely manner.

Smith and Wakeman [1985] indicate that a security deposit and late payment charges guarantee the lessee's monthly rental payments. In addition, a security deposit encourages the maintenance and timely return of the premises by the tenant. If the leased space is not returned in good condition or the tenant does not vacate the premises by the lease termination date, then the security deposit is used to compensate the landlord. Thus, if a lease provision leads to decreased uncertainty for a landlord through the reduction of opportunistic behavior by a lessee, then the landlord can be expected to receive lower lease payments than other landlords with leases on similar assets but without these beneficial provisions.[85] By contrast, if a lease provision creates increased uncertainty for a landlord by allowing opportunistic behavior by a lessee, then building owners may be expected to receive higher lease payments than other

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[83]Proving contract violations for legal remedies can be costly.

[84]See Friedman [1983] for a discussion of the penalty aspects of late payment charges.

[85]It can be argued that late payment charges decrease the probability of default. As a consequence, default premiums are lower and, therefore, rents are lower. This argument can be expressed as:

$$C = r + d$$

where

C = contract rent
r = rent for AAA tenant
d = default premium, including late charges, etc.

The default premium is adjusted for late charges because as they reduce the probability of default, default premiums will be lower.

lessors of similar space but absent detrimental lease provisions. Smith and Wakeman also note that use of a security deposit, late charges, or other monitoring provisions will occur when it is easy to inspect the leased property for misuse. Since retail space is easily inspected by property managers, monitoring provisions to protect the property are more likely to be observed.[86]

HYPOTHESIS 3: Late payment charges decrease rent because the landlord's uncertainty surrounding tenant opportunistic behavior is reduced.

Rent Escalation. A landlord favors inclusion of a rent escalation provision as a hedge against the landlord's income being eroded by unanticipated inflation.[87] Common escalation provisions that provide for increased rent over the lease term are the "step-up rent," the "indexed" rent, and re-appraisal.[88] With the step-up rent, the fixed rent is periodically increased over the lease term in pre-established amounts. The indexed rent allows the fixed rent to fluctuate (or only increase) along with an external standard or index. The external standard or index is usually an economic indicator such as the Consumer Price Index (CPI).[89] Under the re-appraisal escalation method, the fixed rent is predetermined by an appraiser during the lease term. Although the re-appraisal method can provide more exact

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[86]Some leased assets such as automobiles are not easily inspected. Therefore, without the benefits of easy inspection, monitoring provisions may not be present. However, the costs of a landlord's ex-ante expectations of opportunistic behavior by the lessee would be incorporated into the lease rates or insurance would have to be provided by the lessee.

[87]Friedman [1987] notes that property tax and operating expense escalation are two factors which can reduce the landlord's income stream.

[88]See American Bar Association [1987] and Friedman [1987] for more information.

[89]Although the CPI does not necessarily match changes in the value of real property and rental rates, the American Bar Association [1987] observes that it is commonly used because it is widely published and easy to employ. The CPI is determined by the Bureau of Labor Statistics of the United States Department of Labor. Separate CPI indices are published for major urban areas.

estimates of rental value than the step-up or indexed methods, it requires greater time for execution and is more costly.

A rent escalation provision effectively transfers some, if not all, the inflation risk associated with operating the property from the landlord to the tenant. Thus, a rent escalation provision transfers uncertainty from the landlord to the tenant.

HYPOTHESIS 4: A rent escalation provision reduces uncertainty for the landlord but increases uncertainty for the tenant, so that a rental discount should result.

Rental Concession.[90] A tenant is exposed to considerable expense when opening a new store. These costs include attorney's and architect's fees, commitments for the purchase of fixtures and inventory, tying up working capital, etc. In a retail lease, the landlord typically agrees to deliver space to a tenant by a certain date. Therefore, if the deadline for construction completion and premises delivery to the tenant is not met by the landlord, the tenant is exposed to additional expenses. These additional costs which include lost advertising and business effectively increase the tenant's rental rate and are a quasi-rent appropriation by the landlord. However, a rental concession which grants the tenant lower rent as compensation for the late delivery of space serves as a deterrent to such opportunistic behavior.[91] Provisions for rental concessions can also provide for reduced rent by reason of a major tenant's failure to open for business or to continue operation,[92] or because the landlord violates other

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[90]These are rental concessions granted after the lease has been executed and are not related to rental discounts or lower rents given by the landlord to attract tenants to a shopping center or office building.

[91]Additionally, the loss of rental revenues by the landlord serves as an inducement by the landlord to provide the finished space in a timely manner.

[92]According to Stambaugh [1978], retail tenants located next to or near a major department store that closes can face disaster. This has been an unfortunate reality for stores located next to or near Woolco department stores.

covenants in the lease.[93] Thus, a landlord is exposed to additional uncertainty with a rental concession provision. The rental value of a premises would be lessened to the extent that a landlord's rental stream is reduced or interrupted by a rental concession.

HYPOTHESIS 5: A landlord rental concession provision reduces tenant risk, but increases uncertainty for the landlord, so a rental premium should be charged.[94]

Restrictions on Subleasing. Commercial leases usually contain provisions that restrict or limit the ability of a tenant to transfer or sublease space to another tenant. This restriction allows for a more effective bonding between the landlord and the tenant since any unforeseen use of the space could be detrimental to the landlord as well as other tenants.

Cancellation Provisions. Retail leases sometimes contain a cancellation provision which allows the landlord and/or tenant the right to cancel the lease prior to its expiration. Cancellation rights are usually found when the landlord, the tenant, or both parties are unsure of the other contracting party's ability to fulfill the obligations of the lease. A cancellation provision allows either or both parties to end the agreement without exposure to added liability or risk. Copeland and Weston [1982] observe that a tenant cancellation clause is really a put held by the lessee. Thus, a landlord cancellation feature would really be a call held by the lessor.[95]

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[93]In the event of damage by fire or other hazard to the premises or the property is condemned, the fixed rent is normally abated. See Friedman [1983].

[94]In order for the rental concession to be an effective deterant to unwanted lessor behavior, the present value of the rental concession has to be greater than the present value of the rental premiums to be paid.

[95]Copeland and Weston [1982] use a binomial option pricing model to value the lessee cancellation clause or put associated with operating leases. Since the value of the put varies with both the increased uncertainty of the leased asset's replacement value and decreases with the riskfree rate of interest, individual estimates of the put's value would have to be determined for each leased asset. The same would also hold true for the lessor cancellation right or call.

Lee, Martin, and Senchack [1982] show how the contracting costs of monitoring a leased asset's use and maintenance are reduced by the inclusion of call options. The cancellation provisions allow the landlord to recapture the leased asset after the occurrence of an unwanted event or the tenant defaults.[96] These unwanted events or tenant defaults include percentage rents not being received from the tenant or dropping below a specified level for a certain period of time, the lessee's business being closed for several consecutive days, and the lessee failing to operate his retail establishment while other shopping center stores are open.

HYPOTHESIS 6: Landlord cancellation rights lower uncertainty for the landlord and decrease rent.

Common Area Maintenance. Provisions requiring contributions to common area maintenance by the tenant are often included in retail leases.[97] Although common area maintenance is essentially a public good and may therefore not be in the lessee's best interest to participate in the cost since he would receive the benefits anyway, the lessee can be more sure that the duty will be performed if he shares in the expense. Thus, it is in the lessee's best interest to participate in the cost of the maintenance so as to ensure that the common areas are properly maintained.[98] Further, since the shopping center owner and tenants benefit from common area quality, a sharing of these expenses results in both parties having an incentive to upkeep common areas.

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[96]The American Bar Association [1987] observes that a landlord cancellation provision provides greater protection against unwanted lessee behavior than a suit for damages or injuctive relief.

[97]Common area maintenance charges are usually allocated to the tenants based upon the ratio of the tenant's square foot area to the rentable area of the shopping center. Specific items of common area expense include heating, air-conditioning, lighting, cleaning, fire and security protection, utilities, landscape maintenance, snow removal, and liability insurance.

[98]Following Smith and Wakeman's [1985] example, contributions to common area maintenance can be considered a form of metering because it permits the landlord to bind the quality of the common area to the tenant's use.

Default. A provision regarding default by the tenant is usually written into a lease. The American Bar Association [1987] writes that a well drafted default clause will give the landlord the option to declare the tenant in default after the tenant fails to comply with the lease's covenants and agreements. For example, a tenant's breach of covenants to pay rent, maintain membership in the merchant's association, to be open for business, continuously operate during required periods, or comply with all laws, constitutes a default. After a tenant has committed a default and failed to cure it, the landlord can then take any security deposit, make any permissible late charges, or seek other remedies, including taking the space back, lease termination, eviction, legal proceedings, liquidated damages, acceleration of rent, and compensation for expenses such as releasing costs and brokerage and attorneys fees. However, landlords make ex-ante judgments regarding the default risk of a tenant due to financial distress and incorporate the risk into the lease rental payment.

Shopping center landlords make ex-ante judgments about the credit worthiness of the retail tenant in order to allocate default risk by setting lease rates which compensate the landlord for the expected losses from default of the merchant.[99] If the credit worthiness of the lessee is good then the uncertainty surrounding the landlord's receipt of future rental payments would be decreased. With decreased uncertainty about rental payment receipt, the landlord can be expected to charge lower lease payments than other leases on similar assets which have lessees of higher default risk. In contrast, if the credit worthiness of the lessee is bad then the uncertainty surrounding the landlord's receipt of future

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[99]Schallheim, Johnson, Lease, and McConnell [1987] observe that information asymmetries between the lessor and the lessee can exist which could affect lease rates. If the lessor has perfect information about the financial status of the lessee then lease payments should be positively related to the lessee's default potential. Without perfect information, lease payments would be positively related to the lack of lessee credit information, along with being affected by the default risk of the tenant.

rental payments would be increased. With increased uncertainty about rental payment receipt, the landlord can be expected to charge higher lease payments than other leases on similar assets which have lessees of lower default risk.

The Urban Land Institute [1987] describes three basic retail tenant types: national chain, local chain, and independent store. The three tenant types are objective proxies for the tenant's credit worthiness and operational experience. Tenants who are more credit worthy and have greater operational experience should have lower default risk.[100] National chain stores such as The Limited or Radio Shack normally have strong balance sheets and extensive operational experience. The Urban Land Institute classifies a national chain store as having operations in four or more metropolitan areas which are situated in three or more states. The independent tenant known as the "Moms and Pops" are at the opposite end of the tenant spectrum and have questionable balance sheets and limited operational experience. The Urban Land Institute describes an independent store as a business operating not more than two outlets which are located in one metropolitan area. The local chain stores fall in between the national chain store and the independent operator in terms of credit worthiness and operational experience. Therefore, landlords are expected to charge lower rent for a national and local chain store tenant than other leases on similar store space which have independent tenants as lessees. In addition, lower rental rate charges should exist for national and local chain store tenants even in the presence of information asymmetries between the lessor and the lessee, because larger tenants have more

[100]Additionally, credit worthy tenants such as national and local chain stores may benefit from the stability of geographic diversification and larger wealth portfolios.

quality information which lowers default risk.[101] Thus, rental discounts and premiums serve to allocate the tenant's default risk by compensating the landlord for the default risk that he bears. Also, a national chain store would be anticipated to have a greater rental discount than a local chain store because its credit worthiness and operational experience would be greater on-average than a local chain store.[102]

HYPOTHESIS 7: National chain and local chain store tenants should receive rental discounts because of the lower default risk associated with their credit worthiness and operational experience. National chain store tenants should be given a greater discount.

Shopper Draws. Although addressed indirectly by the rent to be paid provision, whether or not a tenant is deemed by the landlord to be a shopping center customer draw is an important aspect of the retail lease. Supermarkets, drug stores, and dry cleaners are examples of stores that attract many customers so as to create a positive externality for the other strip shopping center merchants to enjoy. As noted in Chapter 2, landlords and tenants are aware of the valuable positive economic externality that goes with shopping center customer traffic. Since store clustering especially benefits the retail merchant who is a shopper traffic exploiter (e.g. shoe store), the traffic generator or shopper draw (e.g. supermarket) may request a share of the positive externality he helped to create.

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[101]Schallheim, Johnson, Lease, and McConnell [1987] note that the size of the firm is a reasonable proxy for quality of information about the lessee. They suggest that lease rates will be inversely related to the availability of lessee information along with the ascertainable default risk. Thus, most national and local chain store tenants, who are larger than independent tenants and make available to landlords extensive public and non-public financial information, should have lower rental rates even with the existence of asymmetric information.

[102]Some developers may offer lease rate discounts to national chain stores because they have inadequate credit ratings and need national tenants with strong credit ratings in order to obtain financing.

Thus, a shopping center owner often provides rental discounts to a tenant, who is a shopping center customer draw.

HYPOTHESIS 8: A tenant who generates shopping center traffic should pay reduced rents because the landlord compensates the tenant for the customer traffic externality that he helps to create.

B. The Base and Percentage Rent Combination

Determining the value maximizing rental payment arrangement for a given tenant is a complex undertaking. However, industry leasing practices have evolved over time to allow national chain, local chain, and independent tenants to pay certain combinations of base and percentage rent. Table 2 provides an example of the variations in base and percentage of sales rent for selected tenant types and classifications.[103] The percentage rent is based upon a percentage of gross sales or revenue.[104]

The base and percentage rent combination for a retail tenant reflects a resolution of several contracting problems between the landlord and the tenant. Increased percentage rent and lower based rent enables tenants to enjoy reduced risk by transferring risk to the landlord who may be more financially and geographically diversified. Hence, there is an elimination of aggregate risk which

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[103]Most commercial landlords negotiate the base and percentage rent in advance with the tenant. As indicated in Table 1, the Urban Land Institute [1987, p. 186] reports that national chain family shoe stores located in neighborhood shopping centers will pay a median base rent of $7.71 per square foot and a median percentage rent of 4.0% of gross sales.

[104]The landlord desires that the lease definition for "gross sales" or "gross revenues" be as broadly defined as possible. For example, gross sales is usually written to include the gross selling price of all merchandise and services sold, leased, licensed, or delivered from the premises by the lessee. Further, merchandise or services sold includes all cash and credit transactions and includes revenues from orders taken on the premises, but filled elsewhere. In addition, the landlord often insists that the annual gross sales and the amount of percentage rent due statement be audited in order to ensure reliability. See Friedman [1983].

TABLE 2
Base and Percentage Rent Combination*

Tenant Classification	Total Base Rent Per Square Foot Median	Rate of Percentage Rent Median
Family Shoes		
National Chain	7.71	4.00
Local Chain	9.43	5.00
Independent	10.26	6.00
Radio, Video, and Stereo		
National Chain	7.82	3.00
Local Chain	10.46	3.00
Independent	9.78	4.00
Ladies Ready-to-Wear		
National Chain	10.85	4.00
Local Chain	9.58	5.00
Independent	8.95	6.00
Restaurant without Liquor		
National Chain	11.52	5.50
Local Chain	10.40	5.00
Independent	9.36	6.00

*From Detailed Tenant Information Tables for U. S. Neighborhood Shopping Centers, Urban Land Institute [1987].

is socially beneficial.[105] In addition, the receipt of percentage rent encourages the landlord to maintain and promote the shopping center as well as to create an optimal tenant mix. This reduces free riding by the landlord. Also, in Miller's [1977] equilibrium aggregate debt framework, paying more percentage than base rent may allow the low marginal tax bracket lessee or borrower to pay more rent when sales and marginal tax brackets are higher. However, increased monitoring by the landlord is necessary to limit tenant shirking that accompanies the greater use of percentage rent.

Lowering Merchant Risk. The decision about what amount of base and percentage rent to pay is a trade-off between lessor and lessee demands. The landlord wants an independent or non-credit worthy tenant to pay mostly base rent in order to ensure monthly income. With percentage rent, the landlord's income is more affected by the success or failure of the tenant's business and the productivity of the property's location than with base rent. Since the independent tenant usually has questionable financial worth and limited operational experience, the landlord may prefer mostly base rent so as to receive a certain cashflow. However, the independent tenant usually holds an undiversified portfolio and guaranteeing extended lease payments increases his risk. Percentage rent can reduce the lessee's exposure in his business so as to allow better portfolio diversification.

Percentage rent can also lessen the volatility of a tenant's cash flow by allowing the tenant to pay higher rent when store sales are good and low rent when sales are bad. Liebowitz [1983] has advanced a similar argument regarding metering and tie-in sales. He claims the volatility of a lease's net cash flow is

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[105]The establishment of efficient risk bearing in lease contracts is noted by Flath [1980]. Thus, one can easily construct examples where given access to perfect capital markets, leasing provides opportunities for the efficient administration of leased assets.

lessened through metering and tie-in sales because the lessee pays more rent when asset use is high and less rent for low asset use.

Landlord Maintenance Incentive. Wolfson [1985] points out that to induce a lessor to supply greater maintenance, the lessee must at least partially tie the landlord's fortunes to the maintenance of the leased asset.[106] Thus, the landlord's expected receipt of percentage of sales rent raises the likelihood that the landlord will maintain the shopping center's attractiveness and quality because the property owner would not choose a maintenance and upkeep program that lessens shopper traffic and rental income. Therefore, percentage rent binds together the landlord and tenants' mutual interests for increased sales or revenues.[107, 108]

Optimal Tenant Mix. The anticipated collection of percentage rents provides the landlord with strong incentives to arrange the tenant mix so as to maximize joint profitability.

Reducing Inflation Risk. Percentage rent provisions can make retail commercial real estate investments a reasonable inflation hedge.[109] Kuklin [1980, p. 366] writes that percentage rent is ". . . the cream in the shopping center coffee and the inflation hedge which makes the shopping center one of the prime investment properties today." As prices increase, so do retail sales and the

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[106]Wolfson [1985] demonstrates that lessor-lessee incentive problems are mitigated by tying together the contracting parties' fortunes. He employs a shared home ownership contract as an example.

[107]Friedman [1983] observes that rental income arising as a percentage of sales may be interpreted by the courts as establishing a partnership or joint venture between the landlord and the tenant. Thus, some leases contain a clause indicating that the parties do not intend to establish a partnership or joint venture.

[108]It is assumed that the tenant does not enjoy an inelastic demand curve. In actuality very few tenants (the U. S. Post Office is one example) have inelastic demand curves. The competitive nature of retail merchandising restricts the formation of monopolies.

[109]American Bar Association [1987].

landlord's rental revenues. Thus, the inclusion of a percentage rent provision reduces the landlord's uncertainty from unanticipated inflation.

Leasing and Taxes. Both Modigliani and Miller (MM) [1963] and Miller [1977] support the idea that there is a corporate tax shield on debt (due to the tax deductibility of interest payments) and therefore, when assuming no market imperfections, the supply of debt should be horizontal. However, MM believe that the corporate tax shield is always greater than the tax rate of the marginal lender (lender can shield interest income) so that the firm should borrow until it is 100% levered. By contrast, Miller suggests that the demand curve for debt is upward sloping due to lenders' increasing marginal tax rates. Miller's upward sloping demand curve intersects the horizontal debt supply curve when the personal tax cost of the marginal lender equals the corporate tax benefit to the borrower. In aggregate, there would be an equilibrium amount of debt. However, Miller suggests that the individual firm should issue more debt if its corporate tax rate exceeds the personal tax cost to the marginal lender. Since a lease is a substitute for debt, then a firm should lease more, if its corporate tax rate exceeds the tax rate of the marginal lessor.[110]

Miller's results indicate that the marginal tax brackets of the lessor and lessee could help explain the base and percentage rent trade-off. If the lessee's marginal tax bracket is low, he may choose to own rather than lease. This assumes that his portfolio will not be less diversified by owning. However, if he leases, he

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[110]Given the existence of market imperfections, aggregate and individual firm supply curves for debt may not be horizontal so as to result in an optimum amount of debt that is less than the 100% debt predicted by MM and the equilibrium amount predicted by Miller. An optimal amount of leasing for the individual firm may also result. These market imperfections include bankruptcy costs, contracting and monitoring expenses, information and signaling costs, other tax shields, and clientele effects. See Myers [1984].

may contract to pay more percentage than base rent.[111] As sales increase, so could his marginal income tax bracket. Thus, higher lease payments would result from higher sales, and higher marginal tax brackets would allow a greater advantage to leasing or for leasing to make better sense in Miller's framework. With higher sales and greater profitability, the lessee's marginal tax bracket could even exceed the marginal tax rate of the lessor. Thus, low marginal tax bracket retailers, who chose to lease, would prefer more percentage than base rent so as to minimize the net disadvantage to leasing. In alternative, if the lessee faces a larger marginal tax rate on income than does the lessor, the lessee would favor paying base over percentage rent. There would exist a net advantage to leasing from the beginning.

Portfolio Risk/Return Altering. Another landlord motive for percentage rent is that it allows the landlord to alter the risk/return characteristics of his rental property portfolio. Even with a portfolio of distinct tenants that have different risk and expected return characteristics, a landlord can alter the risk/return structure of his portfolio by increasing or decreasing the number of tenants who only pay base rent (percentage rent). Further, a diversified mixture of base and percentage retail leases should be superior to a landlord than either all leases bearing only base or percentage rent.[112]

Monitoring to Prevent Shirking. If a landlord participates in merchant revenues through percentage rent, the potential for the tenant shirking or deliberately not undertaking his expected operational activities increases.[113] Setting percentage rents on sales and not profits, tenant responsibility for space

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[111]There exist reasons for leasing even if it does not make sense in Miller's framework. These reasons include better location, lower contracting, monitoring, and transaction costs, lower operational expenses, other tax shields, etc.

[112]Martin [1987] demonstrates this portfolio argument with the revenue generated from a portfolio of franchisor owned and franchised outlets.

[113]The problem of monitoring tenant's activities can be viewed as similar to the problems associated with monitoring franchisees. Rubin [1978], Brickley and Dark [1987], and Martin [1987], and others analyzed franchiser-franchisee monitoring problems.

completion, merchant operation provisions, and other additional landlord monitoring help to reduce tenant shirking.

Basing the percentage rent on sales revenues instead of profits lessens the conflict of interest that would result from the incentive of the tenant to increase expenses or take additional on-the-job perks.[114] Another method of controlling tenant shirking is to have tenants complete or finish out their own store premises so that they have a significant amount of their capital at risk. Tenants, who invest little of their wealth in their business, have reduced incentive to increase their stores' sales. Additionally, provisions requiring tenants to spend a percentage of sales on advertising or maintain minimum business hours lessens shirking associated with percentage rent.

Stambaugh [1978] indicates that the major difference between stores paying base rent and stores paying percentage rent is that percentage rent tenants require additional sales monitoring.[115] Monitoring is made easier by comparing the sales of similar tenants or comparing a particular tenant's sales with national averages. Thus, there is a benchmark against which to evaluate the performance of a tenant.[116] Merchants are also monitored for quality substitution. Monthly sales reports can hint at changes in merchandise. Therefore, additional monitoring such as requirements for more frequent sales reports should be observed with merchants paying high percentage rent.

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[114]Jensen and Meckling [1976] discuss on-the-job perquisite consumption. They conclude that owner-managers have greater incentive to consume on-the-job perks because they receive all of the benefits, but pay only a proportion of the costs.

[115]Additional monitoring by landlords to ensure that tenants report sales truthfully includes periodic audits of tenant sales reports and/or sale tax payments.

[116]National averages for tenant type and classification are published by the Urban Land Institute [1987] and serve as exogenous standards against which the performance of lessees can be compared.

Thus, the combination of base and percentage rent reflects a trade-off between lessor and lessee demands. These demands include reducing unwanted risk-bearing by tenants and binding of landlord and tenant interests. In addition, the costs of monitoring tenant activities presumably represent a significant factor in the trade-off. However, a framework needs to be established to better understand the base and percentage rent trade-off. The framework which follows explains, by applied option price theory, how base rent is negatively related to percentage of sales rent while being positively related to sales break-point.

C. An Analysis of the Base and Percentage Rent Trade-off

Chiang, Lai, and Ling (CLL) [1986] extend Merton's [1974] corporate debt and Ingersoll's [1977] convertible bond contingent claim models to the valuation of retail lease contracts.[117] CLL develop a single period model which relates rental rates to the various contractual components of retail leases, including the percentage of sales rent. In their model, the underlying asset upon which the lease value is contingent is the residual claim on a tenant's sales. The tenant must first meet his business expenses prior to paying the landlord rent. Thus, tenant sales dollars are the valued asset because the probability of default on a retail lease, even if the lease requires only a minimum base rent, is largely a function of the variance of tenant sales.

Tenant business expenses representing first claims on tenant sales can be expressed as:

$$C = C_0 + C_1 S + C_2 S \qquad (3\text{-}1)$$

where C_0 is the fixed component of the operating expenses, C_1 represents the variable component of the operating expenses as a percentage of sales or S, C_2

[117]Other approaches beside the CLL method that demonstrate the trade-off between base and percentage rent include the bid-price and expected value methodologies. See Shilling, Sirmans, Turnbull, and Benjamin [1987] for an example of a bid-price application.

comprises the variable component of other expenses claim on sales (such as advertising) as a percentage of S, and C is the total tenant business expenses claim on sales.[118] The payment of the total business expenses claim on sales (C) takes priority over the making of any lease payments. However, lease payments have priority over any tenant business related profits that may be distributed.

A percentage lease arrangement is typical of most commercial shopping center leases. The percentage lease has two components of value: the straight lease and the percentage lease that attains value beyond the tenant's break-even level of sales. The tenant's break-even level of sales can be represented by:

$$S > [(B + C_0) / (1 - C_1 - C_2)] \qquad (3\text{-}2)$$

where S is sales, B is the base lease rent, C_0 represents the fixed component of the operating expenses claim, and C_1 and C_2 are the variable components of tenant business expenses. No percentage of sales rent (and possibly reduced base rent) is paid when $(1 - C_1 - C_2)S < B + C_0$ or sales net of variable expenses are less than base rent and fixed expenses. Since total lease payments are composed of base and percentage rent, the lessor will receive:

$$B + p (S - X) \qquad (3\text{-}3)$$

where B is base rent, p is a percentage, S is sales, and X is the sales break-point or value of sales beyond which the tenant begins to pay the percentage rent. Thus, the sales break-point is the exercise price in sales dollars at which the percentage rent becomes payable. Therefore, the value of a lease with minimum base rent and variable percentage rent at time T has the following boundary condition:

$$V_T = \text{Max} [\text{Min} \{ (1 - C) S - C_0, B \}, 0] + p \, \text{Max} (S - X, 0). \qquad (3\text{-}4)$$

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[118]CLL's model can also be expanded to include the lease provisions previously examined because they are similar to expenses in that provisions may represent claims on a tenant's sales (or lessen claims on tenant's sales). An example would be a provision allowing the tenant the right to open a second or more locations.

The first term in equation (3-4) represents the value of the base or fixed rent whereas the second term is the percentage rent. CLL solve the following partial differential equation that represents the Browman motion process of sales with the above boundary condition:[119]

$$(1 / 2) \sigma^2 S^2 V_{SS} + r S V - r V_S - S_t = 0 \qquad (3\text{-}5)$$

V_S and V_{SS} are the first and second partial derivatives of lease value with respect to sales, while r is the risk-free interest rate. Thus, the value of a percentage lease with current sales dollars, S_0, is:

$$V_L = (1 - C) \{ S_0 N (d_1) - X_1 e^{-rT} N (d_2) - [S_0 N (d_1') - X_2 e r^{-rT} N (d_2')] \}$$
$$+ p [S_0 N (d_1'') - X e^{-rT} N (d_2'')] \qquad (3\text{-}6)$$

where $d_1'' = [\ln (S_0 / X) + (r + \sigma^2 / 2) T] / \sigma\sqrt{T}$

$d_2'' = d_1'' - \sigma\sqrt{T}$

$X_1 = C_0 / (1 - C)$

$X_2 = (B + C_0) / (1 - C)$

$d_1 = [\ln (S_0 / X_1) + (r + \sigma^2 / 2) T] / \sigma\sqrt{T}$

$d_2 = d_1 - \sigma\sqrt{T}$

$d_1' = [\ln (S_0 / X_2) + (r + \sigma^2 / 2) T] / \sigma\sqrt{T}$

$d_2' = d_1' - \sigma\sqrt{T}$

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[119]Chiang, Lai, and Ling (CLL) [1986] employ a set of assumptions similar to Black and Scholes' [1973] original assumptions in order to develop their contingent claim lease model. CLL's assumptions are: (1) single-price law of markets, (2) non-satiation, (3) complete and perfectly competitive capital markets, (4) borrowing and lending at the same rate of interest, (5) continuous trading, (6) the value of tenant's sales is invariant with respect to its lease structure, (7) constant instantaneous risk-free rate of interest, and (8) no restrictions on short sales. Additionally, CLL assume that there exists another retail business or portfolio of businesses which has a stochastic sales process identical to the subject merchant so as to allow for perfect hedging.

The partial derivatives have the following signs:[120]

$$dB / dS_0,\ dB / dp < 0$$

$$dB / dX,\ dB / dC > 0$$

$$dB / dr,\ dB / d6,\ dB / dT \gtrless 0 \qquad (3\text{-}7)$$

The equilibrium base rent of a percentage lease when a retail tenant pays all expenses is negatively related to sales ($dB/dS_0 < 0$) and percentage of sales rent ($dB/dp < 0$), while being positively related to sales break-point ($dB/dX > 0$).[121] Therefore, if a tenant's percentage rent is lower than similar tenants, then its base rent should be higher.[122] Additionally, as the tenant's sales break-point increases, then base rent should also increase.[123]

HYPOTHESIS 9: There exists a trade-off between fixed and percentage rent.

HYPOTHESIS 10: As the tenant's sales break-point increases, then base rent should also increase.

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[120]CLL also derive the partial derivatives for a straight lease, similar to most office leases, in which an investor (landlord) pays operating expenses.

[121]Assuming that lease provisions are also claims on a tenant's revenues then it can be demonstrated in a similar framework that $dB/dC > 0$. Thus, lease provisions that allow for increased claims on a tenant's revenues are positively related to rent while provisions that prevent claims on a tenant's revenues will decrease rent.

[122]Another simpler and more intuitive method for explaining the base and percentage rent trade-off yields the same results. In reviewing combinations of base and percentage rent, the landlord should be indifferent between receiving base or percentage rent if the percentage rent is risk adjusted so as to be equivalent to base rent. However, in lease contracting, if the percent of sales revenue to be paid decreases so that the amount of percentage rent to be received declines, then for the landlord's income to remain constant, base rent will have to be raised. In alternative, if the percent of sales revenue to be paid increases so that the amount of percentage rent to be received rises, then for the landlord's income to remain constant, base rent will have to fall. Thus, base and percentage rent can be traded-off in order to allow the lessor's income to remain constant.

[123]Another explanation for the base rent and the sales breakpoint being positively related is that as the sales breakpoint increases, the probability of the landlord receiving percentage rent decreases. Percentage rent is not paid until the sales breakpoint is attained and, therefore, as that amount becomes higher, then the probability of receiving percentage rent is lower. In order for the landlord's income to remain constant, base rent will have to increase.

D. Other Deterrents to Opportunistic Behavior

Although a lease cannot specify every possible action by the contracting parties, the threat of loss of "goodwill" and the resulting withdrawal of future business can be a deterrent to opportunistic behavior. Thus, the loss of goodwill between a landlord and his tenants, which could lessen future business, is an additional contract enforcement mechanism.[124]

Another method of contract enforcement is to charge the tenant a rental premium that reflects the expected loss from opportunistic behavior that is not protected by late charges, security deposits, and other guarantees (see Klein and Leffler [1979]). The rental premium increases as the potential loss gets larger and/or the contracting period becomes shorter. Thus, the rental premium acts as an insurance payment paid by the tenant.[125] However, a problem occurs in that the landlord must be able to tell ex-ante whether some tenants will engage in opportunistic behavior. In addition, the landlord must be able to determine the expected value of the loss.

III. Contracting Issue Resolution in Office Leasing

Covenants, contingencies, and other special provisions lessen or reduce contracting problems associated with office space leasing.

A. Provisions in Office Leases

Default. Office building landlords make ex-ante appraisals concerning the credit worthiness of the office building tenant so as to establish lease payments which compensate the landlord for the expected losses for default of the space

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[124]A tenant's loss of goodwill to his landlord can also be a contract enforcement mechanism. A tenant's loss of goodwill would be analogous to a shopper's loss of credit worthiness.

[125]Also, rental discounts could serve as an insurance policy that the landlord would provide his expected services.

which compensate the landlord for the expected losses from default of the space user.[126] If the tenant is credit worthy then the uncertainty surrounding the landlord's receipt of lease payments in the future would be reduced. With reduced uncertainty regarding receiving lease payments, the lessor can be counted upon to require lower rent than other leases on similar assets which have lessees of higher default risk. If the tenant is not credit worthy, then the uncertainty surrounding the landlord's receipt of lease payments in the future would be greater. With greater uncertainty regarding lease payments, the lessor can be counted upon to require higher rent than other leases on similar assets which have lessees of lower default risk.

Office tenants can be classified as being above average, average, or below average credit risks.[127] Above average credit tenants provide the landlord with lower default risk, while below average credit tenants give the landlord greater default risk. National office tenants such as IBM have strong balance sheets and are considered to be an above average credit risk office tenant. The local insurance salesman who has a questionable balance sheet would be a below average credit risk. The average credit risk office tenant falls in between the above average and the below average credit risk tenants. Thus, office building landlords are expected to charge lower rent for an above average or average credit risk tenant than other leases on similar office space which have below average credit risk tenants as lessees. Also, an above average credit risk tenant would be

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[126]Schallheim, Johnson, Lease, and McConnell [1987] comment that information asymmetries between the lessor and the lessee can exist so that without perfect information, lease payments could be positively related to the lack of lessee credit information along with being affected by the default risk of the tenant.

[127]These office building tenant credit classifications closely follow shopping center tenant classifications. See Urban Land Institute [1987].

expected to have a greater rental discount than an average credit risk tenant because its credit worthiness would be greater.[128]

HYPOTHESIS 11: Landlords charge above average and average credit risk office tenants lower rent than below average credit risk office tenants because of the lower default risk associated with their credit worthiness. Above average credit risk tenants should be given the greater discount.

Landlords may charge out-of-state tenants higher rental rates for several reasons. First, landlords may make ex-ante appraisals of the collectibility of default judgments against tenants who are from our-of-state. Friedman [1983] notes that collection costs on defaulting lessees are higher if their home office or principal place of business is not found locally. Thus, landlords may charge out-of-state tenants higher rental rates because of the added costs of contract enforcement in the case of default. Additionally, out-of-state office tenants may be unfamiliar with rental rates in the local market place and end up paying more than knowledgeable local tenants.

HYPOTHESIS 12: Out-of-state tenants are charged higher rental rates.

Landlords may grant existing tenants rental discounts because of the lower information and releasing costs associated with releasing to an existing tenant. The rental payment and maintenance record of the existing tenant have been observed by the landlord so that informational asymmetries are reduced. Leland and Pyle [1977] and Santomero [1984] indicate that lower borrowing costs are the result of a bank having past information about a borrower. As with a bank, the office landlord is informed about a customer's payment record so that uncertainty

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[128]Some developers may grant lease rate discounts to credit worthy tenants because they have inadequate credit ratings and need credit worthy office tenants to obtain financing.

is reduced resulting in lower lease rates. Additionally, releasing costs such as new tenant search costs, remodeling and upfitting charges, and leasing fees along with forgone revenues due to the space being unoccupied are lessened.

HYPOTHESIS 13: Existing tenants who sign renewal leases receive a discount because of lower information and leasing costs.

Term of Lease. Office leases with long terms can diminish the problem of landlord quasi-rent appropriation as well as decrease the landlord's risk. Frequent contract renegotiation associated from the use of short term leases could allow the office landlord to appropriate the tenant's customer base or space improvements. Long term contracts lessen the chance of quasi-rent expropriation by the office building landlord. However, long-term leases are large investments for some office tenants and may lead to increased imbalances in risk bearing if the office tenant holds an undiversified portfolio or is geographically non-diversified. Therefore, as the lease term lengthens, the risk of the office tenant increases while the risk of the landlord decreases. In addition, the landlord may offer long-term tenants rental discounts in order to reduce tenant turnover and reletting costs such as new tenant search expenses, forgone rent, and renovation charges. Thus, office building landlords offer tenants rental discounts dependent on "length-of-stay" because they receive most of the risk shifting benefits of long-term leases and experience reduced tenant turnover and reletting costs.

HYPOTHESIS 14: Landlords offer long-term office tenants "length-of-stay" discounts.

Security Deposit and Late Payment Charges. A security deposit and late payment charges protect the landlord against unwanted opportunistic behavior

default by the lessee.[129] Smith and Wakeman [1985] indicate that a security deposit and late payment charges guarantee the lessee's monthly rental payments. In addition, a security deposit encourages the maintenance and timely return of the leased space by the tenant.

Landlords ordinarily require that tenants pay one or more months of rent in advance which serve as a security deposit.[130] If the leased space is not returned in good condition or the tenant does not vacate the premises by the lease termination date, then the security deposit is used to compensate the landlord.[131] Also, the security deposit provides funds for the landlord for restoration of the premises in the event that the tenant defaults under its requirement to maintain the leased space. In addition, the security deposits can serve as partial liquidated damages if the tenant defaults on any other lease provision. Thus, if a requirement for a security deposit or other contractual provision reduces opportunistic behavior by a tenant and leads to decreased landlord uncertainty, then a landlord should receive lower rents than other landlords with similar assets but without beneficial lease provisions.[132]

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[129]Contractual provisions requiring security deposits or late fees, which can penalize the lessee for unwanted opportunistic behavior, are alternatives often used to economize on litigation expenses because proving contract violations for legal remedies can be costly.

[130]Most legal jurisdictions have specific stipulations regarding security deposits, such as an obligation for the landlord to pay interest and not commingle the fund with other monies. See Friedman [1983].

[131]The security deposit may not fully cover all losses to the landlord. However, the landlord can sue for additional compensation.

[132]In alternative, if a contractual provision allows for greater opportunistic behavior by a tenant and leads to increased landlord uncertainty, then building owners with similar assets should receive higher rents than other landlords of similar space but absent detrimental lease provisions.

HYPOTHESIS 15: A security deposit decreases rent because the landlord's uncertainty surrounding tenant opportunistic behavior is reduced.[133]

Assignment. A landlord may not want to allow a lease assignment unless he is convinced that the substitute tenant or assignee had financial strength greater than or equal to the original tenant or assigner. Furthermore, the landlord may wish to ensure that the assignment will not disrupt the office building occupant mix and break any lease covenants regarding use. However, assignment may not be desirable even if the financial strength of the assignee is good. Strum [1987] observes that if the tenant is a key occupant in an office building, an assignment may not be permitted because of the harmful impact that the loss of a major tenant may have on the building's perceived value. Therefore, landlords typically require that a tenant cannot assign his lease or sublet any part of the premises without written consent from the landlord.[134] Any assignment without the landlord's written consent would constitute a default, so that the landlord may terminate the lease.[135] In addition, the lessee's assignment or subletting arrangement would be void.

HYPOTHESIS 16: Covenants preventing assignment decrease the landlord's uncertainty and should reduce rent.

Standards of Tenant's Operations. To enable development of an effective tenant mix, the office building owner/manager normally insists that the tenant use the leased space for office purposes only. The American Bar Association

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[133]In order for a security deposit to indicate a reduction in unwanted tenant behavior and, thus, a lower lease rental payment, the value of the coefficient for the variable representing the security deposit has to be greater than the forgone interest on the deposit.

[134]The American Bar Association [1987, p. 885] reports that in a majority of states, courts have upheld the landlord's right to ". . . withhold consent to a sublease or assignment arbitrarily and capriciously."

[135]Friedman [1983] comments that assignment by operation of law which includes bankruptcy proceedings would not constitute a default.

[1987] comments that it is in the landlord's benefit to have provisions restricting the tenant's use of the leased premises. For example, if the landlord has a high quality office building, the landlord may restrict the tenant to executive or administrative office use that does not generate a high traffic volume. Thus, a lease usually expressly states the purpose for which a tenant is allowed to use the space. In addition, the agreement requires that the occupant maintain its premises and conduct its activities in a manner consistent with other tenants. For major office tenants, there may be a provision which requires that the office space be used continuously throughout the term of the lease and not be closed. A large amount of unoccupied space gives the property an undesirable appearance. However, a clause allowing a release from the responsibility of continuous operation because of strikes, acts of God, etc. is usually included.

Operational Expense Allowance. An office building landlord usually agrees to pay all operating expenses for the leased space, but also includes the right to assess the tenant for future operational costs which are in excess of its first year expense base or allowance. Friedman [1983] comments that operating expenses are normally written to include all costs paid or incurred by the landlord with respect to the operation, cleaning, repair, security, and maintenance of the building. An operating expense allowance provision serves as a hedge against operating expense increases for which the landlord may not be protected.[136]

The tenant's operating expense allowance is usually determined by dividing the rentable area of the leased premises by the entire rentable area of the office building and multiplying the resulting ratio by the estimated operational expenses of the building. However, some tenants negotiate higher operational expense

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[136]Stambaugh [1978] reports that the inflation of the 1970's forced office building owners to shift some or all of the inflation risk onto the tenant. Developers originally paid all of the operational expense, but the added costs due to inflation lessened cashflows.

allowances. Thus, as the operating expense allowance increases, the probability of the landlord receiving additional rent is reduced.

HYPOTHESIS 17: As the operational expense allowance increases, the landlord's probability of receiving additional rent decreases, so that the landlord is exposed to greater risk and charges higher rent.

Construction Delay Release. The construction provision is usually a covenant requiring the landlord to delivered office space in accordance with the office building site plan and applicable municipal laws. For office space, it is usual for the lessor to complete the office space in its entirety (called a "turnkey job"), so that it is ready to hold the tenant's fixtures and furniture. However, a deadline for the completion or remodeling of the premises is needed for the protection of the tenant. The tenant is exposed to considerable costs when opening a new office. These costs include attorney's fees, moving contracts, and commitments for fixtures, equipment, and furniture. The landlord's failure to provide office space in a timely manner would be a quasi-rent appropriation by the landlord. Therefore, office leases sometimes contain a construction delay release which can discourage quasi-rent appropriation by the landlord through giving the tenant the opportunity to cancel the lease and contract for space elsewhere if the delivery date deadline is not met.[137] A construction delay release is usually found when the tenant is unsure of the landlord's ability to fulfill the obligations of the lease. A construction delay release provision allows the tenant to end the agreement without exposure to liability or risk. However, the landlord bears additional risk.

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[137]A construction delay release is somewhat similar to a lessee cancellation provision. However, unlike a lessee cancellation provision which is really a put held by the lessee, the construction delay release is a lessee put that becomes valid only if the landlord fails to perform.

HYPOTHESIS 18: A provision allowing for a construction delay release lowers risk for the tenant, but raises risk for the landlord, so additional rent is charged.

Landlord Relocation Right. Office leases often contain a provision which allows the landlord the right to relocate a tenant to comparable quarters within the building after giving adequate notice and agreeing in writing to pay all reasonable moving expenses. The relocation right enables the landlord to relocate tenants so as to meet expansion requirements. Additionally, the relocation provision permits the landlord to readjust his space inventory in a more efficient manner which should reduce the releasing and operational expenses of the building. The landlord could adjust floor configuration to become more attractive to new tenants or to reduce utility and janitorial expenses. However, tenant moving costs must be considered by the landlord when making a tenant relocation decision. Nevertheless, a reduction in building leasing and operating costs could be transferred to the tenant as compensation for his willingness to relocate and the disruption it creates.

HYPOTHESIS 19: Landlords grant rental discounts in exchange for receiving a right to relocate the tenant.

IV. Summary

This chapter provided risk allocation and opportunistic behavior minimization rationales for the existence of retail and office lease provisions. Testable hypotheses concerning retail and office leases were given. Table 3 summarizes the expected impact of certain lease provisions on nominal retail and office rent. However, are lease provisions priced into nominal lease rates? The next chapter will estimate hedonic rental equations for retail and office leases. The hedonic rental equations include variables representing lease provisions.

TABLE 3

Expected Impact of Lease Provisions on Retail and Office Rent

Hypothesis	Lease Provision	Expected Impact on Rent*
Retail Leases:		
1	Term of Lease	-
2	Renewal Option	+
3	Late Payment Charges	-
4	Rent Escalation	-
5	Landlord Rental Concession	+
6	Landlord Cancellation	-
7	Default: National and Local Chain Stores	-
8	Rent: Shopper Draws	-
9	Lower Percentage of Sales Rent	+
10	Higher Sales Break-Point	+
Office Leases:		
11	Default: Above Average and Average Credit Risk Office Tenants	-
12	Default: Out-of-State Tenants	+
13	Default: Existing Tenants	-
14	Term of Lease	-
15	Security Deposit	-
16	Covenants Preventing Assignment	-
17	Increasing Operational Expense Allowance	+
18	Construction Delay Release	+
19	Landlord Relocation Right	-

*+ = positive impact
- = negative impact

CHAPTER 4

EMPIRICAL RESULTS

Chapter 4 demonstrates how the resolution of contracting issues originating from the existence of risks and opportunistic behavior affect the structure of shopping center and office building leases. Section I introduces an empirical model which utilizes retail and office lease data to examine the effects of provisions. Section II presents the empirical results which show that the resolution of contracting issues is important to retail landlords and tenants in determining lease structure, including the use of specific provisions. In Section III, another set of empirics indicates that the resolution of contracting concerns is also relevant to explaining how office lessors and lessees structure leases.

I. Empirical Model

Explanations of why contractual provisions have value were developed in Section II and Section III of Chapter 3. The empirical tests for lease provision pricing will occur through a reduced-form methodology and a hedonic equation.[138] Previous literature on rent variations includes Clapp [1980], Hough and Kratz [1983], Brennan, Cannaday, and Colwell (BCC) [1984], Cannaday and Kang [1985], and Guntermann and Norrbin [1987]. The model estimated here contains variables

[138]Another way to indicate that provisions have value is by a market failure analogy. A market failure for lease provisions may ensue if landlords and tenants are indifferent or oblivious to lease provisions. Such potential failures would be noticed in lease contracts where provisions would not be present or only present in a random manner. Lease provisions found in a random manner would indicate that they have no value. However, it is easily observed that purposeful provision variation does exist and a market failure has not occurred. See Hough and Kratz [1987] for a similar argument regarding whether good architecture affects office rental rates.

representing spatial and lessee characteristics, market conditions, and contractual provisions.[139]

A. The Rent Equation

Lessors will offer tenants rent based upon the physical characteristics of the leased space, the tenant characteristics, the market conditions, and the lease provisions which include covenants and contingencies. Therefore, landlords may charge different tenants lease prices which vary based upon their spatial, tenant, market, and contractual characteristics. If the law of one price holds for real estate markets, then these characteristics should be incorporated into nominal rental rates. Thus, the implied equation for retail rents is:

$$r = r(Z) \tag{1}$$

where r is the rent for retail space, and Z is a vector of spatial, tenant, market, and contractual characteristics or attributes [$Z = (z_1, \ldots, z_n)$]. By differentiating r(Z) with respect to z_i, one can obtain a set of marginal prices. According to the structural relationship for r(Z), the estimation of these marginal prices is equivalent to direct observations on prices of the component characteristics or attributes.

B. Equilibrium Lease Payment

McConnell and Schallheim [1983] develop a reduced-form methodology for estimating an equilibrium lease payment, ELP, that incorporates changes in asset

[139]The tenant's location and competitive conditions affect the level of rental payments. A retail or office space with a better location provides increased bargaining power to the landlord. Thus, both a larger base rent and percentage of sales rent may result for the retail lessee or just a larger fixed rent for the office occupant.

prices.[140, 141] The value of an ELP can reflect the long-run supply price of retail and office space for noncancelable lease agreements. Assuming real estate markets are efficient, ELP can be expressed as:

$$A_o - h^t A_o - ELP \sum_{i=1}^{t-1} R_f^{-i} = 0 \qquad (2)$$

where A_o is the market value of the leased asset at time t = 0, $h^t A_o$ comprises the present value of the residual value of the asset at the contract's maturity, R_f is the risk free rate plus one, and t is the term of the lease contract.[142] The variable h represents a function composed of the expected rate of appreciation or depreciation for the shopping center or office building, the volatility of the market value of the structure, and the risk-free rate of interest. Since the lease is assumed to be default-free, the discounted value of an asset's residual value is the only determinant of rental payment. Thus, $A_o - h^t A_o$ represents the value of the asset increased or used up during the lease term.

The model is implemented by using yearly property appraisals for each shopping center or office building and by asking the landlord/investor for his expectation about the future market value of the shopping center at various points in time. Additionally, a constant term is added to the regression equation to compensate for taxes and other factors not directly considered.

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[140]McConnell and Schallheim [1983] create a multi-period model for financial lease valuation by merging Miller and Upton's [1976] single-period model with the multi-period valuation methodology of Rubinstein [1976] and Geske [1977]. McConnell and Schallheim's model indicates that the equilibrium lease payment is negatively related to the discounted value of the covariance between a market factor and the logarithm of the leased asset's rate of economic depreciation, while being associated with a multi-period risk-free interest rate.

[141]Schallheim, Johnson, Lease, and McConnell [1987] test McConnell and Schallheim's model and show that the relatively higher yields on financial leases (versus debt of equivalent risk) can be explained by the discounted value of the leased asset's residual value covariance risk.

[142]The reduced-form methodology allows special attention to variation in lease provisions.

C. Hedonic Equation

In order to demonstrate the effect of contractual provisions on the demand for rental space, a standard hedonic equation as utilized by Rosen [1974] is employed:[143]

$$TOTPSF_i = b_0 + b_1 ELP_i + \sum_{j=1}^{n} b_j S_{ij} + \sum_{k=1}^{n} b_k T_{ik} + \sum_{L=1}^{n} b_L C_{iL} + c_i \qquad (3)$$

where the total annual fixed or base rent per square foot or TOTPSF for the i^{th} lease is a linear function of an intercept b_0, the equilibrium lease payment (ELP), spatial characteristics (S_j's), tenant characteristics (T_k's), contractual provisions (C_L's), and an error term.[144, 145] TOTPSF is the dependent variable because when holding other factors constant, demanders and suppliers of retail and office space are principally interested in the amount of fixed rent to be paid or received.

A result of the model should be a significant relationship between actual and equilibrium long-run lease payments. The coefficient for ELP is expected to be positive and approximately equal to 1. This would indicate that the base rent is composed of the ELP adjusted for specific spatial and tenant characteristics and lease provisions. Several lease covenants and contingencies are included in the regression equation in order to determine whether or not the provisions affect rent rates. In addition, the proxies for a tenant's default risk and certain other tenant and spatial characteristics are entered into the model.

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[143]Rosen [1974] sets forth a hedonic price index for explaining the pricing variation of composite products. Clapp [1980], Hough and Kratz [1983], and Brennan, Cannaday, and Colwell [1984] demonstrate that the market for office space follows Rosen's criteria for structural analysis. Thus, Rosen's hedonic regression methodology also should be able to show a connection between retail space rent and the explanatory characteristics. Appendix 2 reviews Rosen's theory of composite product pricing as applied to commercial leasing.

[144]Since the model's functional form is linear, then it is implied that the contributions of each independent variable to the price of the leased space is constant throughout the sample, and independent of the overall composition of the lease contract.

[145]Market conditions are reflected in the estimate of ELP, so they will not be included as separate independent variables in the hedonic model.

II. Retail Lease Empirical Results

This section demonstrates empirically the effects of spatial and tenant characteristics and lease provisions on nominal rental rates for shopping center space. The overall hypothesis to be tested is that lease provisions affect a property's nominal rental rate.

A. Retail Data

To show whether or not variations in retail lease provisions are capitalized into nominal lease rates, data were collected on 103 neighborhood and community shopping center leases located within Greensboro, North Carolina.[146] Greensboro is part of the Greensboro, High Point, and Winston-Salem, North Carolina sales marketing statistical area (SMSA) and is commonly referred to as the Piedmont Triad. Greensboro and the Triad have experienced considerable growth in the past two decades and are characterized by a decentralized, suburban pattern of land use. The population of the Triad exceeds one million persons, which gives the Triad a ranking in the top fifty U.S.A. SMSA areas.

The shopping centers were selected because they allow for a minimization of spatial and locational variation among the leased spaces.[147] The neighborhood and community shopping centers are all of strip design and are located inside a three mile radius in the same geographic area of the city. Further, the open air shopping centers are comparable in size, architecture, occupancy, and amenities.

The sample includes both short and long term lease agreements negotiated between various tenants and landlords for the three year period beginning

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[146]Lease data were gathered through personal contact with the shopping center developer.

[147]It is preferable to reduce non-provision variation when measuring the effects of lease provisions on nominal rent.

January 1984. Specific characteristics of each retail lease agreement were obtained, including rental rate, usable space rented, and lease contingencies, covenants, and other special provisions. Table 4 presents the sample characteristics of the observations. Table A in Appendix I provides the correlation matrix.

Typical covenants in a lease include the right of assignment and cancellation, restrictions on the use of the space, security deposits, restrictions on engaging in any business similar to or in competition with the premises, requirements to maintain liability insurance, obligations for space improvement and repairs, etc.[148] Typical lease contingencies consist of lease options and rights of renewal. Inspection of actual vacancy levels for the subject properties reveal near 100% occupancy. However, since vacancies are an important variable in determining lease rates, actual vacancy levels were collected for each month during the study period.[149] Further, the landlord's intended deviations from the long-run supply price based upon specific tenant characteristics such as the tenant being a national chain store or a "draw" or having another favorable characteristic were observed.

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[148]Rent theory suggests that the use of these covenants may be fairly common for a given leased asset. See Rosen [1974].

[149]Shilling, Sirmans, and Corgel [1987], Rosen and Smith [1983], Blinder [1982], Philips [1980], and other researchers observe that landlords can alter inventories of unrented space by adjusting rents. These researchers study the rental-price adjustment process and show that (1) landlords hold some optimal level of vacancies to accommodate fluctuations in demand -- the studies call this a "normal" vacancy rate, and (2) deviations from the normal vacancy rate affect the rent setting behavior of landlords -- the greater the difference between actual and normal vacancy rates, the lower the rents. Thus, if vacancies are above a desired normal vacancy rate then landlords could adjust rents so as to minimize the losses arising from unrented space. However, a variable representing the shopping center vacancy rate on lease execution date was insignificant in all preliminary models. This occurs because the subject retail properties had similar minimal (<5%) vacancy rates during the three year study period. Additionally, the landlord indicated that vacancy adjustments through rents did not take place.

TABLE 4

Means and Standard Deviations of Retail Lease Data

103 Observations

Variable	Symbol	Mean	Standard Deviation	Minimum	Maximum
Total Rent Per Square Foot	TOTPSF	11.909	2.790	6.390	19.550
Equilibrium Lease Payment	ELP	12.257	1.884	7.353	16.631
Lease Terms:					
Lease Term in Months	LSTERM	57.359	38.095	12.000	240.000
Spatial Characteristics:					
Square Feet in Thousands Leased	SQFT	4.109	8.892	.608	85.610
Shopping Center 4	LOC4	.146	.354	0	1
Lessee Characteristics:					
Percent Rent Below Median	PRCNTRB	.136	.344	0	1
National Chain	NTCHAIN	.204	.405	0	1
Local Chain	LCHAIN	.184	.390	0	1
Shopper Draw	DRAW	.291	.457	0	1
Covenants:					
Late Payment Charges in Thousand Dollars	LATEPAY	.066	.044	0	.300
Contingencies:					
Sales Break-point PSF	BKPTPSF	258.663	227.735	55.556	1,000.000
Rent Escalation	RNTESCL	.243	.431	0	1
Renewal Option	RENEW	.291	.457	0	1
Rent Concession	RNTCON	.029	.169	0	1
Landlord Cancellation	CANBYL	.049	.216	0	1

B. Retail Results

Tables 5 and 6 contain estimates of the effects on nominal retail rent of lease terms, spatial and lessee characteristics, and several lease covenants and contingencies.[150] The dependent variable in Table 5 is total annual base or fixed rent per square foot, while the dependent variable in Table 6 is total annual base rent minus the equilibrium lease payment (ELP).[151] The results of both regressions are consistent. The resulting hedonic equation in Table 5 has an R^2 of .674 and an F-statistic of 12.985, while in Table 6 the R^2 is .650 and the F-statistic is 12.736. All coefficients in both regressions are significant at the 10% level or better.

Equilibrium Lease Payments. An important result from Table 5 is the strong positive relationship between the actual and equilibrium lease payments (ELP) which is indicated by the coefficient of ELP being 1.074. According to the coefficient's standard error, the value of the coefficient for ELP is not significantly different from unity.[152] This indicates that McConnell and Schallheim's [1983] methodology for valuing leases which contain non-cancellation provisions appears to be correct. Further, an accurate representation of the

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[150]A large number of variables could be used to explain variations in commercial rent. However, a regression equation with a large number of variables would be likely to have a high degree of multicollinearity if they measured similar features and provisions. The resulting estimated equation would be misleading as to what features and provisions affect rental rates. Further, the estimated coefficients may not give accurate estimates of the market value for the lease provision variables. Therefore, in preliminary regressions variables which had high simple correlations with other variables were combined with other variables or transformed. However, no multi-collinearity was indicated as being present in the final regressions as determined by SAS variance inflation, eigen value, and condition index indicators which follow procedures outlines by Belsley, Kuh, and Welch [1980]. Additionally, autocorrelation and heteroscedasticity was found not to be present by standard tests and residual plots. Further, the error term appears to be normally distributed (see Table I in Appendix 1).

[151]Having a dependent variable composed of the annual base rent minus the ELP allows for all variation in lease rates to be explained by spatial and lessee characteristics and lease provisions.

[152]The coefficient for ELP has a standard error of .113, so that the ELP estimate of 1.074 lies within one standard deviation.

TABLE 5

The Final Estimated Hedonic Equation of Retail Base Rent for a Sample of 103 Leases*

Variable**	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	1.074	9.543
Lease Terms:		
Lease Term in Months (LSTERM)	$-.147 \times 10^{-1}$	-2.101
Spatial Characteristics:		
Square feet in thousands leased (SQFT)	-.102	-4.135
Shopping Center 4 (LOC4)	1.183	2.075
Lessee Characteristics:		
Percent Rent Below Median (PRCNTRB)	1.483	2.200
National Chain (NTCHAIN)	-1.347	-2.408
Local Chain (LCHAIN)	-1.076	-2.288
Shopper Draw (DRAW)	-.758	-1.623
Covenants:		
Late Payment Charges in thousand dollars (LATEPAY)	-7.327	-1.702
Contingencies:		
Sales Break-point PSF (BKPTPSF)	$.361 \times 10^{-2}$	3.635
Rent Escalation (RNTESCL)	-1.006	-1.975
Renewal Option (RENEW)	.906	2.058
Rent concession (RNTCON)	1.677	1.392
Landlord Cancellation (CANBYL)	-1.636	-1.947
Constant	-0.115	-.084
R^2		0.674
$\bar{R}^2$		.622
F-Statistic		12.986

*Source: Data from five strip shopping centers in Greensboro, North Carolina.

**See text for definition of variables.

TABLE 6

Estimated Hedonic Equation of Retail Base Rent Less Equilibrium Lease Payment (ELP) for a Sample of 103 Leases*

Variable**	Parameter Estimate	t-Statistic
Lease Terms:		
Lease Term in Months (LSTERM)	$-.137 \times 10^{-1}$	-2.013
Spatial Characteristics:		
Square feet in thousands leased (SQFT)	.100	-4.095
Shopping Center 4 (LOC4)	1.054	1.973
Lessee Characteristics:		
Percent Rent Below Median (PRCNTRB)	1.382	2.112
National Chain (NTCHAIN)	-1.312	-2.364
Local Chain (LCHAIN)	-1.107	-2.374
Shopper Draw (DRAW)	-.740	-1.593
Covenants:		
Late Payment Charges in thousand Dollars (LATEPAY)	-6.885	-1.624
Contingencies:		
Sales Break-point PSF (BKPTPSF)	$.369 \times 10^{-2}$	3.756
Rent Escalation (RNTESCL)	-.965	-1.914
Renewal Option (RENEW)	.824	1.947
Rent concession (RNTCON)	1.503	1.782
Landlord Cancellation (CANBYL)	-1.570	-1.888
Constant	.724	1.453
R^2		.650
$\bar{R}^2$		.599
F-Statistic		12.736

*Source: Data from five strip shopping centers in Greensboro, North Carolina.

**See text for definition of variables.

equilibrium lease payment allows the other variables in the model to reflect that part of the actual lease payment which is different from the equilibrium lease payment.[153]

Lease Term. The coefficient for lease term (LSTERM) is negative as predicted and significant. It appears that landlords offer rental discounts to tenants with long-term leases, consistent with Hypothesis 1. Rental discounts may occur because of a reduction in landlord risk. Additionally, the releasing of vacant premises at lease termination is costly due to space downtime with tenant changes and new tenant search costs. Both landlords and tenants are aware of the reduced expenses incentive for a tenant not to move. Therefore, a rental discount may be given to tenants as the length of stay increases.

Spatial Characteristics. In the model, several spatial attributes for the leased space and shopping centers were tested. These spatial attributes include usable square footage of the leased space in thousands of square feet (SQFT) and shopping center location (LOC4).[154] The effective rental rate should decline with greater square feet leased because the landlord's costs of negotiating and servicing lease contracts decrease as the square feet leased increases. The estimated coefficient for SQFT is significant. Thus, it appears that there is a rental discount as the square footage of contracted space increases. This result also conforms to the hypothesis of Brennan, Cannaday, and Colwell [1984]. These authors argue that rental rates will decrease as square footage increases because the negotiating strength of the tenant is greater. Also, large space users are usually anchor stores so that this result is consistent with Hypotheses 7 and 8.

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[153]The ELP reflects only the default free lease payment for the value of the asset used up during the lease term. Thus, other variables, including lease provisions, which are factors of concern to the landlord and the tenant, could still influence nominal lease rates.

[154]Usable square footage of the leased space was employed because some spaces contained unusable areas such as building columns and air conditioning and heating shafts.

The location variable (LOC4) represents a large shopping center.[155] Large shopping centers have more retail space which attracts greater numbers of shoppers than smaller facilities and, therefore, enjoy more of the positive consumer traffic externality. Eaton and Lipsey [1982] and Mulligan [1983] report that merchants in large centers have a competitive advantage over smaller center merchants because of increased multipurpose shopping and a higher resulting positive externality. The coefficient for LOC4 is positive and significant which may indicate that landlords charge greater rent for larger shopping centers with more shopper traffic.[156]

Lessee Characteristics. Lessee characteristics incorporated as dummy variables are percentage rent below the median of store classification (PRCNTRB), a national chain store (NTCHAIN), a local chain store (LCHAIN), and a store which serves as a customer draw for the entire shopping center (DRAW). All estimated coefficients have the expected sign and are significant.

Chiang, Lai, and Ling (CLL) [1986] demonstrate by an option pricing framework and partial derivatives that there exists a trade-off between base rent and percentage rent. However, in order to test CLL's theory and Hypothesis 9, variations in percentage rent because of tenant type and classification have to be accounted for. The Urban Land Institute in conjunction with the International Council of Shopping Centers (ICSC) publishes median percentage rent information based upon merchant types and classifications. A dummy variable representing whether or not a merchant's percentage rent is below the median would hold constant the effects of tenant type and classification on percentage rent and

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[155]Other locational variables were tested for significance but were found to be insignificant. The shopping centers have very similar locations.

[156]This result is compatible with Hypothesis 8 because all retail tenants, including tenants which draw customers, are charged for the externality generated by a larger center size.

indicate if a trade-off between fixed and percentage rent exists.[157] Thus, if a tenant's percentage rent is below the Urban Land Institute [1987] median for its store type and classification, then the tenant should have a higher base rent. Explained in a risk allocation framework, the trade-off allows the transfer of some of the tenant's risk to the landlord through percentage rents.[158] The positive and significant coefficient for the dummy variable representing percentage rent below median (PRCNTRB) indicates that this trade-off does exist and is in agreement with Hypothesis 9. Thus, Chiang, Lai, and Ling's model, which predicts that a tenant's base rent will be higher if its percentage rent is lower than similar tenants or below the industry amount for its store type and classification, is supported.

In the retail leasing industry, there are three basic tenant types: national chain, local chain, and independent.[159] National chain stores have operations in four or more metropolitan areas which are located in three or more separate states. National chain stores (e.g. the Limited, Radio Shack, etc.) typically have the lowest default risk due to stronger balance sheets and greater operational experience. At the opposite end of the tenant spectrum are small independent operators known as the "Moms and Pops" with the greatest default risk because of questionable balance sheets and limited operational experience. In between are local chain stores which do not fall into either of the other two categories. As indicated by

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[157]Interviews with the landlord indicated that there was no decision made by the landlord to set percentage rents below industry median amounts for merchants with greater than average expected sales. Nevertheless, a discount for the ability to generate greater sales could be reflected in discounts given to retail tenants which were deemed to be draws.

[158]As presented in Section I of Chapter 3, small tenants are exposed to increased risk and would want to transfer some of the risk to the landlord who is better diversified and, thus, more able to handle the risk. Percentage rents in which the landlord receives his rent from the success of tenant sales lessens the fixed charges for small tenants and lowers risk of failure. Also, percentage rent forces the landlord to act in the tenant's best interests.

[159]See Urban Land Institute [1987] for a complete description of tenant types.

Hypothesis 7, national chain (NTCHAIN) and local chain (LCHAIN) tenants should receive rental discounts because of the lower default risk associated with their credit worthiness and operational experience. Mom and Pop tenants are likely to pay greater base rent to compensate for their lack of credit worthiness and operational ability. Coefficient estimates are as predicted. National chain tenants pay less rent, while local chain tenants also are charged a reduced rent because both types of tenants are more credit worthy and have greater operational experience which lowers their default risk. In addition, the coefficient for national chain stores indicates a larger rent reduction for national chain stores than local chain stores.[160] Independent tenants are the omitted category. Thus, landlords accept the allocation of default risk through increased rental payments.

Another important lessee characteristic is whether or not a tenant is deemed by the landlord to be a shopping center customer draw.[161] A supermarket, drug store, or dry cleaners is an example of a tenant that attracts many customers so as to create a positive externality for the other strip shopping center merchants to enjoy.[162] The other shopping center merchants remunerate the landlord for the positive traffic externality created by tenants who are customer draws. Tenants that generate shopping center customer traffic should pay reduced rents because

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[160]The bargaining position or power of the tenant may be one explanation of why certain tenants have specific rental rates. It is assumed that national chain tenants have greater negotiating strengths than local chain or independent tenants. However, any measurement of the bargaining power of a tenant is subjective and cursory at best. Additionally, it may be that competent real estate brokers and attorneys are available for all tenants at similar costs. However, small space users may not wish to acquire the services of a competent real estate broker or attorney, because the costs of the services would be greater than any savings in rent arising from better negotiating skills.

[161]The correlation matrix in the appendix indicates that DRAW and SQFT are not highly collinear. Many small size tenants such as video rental stores serve as effective traffic generators. Additionally, no multicollinearity exists in the models as determined by SAS.

[162]Interviews with the developer, commercial brokers, and appraisers along with information from the Urban Land Institute [1987] help determine which of the tenants are valued for their shopping center customer generating potential.

the landlord compensates the tenant for the benefit he helps to generate.[163] The coefficient for tenant being a shopper draw (DRAW) has the correct negative sign and is significant. This outcome is consistent with Hypothesis 8 and indicates that tenants who are customer draws pay reduced rents. Thus, it appears that the landlord compensates a draw tenant for the positive externality he helps to create.

Covenants. A covenant commonly found in retail leases is an obligation to pay late charges. Late payment charges in dollars are owed when rental payments are overdue. Since all retail leases in the sample contain provisions which require unpaid rent to incur interest at the greater of prime rate or 12%, then a late payment charge serves as a penalty. Thus, the late payment charge or penalty is separate from and in addition to the accrued interest on the rental payment not received. Late payment charges discourage the untimely payment of rent and effectively serve as additional security that rental payments will occur in a timely manner.

Smith and Warner [1979] explain how debt contracts are written to lessen borrower-lender conflicts. Covenants which penalize the borrower for unwanted opportunistic behavior, enable monitoring of the borrower's activities, or permit contract enforcement, reduce some of the costs of lending. Borrowers willingly accept provisions which restrict opportunistic behavior and allow for monitoring and enforcement because it lowers nominal borrowing rates. Likewise with leases, a provision for late payment charges which discourages opportunistic behavior by a lessee and allows for increased contract enforcement would be expected to lower nominal lease rates because the lessor's uncertainty surrounding lease payments is

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[163]The rental discount can be considered a payment from the landlord to the tenant as compensation for the positive externality that he helps create. See Lee [1987].

reduced.[164] The coefficient for late payment charges in thousand dollars (LATEPAY) is negative and significant as suggested by Hypothesis 3.

Lease Contingencies. Five lease contingencies are included: sales breakpoint per square foot (BKPTPSF), rent escalation (RNTESCL), renewal option (RENEW), rent concession (RNTCON), and landlord cancellation (CANBYL). Chiang, Lai, and Ling [1986] demonstrate by an option pricing framework and a partial derivative that as the sales break-point increases, then base rent should also increase. The probability of paying percentage rent is directly related to the sales break-point. As the sales break-point increases, the probability of paying percentage rent decreases. The parameter coefficient for sales break-point, which is represented as sales break-point per square foot (BKPTPSF) since base rent is per square foot, is positive and significant as expected by Hypothesis 10. This result supports Chiang, Lai, and Ling's [1986] model, along with indicating that owners must be compensated with higher base rent for the increased uncertainty associated with a higher sales break-point and lower likelihood for receiving such rent.

Leases which include a rent escalation contingency enable rent to be increased during the lease term. This provision reduces inflation uncertainty for the landlord, but increases inflation uncertainty for the tenant. Contracts that contain a rent escalation contingency are represented by a dummy variable equal to 1 and zero otherwise. The estimated coefficient for RNTESCL is significant and reduces the base rent charged by the landlord as anticipated in Hypothesis 4. The size of the coefficient on RNTESCL indicates that lease contracts having

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[164]The late or non-payment of rent by a lessee alone can be considered opportunistic behavior because the accruing of interest on the unpaid rent may not adequately compensate the landlord for the additional uncertainty and accounting and other monitoring costs associated with the delinquency. Furthermore, by deliberately late paying rent, the lessee borrows money from the landlord at a rate equal to the accrual interest rate on the unpaid rent. In effect, the landlord becomes a greater lender to the lessee with the same amount of collateral.

escalation clauses initially cost the tenant $1.01 less per square foot per year than other similar leases without escalation clauses.[165]

The presence of a renewal option (RENEW) indicates that the lessee is able to extend the lease term for additional periods of time at the contract rate. This lease contingency is binding on the lessor but allows the merchant to make an occupancy decision based upon his financial situation and market conditions at renewal time. A renewal option is very advantageous for tenants since it reduces the contracting costs of quasi-rent appropriation by the landlord, poor portfolio diversification, and no geographic diversification. However, the renewal option increases risk to the landlord and a rental premium should be charged to the tenant. As predicted by Hypothesis 2, the coefficient of RENEW is positive and significant.

Rent concessions are represented by the dummy variable RNTCON and reflect a reduction of rent if the space is not ready for tenant occupation by a certain date. If the deadline for construction completion and premises delivery is not met by the landlord then the tenant is exposed to additional expenses which effectively increases the rental rate. This is a quasi-rent appropriation by the landlord. The coefficient for RNTCON is positive and in agreement with Hypothesis 5.[166] However, in order for the rental concession to be an effective deterant to unwanted lessor behavior, the present value of the rental concession has to be greater than the present value of the rental premiums to be paid. This appears to be the case based upon the RNTCON coefficient estimate, the lease

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[165]The hedonic price for each significant provision can easily be determined. The marginal implicit prices are simply the estimated coefficients of the variables contained in the linear hedonic price equation. Further, a stable error term over the study period, as indicated by standard residual plots, indicates that the coefficients or the prices of the various provisions in the hedonic equations do not vary.

[166]The RNTCON contingency's value may be negated by the low probability of a rental concession occurring because of construction bonding.

term, and the rental concession granted.[167] Thus, granting a rental concession for space not completed by a certain date discourages quasi-rent appropriation by the landlord, but exposes the lessor to additional risk and expenses (e.g. higher construction cost risk). Therefore, the lessee must compensate the landlord for the additional uncertainty that he must bear.

An option granting the landlord a right to cancel the lease is primarily used with unproven tenants. The option reduces landlord risk because it allows the landlord to escape from the lease arrangement if the tenant's sales do not reach a predetermined reasonable amount. However, a landlord cancellation option would be valuable to the landlord but expose the tenant to increased uncertainty. For these reasons, the coefficient for a landlord cancellation option is expected by Hypothesis 6 to be negative. As anticipated, the coefficient for landlord cancellation option is negative and significant.

C. Retail Summary

The retail lease empirical results provide strong support for the view that the resolution of contracting issues associated with retail leases are important in determining how landlords select what provisions to include in leases.[168] In addition, Tables B-G in the Appendix demonstrate that retail lease provision pricing holds over a broad range of estimated multiple regression equations, including sensitivity analysis to estimates of ELP from changes in the rate of asset appreciation and in discount rates, and non-linear functional forms. Moreover,

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[167]Using the RNTCON coefficient estimate for the rental premium along with the lease term and the actual rental concession granted, the present value estimates of the rental concession substantially exceed the present value estimates of the rental premium over various assumptions regarding discount rates. The rental concession averaged 30% of the base rental payment and usually remained in effect during the entire term or the first several years of the lease.

[168]Evidence on how landlords allocate between percentage and base rent should have links with how franchisers choose between owning or franchising. See Brickley and Dark [1987].

the results are consistent with the maintained hypotheses. Landlords provide rental discounts to retail tenants with long-term leases. Rental premia are charged to tenants which have leases that contain renewal options. Late payment charges decrease rental payments because the landlord's uncertainty surrounding tenant opportunistic behavior is reduced. Rental discounts result when leases contain a rent escalation provision. A rent escalation provision reduces inflation uncertainty for the landlord, but increases inflation uncertainty for the tenant. Rental concessions discourage quasi-rent appropriation by the landlord (associated with undelivered space), but expose the lessor to additional uncertainty for which he is compensated by a rental premium. Landlord cancellation rights lower uncertainty for the landlord and decrease rent. National chain and local chain store tenants receive rental discounts because of the lower default risk associated with their credit worthiness and operational experience. However, national chain store tenants are given the greater discount. A tenant who generates shopping center traffic pays reduced rents because the landlord compensates the tenant for the benefits of the customer traffic externality that the tenant helps to create. A trade-off between fixed and percentage rent exists. If percentage rent is below the industry amount for a tenant's store type and classification, base rent is higher. As the sales break-point increases, base rent also increases. Thus, the empirics indicate that certain lease covenants and contingencies determine rental rates and, thus, the valuation of leases.[169] Therefore, contracting considerations are important determinants of lease structure.[170]

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[169]It is emphasized that the determination of the optimal leasehold structure, like the determination of the optimal ownership structure of the firm, depends on the entire set of costs faced by the lessor and the lessee.

[170]The coexistence of both base and percentage rent indicates that the lessor and lessee will determine the rent combination based upon their particular contracting problems. The concentration of certain base and percentage rent combinations by store type would imply that predictable cross sectional concentration exists.

III. Office Lease Empirics

This section indicates the effects of spatial and tenant characteristics and contractual provisions on nominal rental rates for office space. The outcome should support the dissertation's main hypothesis that lease provisions affect rental rates.

A. Office Data

To indicate whether or not office lease provisions are capitalized into lease prices, data were collected on 322 actual office leases located in five multi-tenant buildings located in Greensboro, North Carolina.[171] The office buildings were chosen because they enable the minimization of spatial and locational variation among the office spaces. The office buildings are situated in a prominent part of the city within a quarter mile radius of each other and are comparable in size, number of floors, architecture, and occupancy.[172] No one office structure has a superior location over another. The five office complexes were built by the same developer and are all rated class B office space because the buildings are all older structures in prime locations.[173] The buildings in the data set have no special amenities. Office building amenities include a spacious lobby, marble interiors,

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[171]The office leases contain contractual rental rates that were negotiated at different points in time when market conditions differ, unlike the use of the average current rental rate as in the Hough and Kratz [1983] and Cannaday and Kang [1984] rent studies.

[172]Distance from the central business district (CBD), major shopping areas, and interstate highways and expressways do not appear to influence rental rates because all buildings, being within a quarter mile radius of each other, are an equal distance from the CBD, major shopping areas, and interstate highways and expressways.

[173]Employing buildings owned by one developer reduces the chances that specific lease provisions were included because of a developer/owner's investment portfolio requirements.

glass elevators, and other unique tenant benefits.[174] Also, the buildings possess no disamenities that can decrease demand for office space.[175]

The sample includes both short and long term lease agreements negotiated between various tenants and landlords for the four year period beginning January 1984. Specific characteristics of each retail lease agreement that were obtained include lease terms, spatial and lessee characteristics, and lease contingencies, covenants, and other special provisions.[176] Table 7 presents the sample means and standard deviations, while Table J in Appendix I contains the correlation matrix.

Typical covenants in a lease include security deposits, right of assignment, restrictions on use of space, requirements to maintain liability insurance, obligations for space improvement and repairs, etc. Typical lease contingencies are allowance for building operation expenses, lease cancellation for construction delay, and a relocation right. Inspection of actual vacancy levels for the subject properties reveal near 100% occupancy. However, since vacancies are an important variable in determining lease rates, actual vacancy levels were collected for each month during the study period.[177] Data on rental concessions were

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[174]Hough and Kratz [1983] have demonstrated that special office building amenities such as good architecture can increase demand for office space.

[175]Building disamenities include poor physical state, no central air, no parking spaces, etc., while locational disamenities consist of location near a derelict area, nuclear power or sewage plant, etc.

[176]Variables are selected based upon previous research on office, apartment, and housing markets. See King [1973], Clapp [1980], Miller [1982], Hough and Kratz [1983], Brennan, Cannaday, and Colwell [1984], Rosen [1984], Cannaday and Kang [1984], and Guntermann and Norrbin [1987].

[177]Shilling, Sirmans, and Corgel [1986], Rosen and Smith [1983], Blinder [1982], and Philips [1980] note that landlords can alter inventories of unrented space by adjusting rental rates so as to minimize losses arising from unrented space. Nevertheless, a variable representing the office building vacancy rate on the date of lease execution was insignificant in all preliminary models. The subject office buildings had similar minimal (<5%) vacancy rates during the period of study. Also, the landlord communicated that vacancy adjustments through rents did not occur.

TABLE 7

Means and Standard Deviations of Office Lease Data

322 Observations*

Variable**	Symbol	Mean	Standard Deviation	Minimum	Maximum
Total Base Rent Per Square Foot	TOTPSF	13.039	1.524	9.500	16.570
Equilibrium Lease Payment	ELP	11.364	.643	9.335	17.293
Lease Terms:					
Lease Term in Years	LSTERM	1.479	1.721	.083	20.000
Spatial Characteristics:					
Square Feet in Thousands Leased	SQFT	.980	1.618	.090	16.436
Keyman Office Space	KEYMAN	.332	.472	0	1
Lessee Characteristics:					
Above Average Tenant	ABOVE	.344	.476	0	1
Average Tenant	AVGTNT	.295	.457	0	1
Out-of-State Tenant	OUTSTATE	.311	.463	0	1
Existing Tenant	EXTNT	.469	.500	0	1
Covenants:					
Security in Thousand Dollars Deposit	DEPOSIT	.317	.467	0	2.998
Lease Not Assignable	NASSIGN	.879	.327	0	1
Contingencies:					
Operational in Thousand Dollars Allowance	OPERALL	2.397	6.109	0	37.885
Construction Delay Release	DELAY	.230	.421	0	1
Landlord Relocation Right	RELOCATION	.562	.497	0	1

*Source: Data from five multi-tenant office buildings in Greensboro, North Carolina.

**See text for definition of variables.

gathered by obtaining the landlord's long-run supply price of retail space. Further, the landlord's intended deviations from the long-run supply price, based upon whether or not a tenant takes a large amount of space for a long period of time or has a favorable characteristic such as high credit rating, were noted.

B. Office Results

Tables 8 and 9 present estimates of the effects on nominal office rent of lease terms, spatial and lessee characteristics, and several lease covenants and contingencies.[178] The dependent variable in Table 8 is total annual rent per square foot, while the dependent variable in Table 9 is total annual rent minus the equilibrium lease payment (ELP). The regression results are consistent. The resulting hedonic equation in Table 8 has an R^2 of .770 and an F-statistic of 79.107, while in Table 9 the R^2 is .745 and the F-statistic is 75.285. All coefficients in both regressions are significant at the 10% level or better.

Equilibrium Lease Payment. Table 8 reveals that there exists a strong positive relationship between the actual and equilibrium lease payments (ELP). The coefficient of ELP is 1.031 and the value of the coefficient for ELP is not significantly different from unity.[179] As with the retail lease empirics, this result indicates that McConnell and Schallheim's [1983] methodology for valuing leases which contain non-cancellation provisions appears to be correct.

Lease Term. As predicted by Hypothesis 11, the coefficient for lease term (LSTERM) is negative and significant. It appears that landlords offer rental discounts to office tenants with long-term leases. Rental discounts may occur

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[178]The presence of multicollinearity was not indicated by variance inflation, eigen value, and condition index indicators as generated by SAS which follows procedures outlined by Belsley, Kuh, and Welch [1980]. Additionally, standard tests and residual plots showed no autocorrelation or heteroscedasticity problems. Further, the error term appears to be normally distributed (see Table S in Appendix 1) along with being stable over the time period studied.

[179]The coefficient for ELP has a standard error of .086, so that the ELP estimate of 1.031 lies within one standard deviation.

TABLE 8

The Final Estimated Hedonic Equation of Office Rent for a Sample of 322 Leases*

Variable**	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	1.031	12.038
Lease Terms:		
Lease Term in Months (LSTERM)	-.282	-7.142
Spatial Characteristics:		
Square Feet in Thousands Leased (SQFT)	- .055	-1.643
Keyman Office Space (KEYMAN)	1.278	8.750
Lessee Characteristics:		
Above Average Tenant (ABOVE)	-1.029	-7.261
Average Tenant (AVGTNT)	-.598	-5.367
Out-of-State Tenant (OUTSTATE)	.607	5.074
Existing Tenant (EXTNT)	-.269	-2.720
Covenants:		
Security Deposit in Thousand Dollars (DEPOSIT)	-.210	-2.120
Lease Not Assignable (NASSIGN)	-.365	-2.645
Contingencies:		
Operational Allowance in Thousand Dollars (OPERALL)	.022	2.519
Construction Delay Release (DELAY)	.296	2.582
Landlord Relocation Right (RELOCATION)	-.238	-2.054
Constant	2.252	2.439
R^2		.770
$\bar{R}^2$		.760
F-Statistic		79.107

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE 9

Estimated Hedonic Equation of Office Rent Less Equilibrium Lease Payment (ELP) for a Sample of 322 Leases*

Variable**	Parameter Estimate	t-Statistic
Lease Terms:		
Lease Term in Months (LSTERM)	-.276	-7.828
Spatial Characteristics:		
Square Feet in Thousands Leased (SQFT)	- .055	-1.633
Keyman Office Space (KEYMAN)	1.294	9.344
Lessee Characteristics:		
Above Average Tenant (ABOVE)	-1.032	-7.317
Average Tenant (AVGTNT)	-.599	-5.386
Out-of-State Tenant (OUTSTATE)	.611	5.145
Existing Tenant (EXTNT)	-.271	-2.757
Covenants:		
Security Deposit in Thousand Dollars (DEPOSIT)	-.206	-2.100
Lease Not Assignable (NASSIGN)	-.359	-2.624
Contingencies:		
Operational Allowance in Thousand Dollars (OPERALL)	.023	2.586
Construction Delay Release (DELAY)	.305	2.749
Landlord Relocation Right (RELOCATION)	-.237	-2.050
Constant	2.577	13.832
R^2		.745
$\bar{R}^2$		.735
F-Statistic		75.285

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

because of a reduction in landlord risk. Additionally, the releasing of vacant premises at lease termination is costly due to space downtime with tenant turnover and new tenant search costs.[180] Both landlords and tenants are aware of the reduced expenses incentive for a tenant not to move. Therefore, a rental discount may be given to office tenants as the length of stay increases.

Spatial Characteristics. In the model, two spatial attributes for the leased premises were tested.[181] These spatial attributes include usable square footage of the leased space in thousands of square feet (SQFT) and keyman or single executive office space (KEYMAN).[182] The nominal office space rental rate should decrease with greater square feet leased because the landlord's costs of negotiating and servicing lease contracts decline as the square feet leased increases. The estimated coefficient for SQFT has a negative sign and is significant. Thus, it appears that there is a rental discount as the square footage of contracted space increases. This result also conforms to the hypothesis of Brennan, Cannaday, and Colwell [1984], who suggest that rental rates will decrease as square footage increases because the negotiating strength of the tenant is greater. In addition, large space users may also be prominent tenants with their names on the building exterior. As with anchor retail stores that are valued by landlords for their traffic generating ability, anchor office tenants create an atmosphere of importance and prominence with the building. Therefore, well-known office

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[180]Also, the tenant would face turnover costs which include moving office furniture and equipment, lost employee productivity from work disruption, and legal fees with new leases.

[181]Dummy variables for individual office buildings and floor level location were included in preliminary models and found to have insignificant coefficients. Brennan, Cannaday, and Colwell [1984] indicate that floor level location should be positively related to rent because height provides occupants with better views and less noise from street level traffic. However, all buildings in the sample have three floors.

[182]Office suites differ in the amount of area lost to stairs, elevator shafts, storage spaces, pipes, vertical ducts, and bathrooms. The square footage of space for each lease in the data set is net of any lost area.

tenants that are large space users may pay lower rents for giving value to a building.

KEYMAN or single executive office space are small offices that range from 100 to 300 square feet. KEYMAN space is usually occupied by a single tenant on a month-to-month basis. In addition, secretarial or word processing services and conference rooms are available for a fee. The coefficient for KEYMAN office space has a rental premium which reflects the added value of short-term office space and services for the small office space user.

Lessee characteristics include dummy variables for an above average credit risk tenant (ABOVE), an average credit risk tenant (AVGTNT), a tenant with an out-of-state home office (OUTSTATE), and an existing tenant who signs a new lease (EXTNT). Having credit dummy variables which represent above average and average credit risk tenants allows the focus of the variation in credit risk or rating to be on tenants with better-than-average or average credit risks while the left out dummy variable is a tenant with a below average credit risk.[183] Both of the implied marginal prices of the credit risks in the equation are negative and significant as expected by Hypothesis 11. The range for these coefficients suggests that tenants receive a discount of either $1.03 or $0.60 per square foot per year for being a better credit risk or having lower default risk.

Out-of-state tenants may be charged higher rental rates for several reasons. First, landlords may perceive out-of-state tenants to be greater credit risks in that default judgments could be more difficult to collect. Second, out-of-state tenants may be unfamiliar with rental rates in the local marketplace and end up paying too much as compared with knowledgeable local tenants. The coefficient for out-of-state tenant (OUTSTATE) is positive and significant which indicates that out-

[183]The credit risk or rating of the various tenants were obtained from interviews with the landlord/investor and actual tenant financial statements.

of-state tenants are charged higher rental rates. This result is consistent with Hypothesis 12.

As existing tenants are a known commodity in that their rental payment and maintenance records have been observed by the landlord, they may be expected to receive a rental discount because of the landlord's lower information and releasing costs.[184] Since the landlord is informed about the tenant's payment record, uncertainty is reduced and the landlord would be willing to share the benefit with the lessee through lower lease rates. Releasing costs such as new tenant search costs, remodeling and upfitting charges, and leasing fees along with lost revenues due to space downtime are also reduced. Thus, as proposed in Hypothesis 13, existing tenants who sign renewal leases are expected to receive a discount. The coefficient for existing tenant (EXTNT) is negative and significant which supports these theories that existing tenants enjoy a rental discount with renewed leases.

Covenants. Two office covenants commonly found in lease agreements are a requirement for a security deposit and a provision preventing the assignment of the lease to a third party. A security deposit serves to penalize the lessee for unwanted opportunistic behavior. If the lessee defaults on the obligations of his lease or fails to pay his rent in a timely manner, then the deposit acts as compensation. Smith and Warner [1979] indicate that contractual participants willingly accept provisions which restrict opportunistic behavior because they lower the uncertainty surrounding contractual fulfillment and, thus, lower contracting costs ensue. The coefficient for security deposit in thousand dollars (DEPOSIT) is negative and significant as anticipated by Hypothesis 15. However, in order for a security deposit to indicate a reduction in unwanted tenant

[184]This is similar to a bank knowing the history of its customers. Lower borrowing costs are the result of the bank having past information about a borrower. See Leland and Pyle [1977] and Santomero [1984] for an information gathering explanation of bank existence.

behavior and, thus, a lower lease rental payment, the value of the coefficient for the variable representing the security deposit has to be greater than the forgone interest on the deposit. With a DEPOSIT coefficient estimate of -.210, the rental discount amount is greater than the various forgone interest rates that would have been available. Nevertheless, the difference is not significant. Thus, a security deposit may decrease rent because the landlord's uncertainty surrounding tenant opportunistic behavior is reduced. As the amount of the deposit rises in dollar value, the greater the rental discount that the lessee receives.

An assignable lease exposes the lessor to greater uncertainty. A substitute tenant may have increased default risk or be incompatible with the existing tenant mix. For these reasons, most office leases prevent assignment. However, assignment is allowed in some cases. As expected by Hypothesis 16, a covenant preventing lease assignment (NASSIGN) is negative and significant and will reduce nominal rent.

Lease Contingencies. Three lease contingencies are included: operational allowance for rent escalation (OPERALL), construction delay release (DELAY), and landlord relocation right (RELOCATION). A landlord may be exposed to a sudden rise in building operating costs due to unanticipated inflation or other circumstances. For the lessee, the probability of paying additional rent is directly related to the operational expense allowance in thousand dollars (OPERALL).[185] As the operational expense allowance increases, the probability of the tenant paying additional rent decreases. The parameter coefficient for the operational expense allowance is positive and significant. This outcome supports Hypothesis 17 and indicates that landlords must be compensated with higher annual rents for

[185]The tenant usually negotiates an allowance higher than the cost for the first lease year. However, the provision normally requires the landlord to seek to reduce operational expenses.

the reduced likelihood of receiving additional rents associated with higher operating expenses.

An office tenant is exposed to considerable costs when moving into new office space. These costs include attorney's fees, moving contracts, and commitments for fixtures, equipment and furniture. The landlord's failure to provide office space by the agreed upon deadline would expose the lessee to additional expense and would be a quasi-rent appropriation by the landlord. A construction delay release provision which allows the lessee to cancel a lease if space is not provided within an agreed upon number of days and in a certain state of condition is typically found in office leases.[186] The provision should discourage quasi-rent appropriation by the landlord through permitting the tenant to escape from the requirements of the lease. Although the provision decreases the uncertainty for the tenant by providing the tenant with the ability to contract for space elsewhere, it increases the uncertainty for the landlord. Therefore, a construction delay release would be valuable to the tenant but not valuable to the landlord because of increased exposure to uncertainty. For these reasons, Hypothesis 18 expects the coefficient for a construction delay release (DELAY) to be positive. As anticipated, the coefficient for construction delay release is positive and significant.

A relocation right allows the landlord to relocate tenants so as to meet tenant expansion requirements. The relocation provision allows the landlord to readjust his space inventory in a more efficient manner which reduces building operation costs. A reduction in operating costs could be transferred to the tenant through reduced lease rates. Consistent with Hypothesis 19, the coefficient for landlord relocation right (RELOCATION) is negative and significant.

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[186]The provision usually states that a landlord must provide the space within 30 days after the execution of the lease.

C. Office Summary

The office lease empirics provided strong support for the view that certain covenants and contingencies determine office rental rates and, thus, the valuation of leases. In addition, Tables K-Q in the Appendix demonstrate that office lease provision pricing holds over a broad range of estimated multiple regression equations, including sensitivity analysis with respect to estimates of ELP from changes in the rate of asset appreciation and in discount rates, and alternative non-linear functional forms. The hypotheses appear to be consistent with the results. Landlords offer long-term office tenants rental discounts. A security deposit provision may decrease rent because uncertainty surrounding lease payments is reduced. Covenants which prevent the lease from being assigned will decrease the landlord's uncertainty and, therefore, will reduce rent. The landlord charges higher rent as the tenant's operational expense allowance increases. Higher rent compensates the landlord for the decreased probability of receiving additional rent from a greater operational expense allowance. A construction delay release lowers risk for the tenant, but raises risk for the landlord, so additional rent is charged. Landlords grant rental discounts in exchange for receiving the right to relocate a tenant. Thus, contracting considerations are important determinants of office lease structure.

CHAPTER 5

SUMMARY, MAIN RESULTS, AND FUTURE RESEARCH

1. Summary

This dissertation adds to the financial contracting literature by demonstrating that the resolution of contracting issues associated with the allocation of risks and the minimization of opportunistic behavior influences the structure of retail and office leases, including covenants and other provisions. In Chapter 2, background literature on shopping centers, office buildings, leases, and prior related work was presented. Chapter 3 contained a review of contracting issues in retail and office leasing along with an analysis of the resolution of these difficulties by lease provisions. Testable hypotheses regarding the allocating of risks and the minimization of opportunistic behavior by lease provisions were proposed for both retail and office leases. Chapter 4 introduced a rental multiple regression equation which uses Rosen's [1974] well-known theory of hedonic price estimation. The multiple regression equation was utilized on two original data sets to examine the economic impact of specific lease provisions on rent. The shopping center data set contained 103 retail lease observations. The shopping centers were selected because they minimize spatial and locational variation among the retail spaces. The shopping centers are neighborhood and community shopping centers which are all of strip design and are located within a three mile radius in the same geographic area of a city. Further, the open air shopping centers are comparable in size, architecture, occupancy, and amenities. Chapter 4 also gives the results from the retail lease regressions and furnishes evidence that contracting issues are important in determining how shopping center landlords and tenants select what provisions to include in leases. The office lease data set included 322 office leases for class B office space. The office buildings were

chosen because they reduce the spatial and locational variation among the office spaces. The office space is situated in five multitenant buildings that are similarly located in a prominent part of the city within a quarter mile radius of each other. The office buildings are comparable in size, number of floors, architecture, occupancy, and amenities. The hedonic rental equation indicated that the lessening of contracting problems associated with the office lease process is important in determining how landlords and tenants structure leases.

2. Main Results

This dissertation confirms that lessors and lessees of retail and office space value contractual provisions contained in leases. Although the resulting implicit price equation for retail and office rents does not provide direct information about the motivations of lessors and lessees, the hedonic price equation does duplicate the equilibrium generated by producer (lessor) and consumer (lessee) welfare maximization. The retail and office lease hedonic price regressions indicate that lessors charge and lessees are willing to pay rental premiums or discounts for certain lease provisions. This outcome has important implications for models of leases. Models of leases should include or account for the impact of those contractual provisions which may impact the nominal lease rate.[187]

3. Future Research

Future research to gain greater knowledge about the commercial leasing process and the valuation of certain lease provisions would include the collection of new larger data sets of retail and office leases. The gathering of a substantial retail lease data set (300 - 500 observations) from closely located and comparable regional malls would allow for a more complete investigation of this dissertation's hypotheses. The effects of provisions in this dissertation's model could be re-

[187]The few lease provisions that price into this dissertation's models only hint at the provision pricing which is possible, given the multitude of provisions that exist in leasing contracts.

examined with the new retail data set together with the consequences of other provisions not studied such as lessee cancellation rights, anti-competition clauses such as covenants preventing other stores of the same type from operating in the mall, and non-compete restrictions such as the prohibition of the tenant's operation of another business within a certain radius. In addition, the concentration of low base rent and high percentage rent with certain store leases implies that predictable cross-sectional differences in leases based upon store type and/or classification exist. Thus, with adequate retail lease observations a probit choice model could be developed where the trade-off between base and percentage rent could be explained by independent variables covering spatial and lessee characteristics, contractual provisions, and market conditions. Also, the effects of store location within a mall or shopping center could be researched. For example, does location on the main corridor have greater rent than another site with lower pedestrian flow?

To further evaluate the effects of contracting provisions on the value of office leases, new office market data could be collected. The assembling of lease information from 20 to 30 multitenant office buildings situated in a CBD would allow the use of over five hundred leases. The effects of lease provisions included in this dissertation's office lease model could be re-examined along with other provisions such as the lessee's option to renew, expand, cancel, or have a right of first refusal. Further, if enough office leases with options to renew were collected then a model for valuing the option to renew could be developed.

BIBLIOGRAPHY

P. R. Allen, J. D. Shilling, and C. F. Sirmans. "Sales Concessions and Market Value: Solving the Appraiser's Dilemma." *The Appraisal Journal* Vol. 54, No. 2 (April 1986), 205-13.

_____. "Contracting, Contingencies, and Single-Family House Prices." *Economic Inquiry* 25 (January 1987), 159-64.

I. Alexander and J. Dawson. "Employment in Retailing: A Case Study of Employment in Suburban Shopping Centers." *Geoforum* 10 (1979), 407-25.

American Bar Association. "A Practical Guide to Reviewing a Commercial Lease." *Real Property, Probate, and Trust Journal.* Reprinted in M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 857-908.

P. M. Anderson. "Association of Shopping Center Anchors with Performance of a Nonanchor Specialty Chain's Stores." *Journal of Retailing* 61 (Summer 1985), 61-74.

J. Ang and P. Peterson. "The Leasing Puzzle." *Journal of Finance* (September 1984), 1055-66.

W. R. Archer. "Determinants of Location for General Purpose Office Firms within Medium Size Cities." *AREUEA Journal* (Fall 1981), 283-97.

S. E. Atkinson and R. Halvorsen. "A New Hedonic Technique for Estimating Attribute Demand: An Application to the Demand for Automobile Fuel Efficiency." *The Review of Economics and Statistics* 66 (August 1984), 417-26.

A. Barnea, R. Haugen, and L. W. Senbet. "Market Imperfections, Agency Problems, and Capital Structure: A Review." *Financial Management* (1981), 7-22.

_____. *Agency Problems and Financial Contracting.* Englewood Cliffs, NJ: Prentice-Hall, 1985.

M. E. Bayless and J. D. Diltz. "An Empirical Study of the Debt Displacement Effects of Leasing." *Financial Management* (Winter 1986), 53-60.

D. A. Belsley, E. Kuh, and R. E. Welch. *Regression Diagnostics.* New York, N.Y.: John Wiley & Sons, 1980.

D. J. Bennison and R. L. Davies. "The Impact of Town Center Shopping Schemes in Britain: Their Impact on Traditional Retail Environments." *Progress in Planning* 14 (1980), 1-104.

J. D. Benjamin and C. F. Sirmans. "Who Benefits from Mortgage Revenue Bonds?" *National Tax Journal* Vol. XL, No. 1 (March 1987), 115-20.

_____, G. M. Frankfurter, and C. F. Sirmans. "The Pricing of Covenants -- A Theory in Search of Empirical Evidence." Working Paper No. 8802-91, Real Estate Research Institute, LSU, 1988.

G. Benston and C. Smith. "A Transactions Cost Approach to the Theory of Financial Intermediation." *The Journal of Finance* 31 (1976), 215-31.

F. Black and M. Scholes. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy* 81 (May-June 1973), 637-54.

F. Black. "The Pricing of Commodity Contracts." *Journal of Financial Economics* (May 1976), 167-79.

_____ and J. Cox. "Valuing Corporate Securities: Some Effects of Bond Indenture Provisions." *The Journal of Finance* 31 (1976), 351-68.

P. Blackley, J. R. Follain, and J. Ondrich. "Box-Cox Estimation of Hedonic Models: How Serious Is the Iterative OLS Variance Bias?" *Review of Economics and Statistics* 56 (May 1984), 348-52.

A. S. Blinder. "Inventories and Sticky Prices: More on the Microfoundations of Macroeconomics." *American Economic Review* 72 (June 1982), 334-48.

C. M. Boardman and R. M. McEnally. "Factors Affecting Seasoned Corporate Bond Price." *Journal of Financial and Quantitative Analysis* 16 (June 1981), 207-26.

R. S. Bower. "Issues in Lease Financing." *Financial Management* 2 (1973), 25-33.

G. E. P. Box and D. R. Cox. "An Analysis of Transformations." *Journal of the Royal Statistical Society*. Series B, 26 (1964), 211-43.

G. E. P. Box and P. W. Tidwell. "Transformation of the Independent Variables." *Technometrics* (November 1962), 531-50.

G. A. Brauer. "Evidence of the Market Value of Mc-First Rules." *Financial Management* (Spring 1983), 11-18.

R. Brealey and C. M. Young. "Debt, Taxes, and Leasing -- A Note." *Journal of Finance* (December 1980), 1245-50.

R. Brealey and S. Myers. *Principles of Corporate Finance*. New York: McGraw Hill, 1984.

T. P. Brennan, R. E. Cannaday, and P. F. Colwell. "Office Rent in the Chicago CBD." *AREUEA Journal* 12 (Fall 1984), 243-60.

J. A. Brickley and F. H. Dark. "The Choice of Organizational Form: The Case of Franchising." *Journal of Financial Economics* 18 (1987), 401-420.

D. S. Brookshire, M. A. Thayer, J. Tschirhart, and W. D. Schulze. "A Test of the Expected Utility Model: Evidence from Earthquake Risks." *Journal of Political Economy* (1985).

L. P. Bucklin. "The Concept of Mass in IntraUrban Shopping." *Journal of Marketing* 31 (1967), 37-42.

S. A. Buser and P. H. Hendershott. "The Pricing of Callable Mortgages." Working Paper, Ohio State University, 1984.

L. S. Burns. "The Location of Headquarters of Industrial Companies: A Comment." *Urban Studies* 14 (June 1977), 211-14.

J. W. Bruce. *Real Estate Finance*. St. Paul, MN: West Publishing, 1977.

R. E. Cannaday and H. B. Kang. "Estimation of Market Rent for Office Space." *The Real Estate Appraiser and Analyst* (Summer 1984), 67-72.

CALUS. *Rental Assessment and Tenant Mix in Planned Shopping Centers*. Center for Advanced Land Use Studies, Reading, 1975.

R. Cason. "Leasing, Asset Lives and Uncertainty: A Practitioner's Comments." *Financial Management* (Summer 1987), 13-16.

S. Cheung. "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements." *Journal of Law and Economics* 12 (April 1969), 23-42.

R. Chiang, T. Lai, and D. C. Ling. "Retail Leasehold Interests: A Contingent Claim Analysis." *AREUEA Journal* Vol. 14, No. 2 (1986), 216-29.

J. M. Clapp. "The Intrametropolitan Location of Office Activities." *Journal of Regional Science* 20 (November 1980), 387-99.

_____. "A General Model of Equilibrium Locations." *Journal of Regional Science* 23 (November 1983).

_____. "What Do We Know about Office Markets?" Working paper, University of Connecticut, 1985.

R. Coase. "The Problem of Social Cost." *Journal of Law and Economics* 7 (1960), 1-44.

W. R. Code. "The Strength of the Centre: Downtown Offices and Metropolitan Decentralization Policy in Toronto." *Environment and Planning, A*, 15 (October 1983), 1361-380.

T. E. Copeland and J. F. Weston. "A Note on the Evaluation of Cancelable Operating Leases." *Financial Management* (Summer 1982), 68-72.

_____. *Financial Theory and Corporate Policy, 3rd Edition*. Reading, Mass.: Addison-Wesley Publishing Company, 1988.

J. C. Cox, S. A. Ross and M. Rubinstein. "Option Pricing: A Simplified Approach." *Journal of Financial Economics* (September 1979), 229-63.

J. C. Cox and M. Rubinstein. *Options Markets*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1985.

P. W. Daniels. "Office Locations in the British Conurbations: Trends and Strategies." *Urban Studies* 14 (October 1977), 261-74.

F. W. Derrick. "Interpretation of Dummy Variables in Semilogarithmic Equations: Small Sample Implications." *Southern Economic Journal* 50 (February 1984), 1185-88.

K. B. Dunn and C. S. Spatt. "An Analysis of Mortgage Contracting: Prepayment Penalties and the Due-on-Sale Clause." *Journal of Finance* (1985), 293-308.

B. Eaton and R. Lipsey. "Comparison Shopping and the Clustering of Homogeneous Firms." *Journal of Regional Science* 19 (1981), 421-35.

_____. "An Economic Theory of Central Places." *The Economic Journal* 92 (1982), 56-72.

D. R. Epley and J. Rabianski. *Principles of Real Estate*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1986.

A. A. Eubank, Jr. and C. F. Sirmans. "The Price Adjustment Mechanism for Rental Housing in the United States." *Quarterly Journal of Economics* 93 (February 1979), 63-83.

E. F. Fama and M. C. Jensen. "Agency Problems and Residual Claims." *Journal of Law and Economics* 26 (1983), 327-49.

E. F. Fama and M. Miller. *The Theory of Finance*. New York, N.Y.: Holt, Rinehart, and Winston, 1977.

D. Flath. "The Economics of Short-Term Leasing." *Economic Inquiry* 18 (April 1980), 247-59.

J. R. Follain, D. J. Gross, E. Jimenez, and S. Malpozzi. "Annotated Bibliography of Housing Characteristic Demand Studies." Working Paper No. 8414-14, Real Estate Research Institute, LSU, 1984.

J. R. Follain and E. Jimenez. "Estimating the Demand for Housing Characteristics: A Survey Critique." *Regional Science and Urban Economics* 15:1 (1985).

T. B. Fomby, R. C. Hill, and S. R. Johnson. *Advanced Econometric Methods*. New York: Springer-Verlag, 1984.

J. R. Franks and S. D. Hodges. "Valuation of Financial Lease Contracts." *Journal of Finance* (May 1978), 657-72.

M. R. Friedman. "Store Leases." 37 *New York State Bar Journal* 126 (April 1968). Reprinted in M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 547-60.

_____. *Friedman on Leases* 2nd Edition, Volumes I-III. New York: Practicing Law Institute, 1983.

_____. "Rent Escalation Under Business and Commercial Leases." In M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 397-408.

D. Galai and R. Masulis. "The Option Pricing Model and the Risk Factor of Stock." *Journal of Financial Economics* (January/March 1976), 53-82.

F. W. Galaty, W. J. Allaway, and R. C. Kyle. *Modern Real Estate Practice, 10th Edition.* Chicago, Ill.: Real Estate Education Company, 1985.

R. Geske. "The Valuation of Corporate Liabilities as Compound Options." *Journal of Financial and Quantitative Analysis* (November 1977), 541-52.

A. Ghosh. "Competition and Cooperation Among Itinerant Traders." *Geographical Analysis* 15 (1983), 1-13.

_____ and C. S. Craig. "Models of the Retail Location Process: A Review." *Journal of Retailing* 60 (Spring 1984), 5-36.

_____. "The Value of a Mall and Other Insights from a Revised Central Place Model." *Journal of Retailing* 62 (Spring 1986), 79-97.

F. Gibson, J. Karp, and E. Klayman. *Real Estate Law.* Chicago, Illinois: Real Estate Education Company, 1983.

D. E. Giles. "The Interpretation of Dummy Variables in Semilogarithmic Equations: Unbiased Estimation." *Economic Letters* 10 (1982), 77-79.

K. L. Guntermann and S. Norrbin. "Explaining the Variability of Apartment Rents." *AREUEA Journal* Vol. 15, No. 4 (Winter 1987), 321-40.

D. M. Grether and P. Mieszkowski. "Determinants of Real Estate Values." *Journal of Urban Economics* 1 (April 1974), 127-46.

R. Halvorsen and H. O. Pollakowski. "Choice of Functional Form for Hedonic Price Equations." *Journal of Urban Economics* (July 1981), 37-49.

A. M. Hammer. "Metropolitan Planning and Location Behavior of Basic Office Firms: A Case Study." The Review of Regional Studies (1974), 34-45.

D. J. Hartzell, J. Hekman, and M. E. Miles. "Diversification Categories in Investment Real Estate." *AREUEA Journal* (Summer 1986), 230-54.

D. J. Hartzell, D. G. Shulman, and C. H. Wurtzebach. "Refining the Analysis of Regional Diversification for Income-Producing Real Estate." *The Journal of Real Estate Research* Vol. 2, No. 2 (Winter 1987), 85-95.

W. Z. Hirsch. *Law and Economics.* New York: Academic Press, 1979.

T. S. Y. Ho and R. F. Singer. "Bond Incentive Provisions and The Risk of Corporate Debt." *Journal of Financial Economics* 10 (December 1982), 375-406.

D. E. Hough and C. G. Kratz. "Can 'Good' Architecture Meet the Market Test?" *Journal of Urban Economics* (August 1983), 40-54.

C. Hsia. "Coherence of the Modern Theories of Finance." *Financial Review* (Winter 1981), 27-42.

C. Ingene. "Temporal Influences upon Spatial Shopping Behavior of Consumers." *Papers of the Regional Science Association* 54 (1984), 71-87.

J. Ingersoll. "A Theoretical and Empirical Investigation of the Dual Purpose Funds: An Application of Contingent Claims Analysis." *Journal of Financial Economics* (January/March 1976), 83-124.

_____. "A Contingent Claim Valuation of Convertible Securities." *Journal of Financial Economics* 4 (1977), 289-322.

R. A. Jarrow and A. R. Rudd. *Option Pricing.* Homewood, Ill.: Irwin, Inc., 1983.

M. C. Jensen and W. H. Meckling. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3 (1976), 305-60.

_____ and C. W. Smith, Jr. "Stockholder, Manager and Creditor Interests: Applications of Agency Theory." In E. D. Altman and M. G. Subrahmanyam, *Recent Advances in Corporate Finance.* Homewood, Ill.: Irwin, 1985, 93-131.

J. Johnston. *Econometric Methods, 3rd ed.* New York: McGraw-Hill, 1984.

G. Judge, W. Griffiths, R. Hill, and T. Lee. *The Theory and Practice of Econometrics.* New York: Wiley, 1980.

J. F. Kain and J. M. Quigley. "Measuring the Value of Housing Quality." *Journal of the American Statistical Association* 65 (June 1970), 532-48.

A. Kalay. "Stockholders-Bondholders Conflict and Dividend Constraints." *Journal of Financial Economics* (July 1982), 211-33.

H. E. Kane. "Shopping Center Leases -- Negotiability -- Different Problems Presented and Confronted by Landlords and Tenants." *Commercial Real Estate Leases 1982.* Reprinted in M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 439-62.

H. Kelly. "Forecasting Office Space Demand in Urban Areas." *Real Estate Review* 13 (Fall 1983), 87-95.

P. E. Kennedy. "Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations." *American Economic Review* 71 (September 1981), 801.

A. T. King. *Property Taxes, Amenities, and Residential Land Values.* Cambridge, Massachusetts: Ballinger Publishing Co., 1973.

J. King. "Contracting for Standards of Service in Leased Office Space." *Administrative Management* (February 1977), 63-68.

B. Klein, R. G. Crawford, and A. A. Alchian. "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process." *Journal of Law and Economics* 21 (October 1978), 297-326.

B. Klein and K. Leffler. "The Role of Price Guaranteeing Quality." *Journal of Political Economy* (1979).

A. B. Kuklin. "The Shopping Center Lease -- Principal Negotiating Concerns." In M. R. Friedman, ed., *Commercial Real Estate Leases, 11th,* New York, N.Y.: Practicing Law Institute, 1980, 343-92.

R. Kratovil and R. J. Werner. *Modern Mortgage Law and Practice.* Englewood Cliffs, NJ: Prentice-Hall, 1981.

_____. *Real Estate Law,* 8th ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1983.

K. Lee. "The Economics of Shopping Centers: A Literature Survey." ORER Paper No. 51, Office of Real Estate Research, University of Illinois, Urbana-Champaign, 1987.

W. Y. Lee, J. D. Martin, and A. J. Senchack. "The Case for Using Options to Evaluate Salvage Values in Financial Leases." *Financial Management* (Autumn 1982), 33-41.

H. E. Leland and D. H. Pyle. "Information Asymmetries, Financial Structure, and Financial Intermediation." *Journal of Finance* 32 (May 1977), 371-87.

W. Lewellen, M. Long, and J. J. McConnell. "Asset Leasing in Competitive Capital Markets." *Journal of Finance* 31 (June 1976), 787-98.

S. J. Liebowitz. "Tie-In Sales and Price Discrimination." *Economic Inquiry* 21 (July 1983), 387-99.

S. K. Long, A. D. Witte, H. Tauchen, W. Archer. "The Location of Office Firms." Draft paper, October, 1984.

J. Lord and C. Lynds. "The Use of Regression Models in Store Location Research: A Review and Case Study." *Akron Business and Economic Review* 10 (1981), 13-19.

A. Losch. *The Economics of Location.* New Haven, Conn.: Yale Univ. Press, 1954.

H. F. Lusk and W. B. French. *Law of the Real Estate Business.* Homewood, Ill.: Richard D. Irwin, Inc., 1984.

S. MacCaulay. "Non-Contractual Remedies in Business: A Preliminary Study." *American Sociological Review* 28 (February 1963), 55-67.

M. J. Machina. "Choice Under Uncertainty: Problems Solved and Unsolved." *Economic Perspectives* Vol. I, No. I (Spring 1987), 121-54.

I. Malitz. "On Financial Contracting: The Determinants of Bond Covenants." *Financial Management* (Summer 1986), 18-25.

H. M. Markowitz. "Portfolio Selection." *Journal of Finance* 7, No. I (March 1952), 77-91.

J. D. Martin, S. H. Cox, R. D. MacMinn. *The Theory of Finance: Evidence and Applications.* New York, New York: Dryden Press, 1988.

R. E. Martin. "Franchising and Risk Management." Working Paper, Department of Economics, LSU, 1987.

D. Mayers and C. Smith. "Contractual Provisions, Organizational Structure and Conflict Control in Insurance Markets." *Journal of Business* 54, (1981), 407-34.

J. J. McConnell and J. S. Schallheim. "Valuation of Asset Leasing Contracts." *Journal of Financial Economics* 12 (August 1983), 237-61.

R. C. Merton. "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates." *Journal of Finance* (May 1974), 449-70.

_____. "An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory." *Journal of Banking and Finance* 1 (1977), 3-11.

_____. "The Theory of Rational Option Pricing." *Bell Journal of Economics and Management Science* (Spring 1983), 141-83.

N. G. Miller. "Residential Property Hedonic Pricing Models: A Review." In C. F. Sirmans, ed., *Research in Real Estate*, Vol. 2. Greenwich, Conn.: JAI Press, 1982, 31-56.

M. Miller. "Debt and Taxes." *The Journal of Finance* XXXII, No. 2 (May 1977), 261-75.

M. Miller and C. Upton. "Leasing, Buying, and the Cost of Capital Services." *Journal of Finance* 31 (June 1976), 761-86.

N. J. Minaya. "Consider the Circumstances." *The Appraisal Journal* (October 1969), 529.

F. Modigliani and M. H. Miller. "The Cost of Capital, Corporation Finance and the Theory of Investment." *American Economic Review* (June 1958), 261-97.

_____. "Corporate Income Taxes and the Cost of Capital: A Correction." *The American Economic Review* LIII, No. 3 (June 1963), 433-43.

S. C. Myers. "Determinants of Corporate Borrowing." *Journal of Financial Economics* 5 (1977), 147-75.

_____. "The Capital Structure Puzzle." *The Journal of Finance* XXXIX, No. 3 (July 1984), 575-92.

_____, D. Dill, and A. Bautista. "Valuation of Financial Lease Contracts." *Journal of Finance* 31 (June 1976), 799-820.

G. Mulligan. "Consumer Demand and Multipurpose Shopping Behavior." *Geographical Analysis* 15 (1983), 76-80.

S. Narula, M. Horowitz and B. Lentnek. "Where Shall We Stop Today? A Theory of Multipurpose Stop, Multipurpose Shopping Trips." *Papers of the Regional Science Association* 53 (1983a), 159-73.

_____. "Do I Have to Go Shopping Again? A Theory of Choice with Movement Costs." *Journal of Urban Economics* 13 (1983b), 165-80.

J. von Neumann and O. Morgenstern. *Theory of Games and Economic Behavior*. New York: John Wiley & Sons, Inc., 1944.

T. J. O'Brien and B. H. Nunnally, Jr. "A 1982 Survey of Corporate Leasing Analysis." *Financial Management* (Summer 1983), 30-36.

M. O'Kelly. "A Model for Demand Retail Facilities Incorporating Multipurpose Shopping." *Geographical Analysis* 13 (1981), 134-48.

_____. "Impacts of Multistop on Retail Distribution." *Urban Geographer* (1983), 173-90.

L. Ozanne, M. Andrews, and S. Malpozzi. "The Efficacy of Hedonic Estimation with the Annual Housing Survey: Evidence from the Demand Experiment." Mimeo, 1984.

R. B. Palmquist. "Estimating the Demand for the Characteristics of Housing." *The Review of Economics and Statistics* 66 (August 1984), 394-404.

L. Philips. "Intertemporal Price Discrimination and Sticky Prices." *Quarterly Journal of Economics* (May 1980), 525-47.

R. S. Pindyck and D. L. Rubinfeld. *Econometric Models and Economic Forecasts*, 2nd. ed. New York: McGraw-Hill Book Company, 1981.

B. Pollak. "Shopping Center Leases." *The University of Kansas Law Review* Vol. 4, No. 9 (1961).

_____. "Outlines of Some Clauses of a Shopping Center Lease." In *Business and Legal Problems of Shopping Centers 2nd.* New York, N.Y.: Practicing Law Institute, 1970.

R. Pye. "Office Location and the Cost of Maintaining Contact." *Environment and Planning, A*, (February 1977), 149-68.

S. A. Pyhrr and J. R. Cooper. *Real Estate Investment: Strategy, Analysis, Decision.* New York: Wiley, 1982.

P. Rao and R. L. Miller. *Applied Econometrics.* Belmont, California: Wadsworth Publishing Co., 1971.

Report of the Committee on Leases, Section of Real Property, Probate, and Trust Law, American Bar Association. "Drafting Shopping Center Leases." *Real Property, Probate and Trust Journal* Vol. 2, Number 2 (Summer 1967). Reprinted in M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 409-38.

R. G. Ridker and J. A. Henning. "The Determinants of Residential Property Values with Special Reference to Air Pollution." *The Review of Economics and Statistics* 49 (May 1967), 246-57.

A. A. Ring and J. Dasso. *Real Estate: Principles and Practices, 10th Edition.* Englewood Cliffs, N.J.: Prentice-Hall, In., 1985.

E. D. Robbins and J. D. Schatzberg. "Callable Bonds: A Risk Reducing Signaling Mechanism." *Journal of Finance* Vol. XLI, No. 4 (September 1986), 935-49.

S. M. Robbins and N. E. Terleckyj. *Money Metropolis.* Cambridge, Mass.: Harvard University Press, 1960.

G. S. Roberts and J. Viscione. "The Impact of Seniority and Security Covenants on Bond Yields: A Note." *The Journal of Finance* 39 (December 1984), 1597-1602.

D. S. Rogers. "Evaluating the Business and Planning Impact of Suburban Shopping Developments: A Proposed Framework of Analysis." *Regional Studies* (1979), 395-408.

K. Rosen. "Toward a Model of the Office Building Sector." *AREUEA Journal* 12 (Fall 1984), 261-69.

_____ and L. B. Smith. "The Price-Adjustment Process for Rental Housing and the Natural Vacancy Rate." *American Economic Review* 73 (September 1983), 779-86.

S. Rosen. "Hedonic Prices and Implicit Markets: Product Differentiation in Price Competition." *Journal of Political Economy* 82 (Jan/Feb. 1974), 35-55.

P. H. Rubin. "The Theory of the Firm and the Structure of the Franchise Contract." *Journal of Law and Economics* 21 (April 1978), 223-33.

M. Rubinstein. "The Value of Uncertain Income Streams and the Pricing of Options." *The Bell Journal of Economics* 7 (1976), 407-25.

J. Sa-Aadu, C. F. Sirmans, and J. D. Benjamin. "Financing and Single-Family House Prices." Working paper No. 8618-62, Real Estate Research Institute, LSU, 1986.

A. Santomero. "Modeling the Banking Firm: A Survey." *Journal of Money, Credit, and Banking* 16 (November 1984).

L. D. Schall. "The Lease-or-Buy and Asset Acquisition Decisions." *Journal of Finance* (September 1974), 1203-14.

_____. "The Evaluation of Lease Financing Opportunities." *Midland Corporate Finance Journal* (Spring 1985), 48-65.

_____. "Analytic Issues in Lease vs. Purchase Decisions." *Financial Management* (Summer 1987), 17-20.

J. S. Schallheim, R. E. Johnson, R. C. Lease, and J. J. McConnell. "The Determinants of Yields on Financial Leasing Contracts." *Journal of Financial Economics* 19 (1987), 45-67.

P. J. H. Schoemaker. "The Expected Utility Model: Its Variants, Purposes, Evidence and Limitations." *Journal of Economic Literature* 20, No. 2 (June 1982), 529-63.

S. Shavell. "Risk-Sharing and Incentives in the Principal and Agent Relationship." *The Bell Journal of Economics* 10 (Spring 1979), 55-73.

_____. "Damage Measures for Breach of Contract." *The Bell Journal of Economics* 11 (Autumn 1980), 466-90.

_____. "The Design of Contracts and Remedies for Breach." *Quarterly Journal of Economics* 99 (February 1984), 121-48.

W. B. Shear. "A Note on Occupancy Turnover in Rental Housing Units." *AREUEA Journal* 11 (Winter 1983), 525-38.

J. D. Shilling, C. F. Sirmans, and J. D. Benjamin. "Contracts as Options: Some Evidence from Condominium Developments." *AREUEA Journal* 13 (Summer 1985a), 143-52.

_____. "The Valuation of Vacant Land Option Contracts and a Test of Market Efficiency." Working Paper No. 8511-25, Real Estate Research Institute, LSU, 1985b.

_____. "Lessee Characteristics, Covenants, and Contingencies and Lease Valuation: Some Empirical Evidence." Working Paper No. 8601-45, Real Estate Research Institute, LSU, 1986.

_____. "Coordinating Professional Skills, Real Estate Developers and Land Options." Working Paper No. 8708-73, Real Estate Research Institute, LSU, 1987a.

_____. "On Option-Pricing Models in Real Estate: A Critique." *AREUEA Journal* 15 (Spring 1987b), 742-52.

J. D. Shilling, C. F. Sirmans, and J. B. Corgel. "Price Adjustment Process for Rental Office Space." *Journal of Urban Economics* (July 1987), 90-100.

J. D. Shilling, C. F. Sirmans, G. K. Turnbull, and John D. Benjamin. "A Theory and Empirical Test of Land Option Pricing." Working Paper No. 8708-73, Real Estate Research Institute, LSU, 1987.

C. W. Smith, Jr. and L. M. Wakeman. "Determinants of Corporate Leasing Policy." *Journal of Finance* 40 (July 1985), 895-908.

_____ and J. B. Warner. "On Financial Contracting: An Analysis of Bond Covenants." *Journal of Financial Economics* 7 (June 1979), 117-61.

D. R. Stambaugh. "The Evolution of the Shopping Center Lease." *Real Estate Today* (August 1978), 20-23.

B. J. Strum. "The Mortgagee Looks at the Lease as a Basis for Mortgage Financing." In M. R. Friedman, ed., *Commercial Real Estate Leases 1987*, New York, N.Y.: Practicing Law Institute, 1987, 77-114.

J. Thatcher. "The Choice of Call Provisions: Evidence of Agency Costs of Debt." *The Journal of Finance* (June 1985), 549-61.

B. Thorngren. "How Do Contact Systems Affect Regional Development?" *Environment and Planning* 2 (1970), 409-27.

S. Titman. "Urban Land Prices Under Uncertainty." *American Economic Review* 75 (June 1985), 505-14.

Urban Land Institute. *Dollars and Cents of Shopping Center: 1987.* Washington, D.C.: ULI - The Urban Land Institute, 1987.

J. Van Horne. *Financial Management and Policy, 6th ed.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1983.

J. S. Wabe. "Office Decentralization: An Empirical Study." *Urban Studies* 3 (February 1966), 35-55.

H. M. Weingartner. "Leasing, Asset Lives and Uncertainty." *Financial Management* (Summer 1987), 5-12.

W. C. Wheaton. "The Incidence of Inter-Jurisdictional Differences in Commercial Property Taxes." *National Tax Journal* (December 1983).

_____ and R. Torto. "The National Office Market: History and Future Prospects II." Center for Real Estate Development, Massachusetts Institute of Technology, February 1985.

B. Winberly. "True Office Lease Values." *Journal of Property Management* (September - October 1977), 290-96.

A. D. Witte, H. J. Sumka, and H. Erekson. "An Estimate of a Structural Hedonic Price Model of the Housing Market: An Application of Rosen's Theory of Implicit Markets." *Econometrica* 47 (September 1979), 1151-73.

M. A. Wolfson. "Tax, Incentive, and Risk-sharing Issues in the Allocation of Property Rights: The Generalized Lease-or-Buy Problem." *Journal of Business* 58 (1985), 159-71.

APPENDIX 1

In this appendix numerous multiple regression equations are estimated with the retail and office lease data sets. Base or fixed rent is the dependent variable and various spatial and lessee characteristics and lease provisions are the independent variables. Additionally, alternative functional forms and the normality of the multiple regression residual are investigated. Section I discusses Tables A-I which employ the retail lease data set, while Section II reviews Tables J-S which use the office lease data set.

I. Retail Correlation Matrix and Regressions

Table A shows the correlation matrix for the final retail rent multiple regression (Table 4 in Chapter 4).[188] All Pearson correlation coefficients as generated by SAS are less than .60. Furthermore, of the 91 independent variable correlation coefficients, only 6 are greater than .40. Collinearity appears not to be a problem with the independent variables used in the final regression.

Table B indicates a series of multiple regressions in which different groups of independent variables are added one group per regression. ELP is the first group added, followed by covenants, contingencies, lessee characteristics, spatial characteristics, and lease terms. The signs of the coefficients are consistent throughout the series, but the coefficients for RENEW, RNTCON, and CANBYL are not significant in the early regressions of the series. Nevertheless, all coefficients are significant in the final two regressions.

Table C reveals a sensitivity analysis by Delta or rate of asset appreciation for the shopping centers. McConnell and Schallheim's [1983] reduced-form

[188]These variables are also used for the regression in Table 5 and in the retail lease regressions in this appendix.

methodology for estimating ELP requires an estimate for the yearly appreciation of the asset. A 6% rate of appreciation was used in the final model and was based upon average yearly historic increases in property value which is consistent with the landlord's expectations regarding future appreciation. Although there exists depreciation in terms of wear and tear and obsolescence, the appreciation represents a rise in value in excess of the depreciation. Nevertheless, a sensitivity analysis with respect to different appreciation rates is provided in Table C. Appreciation rates or Deltas range from .01 to .11 with .06 representing the appreciation rate in the final regression. The coefficients for all variables in the regressions have the same signs and remain significant over the range. Thus, lease provisions and spatial and lessee characteristics have coefficient values which are fairly independent of changes in appreciation and ELP.

Table D demonstrates a sensitivity analysis by the risk-free discount rate used to generate ELP. For the final model, ELP employs a discount rate of .13. However, all coefficient signs and significance are consistent as the discount rate ranges from .10 to .16. Nevertheless, the estimate of ELP changes over the range. Thus, lease provisions, lessee characteristics, and spatial characteristics are valuable at different discount rates and estimates of ELP.

Table E discloses estimates of the hedonic rental equations without the ELP variable. The first regression (No ELP) demonstrates that many of the coefficients lose significance and change signs when the ELP variable is removed. If a time trend variable is added to replace the lost ELP variable, then the coefficients are still insignificant and have improper signs. The R^2 of the equations also severely diminish. Therefore, it appears that lessors incorporate estimates of the opportunity cost of funds and the asset's appreciation or depreciation into the rent.

Table F reproduces the final model with a dummy variable for no late payment charge (NOLATEPAY). NOLATEPAY has a value of 1 if no late payment charges are present and zero otherwise. NOLATEPAY replaces the LATEPAY variable in the first model and is insignificant, although correctly signed. Thus, the dollar amount of the late payment charges along with the presence of the charges, serves to decrease landlord uncertainty and lower rent.

Table G contains estimated hedonic equations of retail rent using two non-linear functional forms. Brennan, Cannaday, and Colwell [1984] and Hough and Kratz [1983] suggest the use of non-linear functional forms for rent estimation. The semi-log and quadratic functional forms provide coefficient estimates that are consistent with the coefficient estimates generated by the final model. In addition, the quadratic functional form has a square feet leased squared variable ($SQFT^2$)which indicates that the rental discount for greater square feet increases at an increasing rate. Thus, as the size of the leased space gets larger, base rent declines at an increasing rate. This may occur because there exist fixed costs such as negotiating and servicing expenses associated with each leased space and larger spaces would have more square feet to spread the fixed cost over. Although the coefficient estimates of the non-linear function forms have signs and significance consistent with the linear functional form, they do not provide a dollar value estimate for the presence of a certain lease provision or characteristic. Further, there is no reason to think or theory to suggest that the use of any other model variables (outside of the square feet leased variable) would require a non-linear functional form. For these reasons, the linear functional form, as used in the final model, appear to be better suited for demonstrating the dollar value impact of lease provisions on nominal lease rates.

Table H shows a plot of predicted retail base rent by actual retail base rent (TOTPSF). The plot appears to be linear with randomly scattered points which indicate that the hedonic equation fairly represents actual base rent.

Table I presents the normality tests for the residuals that were produced by the final retail rent multiple regression. The normality tests were generated by the Proc Univariate procedure contained within SAS. There exists insufficient evidence to reject residual normality with a p-value of >.082 for the standard normality test, the stem and leaf plot appearing normal, the normal probability plot looking linear, and reasonable skewness and kurtosis tests. Thus, the residuals seem to be normally distributed.

II. Office Correlation Matrix and Regressions

Table J contains the correlation matrix for the final office rent multiple regression (Table 7 in Chapter 4).[189] The Pearson correlation coefficients for the independent variables which are generated by SAS, disclose that all the correlation coefficients are less than .62. Additionally, of the 78 independent variable correlation coefficients only 7 are greater than .40. Collinearity appears to be minimal with the independent variables used in the final model.

Table K reveals a series of multiple regression. The different groups of independent variables are added one group per regression. ELP is the first group added, followed by covenants, contingencies, lessee characteristics, spatial characteristics, and lease terms. The signs of the coefficients for the independent variables are in agreement throughout the series. However, in the early regressions the coefficients for DEPOSIT, OPERALL, DELAY, and

[189]These variables are also used for the regression in Table 8 and in the office lease regressions in this appendix.

RELOCATION are not always significant. Notwithstanding, all coefficients are significant in the final model.

Table L shows a sensitivity analysis by the Delta or rate of appreciation for the office buildings. Appreciation rates range from .01 to .08, with .04 being the appreciation rate selected for the final model. It is noted that the appreciation rate for office buildings is less than that of shopping centers for a similar time period and locale. This is because the demand for retail space was greater than office space (and is expected to be greater) so as to cause future estimates of value appreciation to be slightly greater. As with the retail lease sensitivity analysis by Delta, the coefficients for all variables in the regressions have the same signs and remain significant over the range. Therefore, lease provisions and spatial and lessee characteristics have coefficient values which are fairly resilient to changes in asset appreciation rate and ELP.

Table M presents a sensitivity analysis by the discount rate used to generate ELP. The final office lease regression employs a discount rate of .13. As with the retail data set, all coefficient signs and significance are consistent over the range.

Table N discloses three separate regressions based upon office lease observations segmented by default risk. The above only regression represents those observations with above only default risk. Similarly, AVGTNT only and neither above nor AVGTNT regressions contain average default and neither above nor average default risk tenants, respectively. The signs of the coefficient are in agreement for the three regressions, but the DEPOSIT, NASSIGN, DELAY, and RELOCATION coefficients are not always significant. Thus, lease provision pricing appears to exist even if tenants are segregated into different risk groups.

Table O provides the estimates of the final regression without the ELP variable. A time trend variable (LSMTH) is added to one regression. Several of

the coefficients lose significance and change signs, indicating that a variable representing the lessor's opportunity cost of funds, along with the asset's appreciation or depreciation, is needed.

Table P presents the final model with dummy variables for no security deposit (NODEPOSIT) and no operational expense allowance (NOOPERALL). The security deposit (DEPOSIT) and operational expense allowance (OPERALL) variables are expressed in dollars. The NOOPERALL variable has the correct sign but is not significant, indicating that lessors value the dollar amount along with the presence of the allowance. NODEPOSIT is significant, although the coefficient is less in absolute terms than the DEPOSIT coefficient.

Table Q discloses estimated hedonic equations of office rent generated by two non-linear functional forms. The coefficient estimates of the semi-log and quadratic functional form are in agreement with the estimates of the final model in terms of sign and significance. As with the retail lease quadratic form coefficient estimate for the square feet leased squared variable, the office lease quadratic form coefficient estimate for ($SQFT^2$) reveals that the rental discount for greater square feet increases at an increasing rate. Thus, office rent decreases at an increasing rate with greater size. Lower fixed costs of leasing per square foot may explain why lower rents are observed. Nevertheless, the linear function form, as used in the final model, demonstrates the dollar value impact of provisions on nominal lease rates so that its use is preferred over the semi-log and quadratic functional forms. Additionally, there is no reason to think or theory to suggest, aside from the square feet leased variable, that any model variable necessitates employment of a non-linear functional form.

Table R reveals a plot of predicted office rent by actual office rent (TOTPSF). The plot looks like a straight line with random points scattered around it which indicates that the hedonic equation fairly represents actual office rent.

Table S gives the normality tests for the residuals generated by the final office rent multiple regression. The normality tests were produced by the Proc Univariate procedure of SAS. Based upon the results of the normality tests, there exists no evidence to reject normality of the residuals. The p-value for the standard normality test is >.033, the stem and leaf plot appears normal, the normal probability plot looks linear, and reasonable skewness and kurtosis tests are present. Therefore, the residuals seem to be normally distributed.

TABLE A

Correlation Matrix of Retail Rent Variables
for a Sample of 103 Leases*

TOTPSF	1.00000														
ELP	0.38389	1.00000													
LSTERM	0.28873	0.29390	1.00000												
SQFT	-0.32631	0.21258	0.56997	1.00000											
LOC4	0.12985	0.22211	0.36275	0.23503	1.00000										
PRCNTRB	0.12156	-0.12481	0.06574	0.04116	0.07720	1.00000									
NTCHAIN	-0.30400	0.14591	0.48659	0.37396	0.13266	0.22119	1.00000								
LCHAIN	-0.18036	0.01847	-0.01111	0.03622	0.01654	0.17656	0.06997	1.00000							
DRAW	-0.27236	0.12773	0.42176	0.27623	0.03823	-0.00484	0.47118	0.02567	1.00000						
LATEPAY	-0.08750	0.18370	-0.00135	0.03862	-0.17154	0.12553	0.11380	0.22986	0.01907	1.00000					
BKPTPSF	0.31962	-0.05066	0.03237	0.08593	0.11063	0.58050	0.04467	0.12055	0.05421	-0.02838	1.00000				
RNTESCL	-0.13246	0.21527	0.44385	0.31057	0.08726	0.30409	0.33179	0.02267	0.13549	0.16637	0.24786	1.00000			
RENEW	-0.08324	-0.15831	0.10272	0.26858	0.03823	-0.00484	0.20598	-0.13961	0.29452	0.05535	0.14254	0.08565	1.00000		
RNTCON	-0.19065	-0.11957	0.19482	0.20152	0.09217	0.09977	0.34226	-0.08238	0.27019	-0.12163	-0.01169	0.30594	0.14311	1.00000	
CANBYL	-0.11384	0.07948	0.09081	0.02117	0.03482	0.04223	-0.00218	0.00905	0.05406	-0.06658	-0.06821	0.18824	-0.04537	0.22952	1.00000
	TOTPSF	ELP	LSTERM	SQFT	LOC4	PRCNTRB	NTCHAIN	LCHAIN	DRAW	LATEPAY	BKPTPSF	RNTESCL	RENEW	RNTCON	CANBYL

*Pearson Correlation Coefficients.

TABLE 8

Estimated Hedonic Equations of Retail Base Rent
for a Sample of 103 Leases*

Variable**	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.568	4.178	.613	4.475	.722	5.631	.876	7.387	1.024	9.135	1.074	9.543
Lease Terms:												
Lease Term in Months (LSTERM)											$.147x10^{1}$	2.101
Spatial Characteristics:												
Square feet in thousands leased (SQFT)									-.122	-5.185	-.102	-4.135
Shopping Center 4 (LOC4)									.737	1.367	1.183	2.075
Lessee Characteristics:												
Percent Rent Below Median (PRCNTRB)							1.654	2.140	1.495	2.177	1.483	2.200
National Chain (NTCHAIN)							2.0254	-3.296	-1.585	-2.850	-1.347	-2.408
Local Chain (LCHAIN)							-1.221	-2.272	-1.015	-2.123	-1.076	-2.288
Shopper Draw (DRAW)							-1.162	-2.242	-1.040	-2.282	-.758	-1.623
Covenants:												
Late Payment Charges in $ (LATEPAY)			-1.03	-1.768	-7.759	-1.460	-5.904	-1.211	-6.603	-1.510	-7.327	1.702
Contingencies:												
Sales Break-point PSF (BKPTPSF)					$.505x10^{-2}$	4.629	$.368x10^{-2}$	3.249	$.375x10^{-2}$	3.714	$.361x10^{-2}$	3.635
Rent Escalation (RNTESCL)					-1.899	-3.109	-1.722	-3.162	-1.338	-2.709	-1.006	-1.975
Renewal Option (RENEW)					-.193	-.379	.438	.896	.995	2.227	.906	2.058
Rent concession (RNTCON)					-.527	-.354	1.420	1.034	1.920	1.570	1.677	1.392
Landlord Cancellation (CANBYL)					-.924	-.848	-1.430	-1.483	-1.660	-1.935	-1.636	-1.947
Constant	4.942	2.930	5.075	3.037	2.844	1.755	1.643	1.131	0.121	-.087	-.115	-.084
$\bar{R}^2$		.1389		.1567		.3403		.5001		.6074		.622
F-Statistic		17.457		10.475		8.516		10.276		13.141		12.986

*Source: Data from five strip shopping centers in Greensboro, North Carolina.

**See text for definition of variables.

TABLE C

Sensitivity Analysis by Delta for Estimated Hedonic Equation of Retail Base Rent
Using a Sample of 103 Leases*

Variable**	Delta = .01 Parameter Estimate	Delta = .01 t-Statistic	Delta = .04 Parameter Estimate	Delta = .04 t-Statistic	Delta = .06 Parameter Estimate	Delta = .06 t-Statistic	Delta = .08 Parameter Estimate	Delta = .08 t-Statistic	Delta = .11 Parameter Estimate	Delta = .11 t-Statistic
Equilibrium Lease Payment (ELP)	.695	9.635	.874	9.588	1.074	9.543	1.424	9.492	3.036	9.367
Lease Terms:										
Lease Term in Months (LSTERM)	$.440 \times 10^{-2}$	.644	$.678 \times 10^{-2}$	.987	$-.147 \times 10^{-1}$	-2.101	$-.229 \times 10^{-1}$	-3.150	$.325 \times 10^{-1}$	-4.211
Spatial Characteristics:										
Square Feet Leased in Thousands (SQFT)	-.099	-4.035	-.100	-4.048	-.102	-4.135	-.107	-4.299	-.118	-4.675
Shopping Center 4 (LOC4)	1.054	1.873	1.123	1.982	1.183	2.075	1.270	2.209	1.598	2.694
Lessee Characteristics:										
Percent Rent Below Median (PRCNTRB)	1.456	2.173	1.469	2.186	1.483	2.200	1.504	2.224	1.553	2.276
National Chain (NTCHAIN)	-1.322	-2.378	-1.338	-2.399	-1.347	-2.408	-1.356	-2.419	-1.388	-2.458
Local Chain (LCHAIN)	-1.120	-2.396	-1.088	-2.320	-1.076	-2.288	-1.072	-2.274	-1.096	-2.310
Shopper Draw (DRAW)	-.753	-1.621	-.764	-1.639	-.758	-1.623	-.074	-1.584	-.697	-1.483
Covenants:										
Late Payment Charges in $M (LATEPAY)	-7.004	-1.637	-7.313	-1.703	-7.327	-1.702	-7.147	-1.657	-6.425	-1.483
Contingencies:										
Sales Break-point PSF (BKPTPSF)	$.364 \times 10^{-2}$	3.684	$.362 \times 10^{-2}$	3.654	$.361 \times 10^{-2}$	3.635	$.360 \times 10^{-2}$	3.614	$.357 \times 10^{-2}$	3.555
Rent Escalation (RNTESCL)	-1.009	-1.990	-1.006	-1.980	-1.006	-1.975	-1.009	-1.975	-1.025	-1.991
Renewal Option (RENEW)	.837	1.920	.884	2.015	.906	2.058	.924	2.090	.960	2.150
Rent concession (RNTCON)	1.584	1.323	1.620	1.349	1.677	1.392	1.776	1.466	2.032	1.657
Landlord Cancellation (CANBYL)	-1.619	-1.937	-1.638	-1.955	-1.636	-1.947	-1.620	-1.923	-1.567	-1.849
Constant	-1.244	.852	-.588	.419	-.115	-.084	.377	.283	1.107	.875
$\bar{R}^2$		.626		.624		.622		.620		.615
F-Statistic		13.177		13.079		12.986		12.882		12.628

*Source: Data from five strip shopping centers in Greensboro, North Carolina.
**See text for definition of variables.

TABLE D

Sensitivity Analysis by Discount Rate for Estimated Hedonic Equation of Retail Base Rent
Using a Sample of 103 Leases*

Variable**	R = .10 Parameter Estimate	R = .10 t-Statistic	R = .13 Parameter Estimate	R = .13 t-Statistic	R = .16 Parameter Estimate	R = .16 t-Statistic
Equilibrium Lease Payment (ELP)	1.794	9.521	1.074	9.543	.767	9.544
Lease Terms:						
Lease Term in Months (LSTERM)	$-.156 \times 10^{-1}$	-2.223	$-.147 \times 10^{-1}$	-2.101	$-.132 \times 10^{-1}$	-1.897
Spatial Characteristics:						
Square Feet in Thousands Leased (SQFT)	-.107	-4.288	-.102	-4.135	-.099	-4.006
Shopping Center 4 (LOC4)	1.323	2.296	1.183	2.075	1.119	1.971
Lessee Characteristics:						
Percent Rent Below Median (PRCNTRB)	1.503	2.226	1.483	2.200	1.468	2.179
National Chain (NTCHAIN)	-1.360	-2.428	-1.347	-2.408	-1.342	-2.400
Local Chain (LCHAIN)	-1.092	-2.321	-1.076	-2.288	-1.066	-2.267
Shopper Draw (DRAW)	-.740	-1.584	-.758	-1.623	-.774	-1.656
Covenants:						
Late Payment Charges in $N (LATEPAY)	-6.993	-1.625	-7.327	-1.702	-7.578	-1.759
Contingencies:						
Sales Break-point PSF (BKPTPSF)	$.360 \times 10^{-2}$	3.614	$.361 \times 10^{-2}$	3.635	$.362 \times 10^{-2}$	3.641
Rent Escalation (RNTESCL)	-1.015	-1.989	-1.006	-1.975	-1.001	-1.964
Renewal Option (RENEW)	.917	2.079	.906	2.058	.905	2.056
Rent concession (RNTCON)	1.780	1.471	1.677	1.392	1.606	1.334
Landlord Cancellation (CANBYL)	-1.614	-1.919	-1.636	-1.947	-1.654	-1.968
Constant	$-.287 \times 10^{-2}$	-.002	-.115	-.084	-.200	-.145
$\bar{R}^2$		.6211		.622		.622
F-Statistic		12.941		12.986		12.988

*Source: Data from five strip shopping centers in Greensboro, North Carolina.
**See text for definition of variables.

TABLE E

Estimated Hedonic Equations of Retail Base Rent with No ELP Variable
Using a Sample of 103 Leases*

Variable**	No ELP Variable		No ELP Variable Month of Lease (LSMTH) Added	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)				
Lease Terms:				
Month of Lease Execution (LSMTH)			$.730 \times 10^{-1}$	4.450
Lease Term in Months (LSTERM)	$-.593 \times 10^{-3}$	-.061	$.416 \times 10^{-2}$	.466
Spatial Characteristics:				
Square Feet in Thousands Leased (SQFT)	-.067	-1.938	-.081	-2.543
Shopping Center 4 (LOC4)	-.674	-.887	-.119	-.170
Lessee Characteristics:				
Percent Rent Below Median (PRCNTRB)	.333	.036	.612	.715
National Chain (NTCHAIN)	-.850	-1.076	-.719	-1.002
Local Chain (LCHAIN)	-1.528	-2.302	-.944	-1.530
Shopper Draw (DRAW)	-.505	-.764	-.363	-.603
Covenants:				
Late Payment Charges in $M (LATEPAY)	-.953	.158	-4.193	-.759
Contingencies:				
Sales Break-point PSF (BKPTPSF)	$.478 \times 10^{-2}$	3.416	$.511 \times 10^{-2}$	4.012
Rent Escalation (RNTESCL)	.416	.577	-.912	-1.379
Renewal Option (RENEW)	-.281	-.469	-.345	-.634
Rent concession (RNTCON)	-.833	-.500	-.219	-.144
Landlord Cancellation (CANBYL)	-.678	-.573	-.326	-.301
Constant	11.982	16.910	8.941	9.522
$\bar{R}^2$		.2394		.3721
F Statistic		3.469		5.317

**Source: Data from five strip shopping centers in Greensboro, North Carolina.
See text for definition of variables.

TABLE F

Estimated Hedonic Equations of Retail Base Rent with No Late Payment Charges Dummy Variable
Using a Sample of 103 Leases*

Variable**	NOLATEPAY Parameter Estimate	NOLATEPAY t-Statistic	LATEPAY Parameter Estimate	LATEPAY t-Statistic
Equilibrium Lease Payment (ELP)	1.040	9.179	1.074	9.543
Lease Terms:				
Lease Term in Months (LSTERM)	$.128 \times 10^{-1}$	1.721	$-.147 \times 10^{-1}$	2.101
Spatial Characteristics:				
Square Feet in Thousands Leased (SQFT)	-.101	-3.999	-.102	-4.135
Shopping Center 4 (LOC4)	1.300	2.247	1.183	2.075
Lessee Characteristics:				
Percent Rent Below Median (PRCNTRB)	1.233	1.791	1.483	2.200
National Chain (NTCHAIN)	-1.354	-2.345	-1.347	-2.408
Local Chain (LCHAIN)	-1.282	-2.758	-1.076	-2.288
Shopper Draw (DRAW)	-.744	-1.589	-.758	-1.623
Covenants:				
Late Payment Charges in $M (LATEPAY)			-7.327	-1.702
No Late Payment Charges Dummy (NOLATEPAY)	.326	.455		
Contingencies:				
Sales Break-point PSF (BKPTPSF)	$.405 \times 10^{-2}$	3.996	$.361 \times 10^{-2}$	3.635
Rent Escalation (RNTESCL)	-1.219	-2.337	-1.006	-1.975
Renewal Option (RENEW)	.799	1.808	.906	2.058
Rent concession (RNTCON)	2.107	1.697	1.677	1.392
Landlord Cancellation (CANBYL)	-1.477	-1.735	-1.636	-1.947
Constant	-.260	-1.890	-.115	-.084
$\bar{R}^2$		.610		.622
F-Statistic		12.415		12.986

*Source: Data from five strip shopping centers in Greensboro, North Carolina.
**See text for definition of variables.

TABLE G

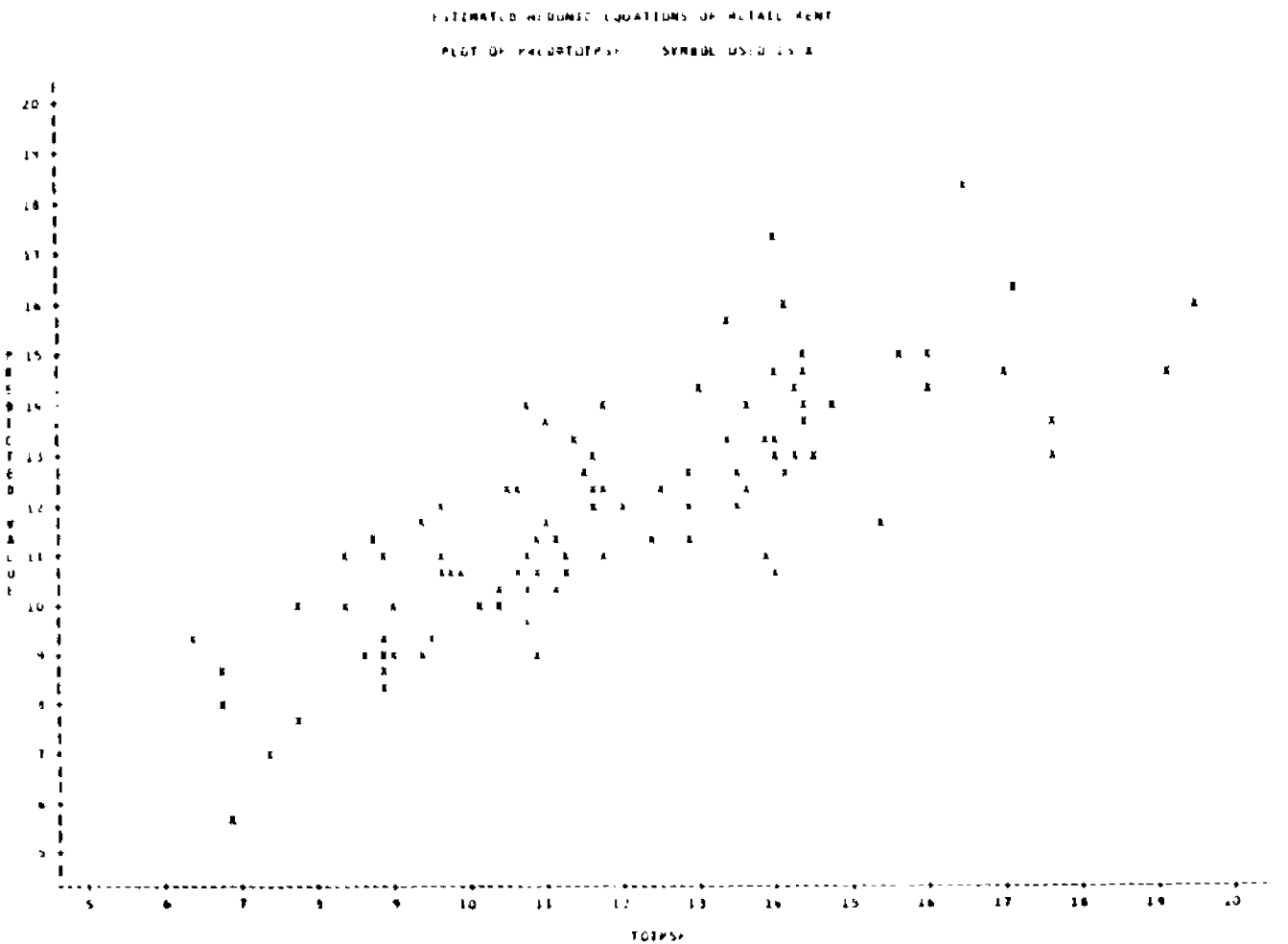
Estimated Hedonic Equations of Retail Rent by Other Functional Forms
Using a Sample of 103 Leases*

Variable**	Semi-log		Quadratic	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.093	9.928	1.038	9.624
Lease Terms:				
Lease Term in Months (LSTERM)	$-.123 \times 10^{-2}$	-2.152	$-.118 \times 10^{-1}$	-1.754
Spatial Characteristics:				
Square Feet in Thousands Leased (SQFT)	-.010	-5.133	-.410	-4.079
Square Feet in Thousands Leased Squared ($SQFT^2$)			$.364 \times 10^{-5}$	3.168
Shopping Center 4 (LOC4)	.130	2.766	1.068	1.962
Lessee Characteristics:				
Percent Rent Below Median (PRCNTR$)	.121	2.184	1.394	2.169
National Chain (NTCHAIN)	-.107	-2.310	-1.003	-1.845
Local Chain (LCHAIN)	-.116	-2.980	-.748	-1.626
Shopper Draw (DRAW)	-.066	-1.717	-.741	-1.664
Covenants:				
Late Payment Charges in $N (LATEPAY)	-.451	-1.269	-1.880	-.373
Contingencies:				
Sales Break-point PSF (BKPTPSF)	$.279 \times 10^{-3}$	3.399	$.383 \times 10^{-2}$	4.035
Rent Escalation (RNTESCL)	-.084	-2.008	-.998	-2.056
Renewal Option (RENEW)	.089	2.441	1.176	2.746
Rent concession (RNTCON)	.114	1.179	4.076	2.957
Landlord Cancellation (CANBYL)	-.123	-1.775	-1.474	-1.837
Constant	1.408	12.520	.147	.113
$\bar{R}^2$		.648		.657
F Statistic		14.396		14.008

*Source: Data from five strip shopping centers in Greensboro, North Carolina.
**See text for definition of variables.

TABLE H

Plot of Predicted Retail Base Rent by Actual Retail Base Rent (TOTPSF)
Using the Final Model Based on a Sample of 103 Leases



NOTE: 9 OBS HIDDEN

TABLE 1

Normality Tests for Final Retail Rent Multiple Regression Residuals
Using Residuals from the Final Model Based on a Sample of 103 Leases

NORMALITY TESTS FOR RETAIL REGRESSION RESIDUALS

UNIVARIATE

VARIABLE=RESID RESIDUALS

MOMENTS

N	103	SUM WGTS	103
MEAN	6.256E-15	SUM	6.444E-13
STD DEV	1.59326	VARIANCE	2.53847
SKEWNESS	0.425604	KURTOSIS	0.72482
USS	258.924	CSS	258.924
CV	99999	STD MEAN	0.156983
T:MEAN=0	3.985E-14	PROB>|T|	1
SGN RANK	-35	PROB>|S|	0.909632
NUM ^= 0	103		
D:NORMAL	0.0324335	PROB>D	0.312

QUANTILES(DEF=4)

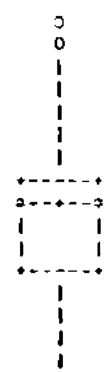
100% MAX	4.49163	99%	4.45987
75% Q3	0.806464	95%	3.50906
50% MED	0.102393	90%	1.56975
25% Q1	-1.00393	10%	-2.21995
0% MIN	-3.31713	5%	-2.67353
		1%	-3.31266
RANGE	7.80831		
Q3-Q1	1.81045		
MODE	0.205471		

EXTREMES

LOWEST	HIGHEST
-3.31713	3.53363
-3.20537	3.79333
-3.04816	3.81947
-2.73194	4.44645
-2.69404	4.49163

```
STEM LEAF                 #
   4 5                    1
   4 4                    1
   3 558                  3
   3 4                    1
   2 8                    1
   2 02                   2
   1 55566                5
   1 011124               6
   0 55666777778889999   17
   0 111222222233334     15
  -0 4443333311111000    16
  -0 88766655             8
  -1 33332100             8
  -1 9998755              7
  -2 433310               6
  -2 776                  3
  -3 320                  3
     ----+----+----+----+
```

BOXPLOT



NORMAL PROBABILITY PLOT

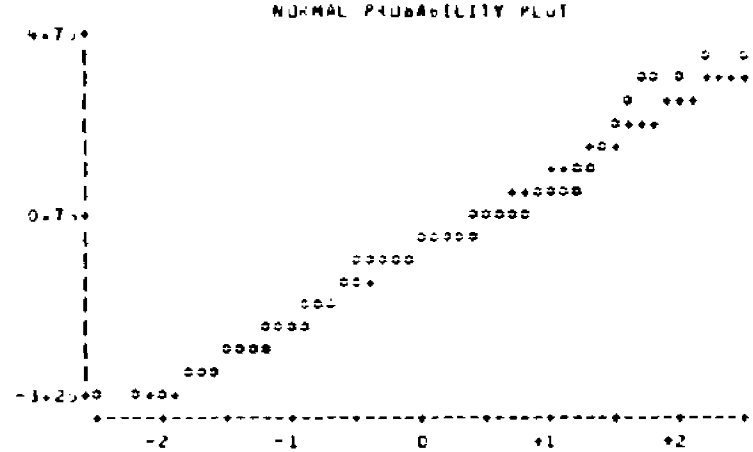


TABLE J

Correlation Matrix of Office Rent Variables
for a Sample of 322 Leases*

	RNTPSF	ELP	LSTERM	SQFT	KEYMAN	ABOVE	AVGINT	OUTSTATE	EXTNT	DEPOSIT	NASSIGN	OPERALL	DELAY	RELOCATION
RNTPSF	1.00000													
ELP	0.32390	1.00000												
LSTERM	0.39335	0.48175	1.00000											
SQFT	-0.26639	0.29518	0.52599	1.00000										
KEYMAN	0.72197	0.00743	-0.54567	-0.32776	1.00000									
ABOVE	-0.30342	0.08239	0.29096	0.33922	-0.23423	1.00000								
AVGINT	-0.07164	0.00426	0.01129	0.06774	-0.08050	0.46921	1.00000							
OUTSTATE	-0.04359	0.16984	0.21105	0.20231	-0.17426	0.57231	-0.08099	1.00000						
EXTNT	-0.47591	-0.07808	0.24065	0.26103	-0.42511	0.24809	-0.04844	0.05522	1.00000					
DEPOSIT	-0.09264	0.05521	-0.00156	0.07111	-0.14095	0.22044	0.13716	0.12237	0.01124	1.00000				
NASSIGN	-0.22088	0.10120	0.13574	0.08480	0.26352	0.14909	-0.11466	0.12573	0.19625	0.04578	1.00000			
OPERALL	-0.14411	0.36792	0.53638	0.51196	0.26791	0.28855	-0.06493	0.11883	0.20988	0.05323	0.12156	1.00000		
DELAY	0.11563	0.36645	0.26555	0.19289	-0.15029	-0.00791	0.13220	0.20758	-0.14351	0.07194	0.02178	0.19661	1.00000	
RELOCATION	-0.48667	-0.01244	0.23194	0.07816	-0.61324	0.10017	0.10431	0.06478	0.30256	0.29165	0.28630	0.14534	0.13992	1.00000

*Pearson Correlation Coefficients

TABLE K

Estimated Hedonic Equations of Office Rent

for a Sample of 322 Leases*

Variable**	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.768	6.124	.842	6.946	.903	7.526	.822	7.860	.755	9.167	1.031	12.038
Lease Terms:												
Lease Term in Months (LSTERM)											-.282	-7.142
Spatial Characteristics:												
Square Feet in Thousands Leased (SQFT)									$-.01 \times 10^{-2}$	2.862	-.055	-1.643
Keyman Office Space (KEYMAN)									1.793	13.112	1.278	8.756
Lessee Characteristics:												
Above Average Tenant (ABOVE)							-1.396	-7.276	-1.093	-7.171	-1.029	-7.261
Average Tenant (AVGTNT)							-.846	-5.545	-.634	-5.283	-.598	-5.367
Out-of-State Tenant (OUTSTATE)							.563	3.377	.635	4.928	.607	5.074
Existing Tenant (EXTNT)							-.713	-5.455	-.267	-2.505	-.269	-2.720
Covenants:												
Security Deposit in $M (DEPOSIT)			-.328	-1.978	-.081	-.560	-.178	-1.318	-.124	-1.175	-.210	-2.120
Lease Not Assignable (NASSIGN)			-1.176	-4.937	-.513	-2.391	-.459	-2.414	-.299	-2.014	-.365	-2.645
Contingencies:												
Operational Allowance in $M (OPERALL)					.056	4.716	.019	1.754	.007	.710	.022	2.519
Construction Delay Release (DELAY)					.296	1.719	.046	.296	.286	2.319	.296	2.582
Landlord Relocation Right (RELOCATION)					-1.338	-8.956	-.916	-6.680	-.157	-1.260	-.238	-2.054
Constant	4.320	3.030	6.621	3.370	4.028	3.016	5.606	4.764	4.766	5.178	2.252	2.439
$\bar{R}^2$		.1021		.1723		.3882		.5373		.7209		.760
F-Statistic		37.506		23.270		34.954		38.274		70.103		79.107

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE 1

Sensitivity Analysis by Delta for Estimated Hedonic Equation of Office Rent
Using a Sample of 322 Leases*

Variable**	Delta = .01		Delta = .03		Delta = .04		Delta = .06		Delta = .08	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.790	12.094	.935	12.040	1.031	12.038	1.297	12.081	1.753	12.137
Lease Terms:										
Lease Term in Months (LSTERM)	-.124	-3.495	-.227	-6.031	-.282	-7.142	-.400	8.941	.523	-10.168
Spatial Characteristics:										
Square Feet in Thousands Leased (SQFT)	-.054	-1.619	-.055	-1.637	-.055	-1.643	.055	-1.644	-.055	-1.619
Keyman Office Space (KEYMAN)	1.263	8.642	1.277	8.748	1.278	8.750	1.264	8.646	1.235	8.397
Lessee Characteristics:										
Above Average Tenant (ABOVE)	-1.032	-7.297	-1.031	-7.276	-1.029	-7.261	-1.022	-7.22	-1.011	-7.150
Average Tenant (AVGTNT)	-.598	-5.378	-.599	-5.374	-.598	-5.367	-.594	-5.340	-.587	-5.285
Out-of-State Tenant (OUTSTATE)	.611	5.117	.608	5.088	.607	5.074	.603	5.050	.600	5.030
Existing Tenant (EXTNT)	.269	2.723	-.270	-2.728	-.269	-2.720	-.265	-2.681	-.257	-2.609
Covenants:										
Security Deposit in $M (DEPOSIT)	-.210	-2.129	-.210	-2.121	-.210	-2.120	-.209	-2.121	-.208	-2.118
Lease Not Assignable (NASSIGN)	-.362	-2.629	-.364	-2.637	-.365	-2.645	-.368	-2.667	-.370	-2.685
Contingencies:										
Operational Allowance in $M (OPERALL)	.022	2.512	.022	2.508	.022	2.519	.022	2.577	.024	2.694
Construction Delay Release (DELAY)	.298	2.607	.295	2.577	.296	2.582	.301	2.041	.317	2.789
Landlord Relocation Right (RELOCATION)	-.236	-2.036	-.237	-2.048	-.238	-2.054	-.239	-2.065	-.240	-2.070
Constant	1.823	1.919	2.098	2.241	2.252	2.439	2.621	2.945	3.145	3.724
$\bar{R}^2$		.761		.760		.760		.760		.7611
F-Statistic		79.414		79.118		79.107		79.342		79.648

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE N

Sensitivity Analysis by Discount Rate (R) for Estimated Hedonic Equation of Office Rent with a Sample of 322 Leases*

Variable**	R = .10		R = .13		R = .16	
	Parameter Estimate	t-Statistic	Parameter Estimate	t Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	1.536	12.111	1.031	12.038	.776	11.962
Lease Terms:						
Lease Term in Months (LSTERM)	-.300	7.473	-.282	7.142	-.267	-6.828
Spatial Characteristics:						
Square Feet in Thousands Leased (SQFt)	-.055	-1.626	-.055	-1.643	-.056	-1.654
Keyman Office Space (KEYMAN)	1.258	8.604	1.278	8.750	1.296	8.881
Lessee Characteristics:						
Above Average Tenant (ABOVE)	-1.024	-7.242	-1.029	-7.261	-1.033	-7.275
Average Tenant (AVGTNT)	-.595	-5.348	-.598	-5.367	-.601	-5.381
Out-of-State Tenant (OUTSTATE)	.606	5.075	.607	5.074	.608	5.073
Existing Tenant (EXTNT)	-.265	-2.687	-.269	-2.720	-.272	-2.749
Covenants:						
Security Deposit in $M (DEPOSIT)	-.210	-2.126	-.210	-2.120	-.209	-2.112
Lease Not Assignable (NASSIGN)	-.366	-2.657	-.365	-2.645	-.364	-2.631
Contingencies:						
Operational Allowance in $M (OPERALL)	.022	2.570	.022	2.519	.022	2.479
Construction Delay Release (DELAY)	.302	2.648	.296	2.582	.290	2.529
Landlord Relocation Right (RELOCATION)	-.238	-2.054	-.238	-2.054	-.238	-2.052
Constant	2.346	2.577	2.252	2.439	2.190	2.343
$\bar{R}^2$		.761		.770		.759
f-Statistic		79.505		79.107		78.689

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE N

Estimated Hedonic Equations of Office Rent

Segregated by Lessee Default Risk or ABOVE, AVGTNT, and Neither Variables*

Variable**	ABOVE ONLY		AVGTNT ONLY		Neither ABOVE nor AVGTNT	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	1.057	8.649	.842	5.841	1.315	6.563
Lease Terms:						
Lease Term in Months (LSTERM)	-.258	-5.326	-.160	-1.570	-.317	-2.711
Spatial Characteristics:						
Square Feet in Thousands Leased (SQFT)	.047	1.333	-.383	-2.866	-1.550	3.173
Keyman Office Space (KEYMAN)	1.172	5.077	.796	2.421	1.026	3.591
Lessee Characteristics:						
Above Average Tenant (ABOVE)						
Average Tenant (AVGTNT)						
Out-of-State Tenant (OUTSTATE)	.371	2.222	.658	3.371	1.565	2.175
Existing Tenant (EXTNT)	-.207	-1.313	-.274	-1.485	$-.790 \times 10^{-1}$	-.485
Covenants:						
Security Deposit in $M (DEPOSIT)	-.167	-.841	-.312	-1.636	.537	-1.819
Lease Not Assignable (NASSIGN)	-.305	-.948	-.749	-3.227	-.430	-2.211
Contingencies:						
Operational Allowance in $M (OPERALL)	.018	1.907	.015	.470	.031	.640
Construction Delay Release (DELAY)	.349	1.663	.421	2.152	.226	1.179
Landlord Relocation Right (RELOCATION)	.039	-.245	-.474	1.769	-.459	-1.959
Constant	.244	.182	4.275	2.796	-.395	-.177
$\bar{R}^2$		.663		.740		.807
F Statistic		20.682		25.341		44.699
Number of observations		111		95		116

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE O

Estimated Hedonic Equations of Office Rent with No ELP
Using a Sample of 322 Leases*

Variable**	No ELP Variable		No ELP Variable Month of Lease (LSMTH) Added	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)				
Lease Terms:				
Month of Lease Execution (LSMTH)			$.250 \times 10^{-1}$	6.434
Lease Term in Months (LSTERM)	$.682 \times 10^{-1}$	-1.594	$.361 \times 10^{-1}$	-.890
Spatial Characteristics:				
Square Feet in Thousands Leased (SQFT)	-.040	-.975	-6.869	-.002
Keyman Office Space (KEYMAN)	1.827	10.883	1.643	10.237
Lessee Characteristics:				
Above Average Tenant (ABOVE)	-1.154	-6.748	-1.084	-6.726
Average Tenant (AVGTNT)	-.634	-4.701	-.597	-4.706
Out-of-State Tenant (OUTSTATE)	.753	5.232	.824	6.068
Existing Tenant (EXTNT)	-.353	-2.958	-.388	-3.451
Covenants:				
Security Deposit in $M (DEPOSIT)	-.106	-.891	-.120	-1.066
Lease Not Assignable (NASSIGN)	-.148	-.891	-.145	-.930
Contingencies:				
Operational Allowance in $M (OPERALL)	.035	3.317	.018	1.782
Construction Delay Release (DELAY)	.663	4.626	.450	3.553
Landlord Relocation Right (RELOCATION)	.210	-1.494	-.306	-2.306
Constant	13.142	58.185	12.506	53.397
$\bar{R}^2$		.6479		.6887
F-Statistic		50.228		55.624

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE P

Estimated Hedonic Equation of Office Rent with No Security Deposit and No Operational Expense Allowance Dummy Variables Using a Sample of 322 Leases*

Variable**	No Deposit		No Operational Allowance		No Deposit, No Operational Allowance	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.997	11.553	1.044	12.073	1.009	11.586
Lease Terms:						
Lease Term in Months (LSTERM)	.263	6.612	-.267	-6.763	-.249	-6.279
Spatial Characteristics:						
Square Feet in Thousands Leased (SQFT)	-.065	-1.969	-.028	.859	-.039	-1.203
Keyman Office Space (KEYMAN)	1.264	8.587	1.313	8.937	1.297	8.765
Lessee Characteristics:						
Above Average Tenant (ABOVE)	.873	5.791	-.996	-6.995	-.843	-5.572
Average Tenant (AVGTNT)	-.566	-5.018	-.597	-5.314	-.565	-4.974
Out-of-State Tenant (OUTSTATE)	.595	4.952	.580	4.834	.570	4.732
Existing Tenant (EXTNT)	-.236	-2.363	-.258	-2.596	-.227	-2.252
Covenants:						
Security Deposit in $M (DEPOSIT)			-.198	-1.993		
No Security Deposit Dummy (NODEPOSIT)	.175	1.615			.181	1.658
Lease Not Assignable (NASSIGN)	-.359	-2.593	-.368	-2.632	-.363	-2.593
Contingencies:						
Operational Allowance in $M (OPERALL)	.021	2.394				
No Operational Allowance Dummy (NOOPERALL)			-.131	-1.132	-.134	-1.154
Construction Delay Release (DELAY)	.318	2.758	.290	2.356	.301	2.521
Landlord Relocation Right (RELOCATION)	-.344	-2.994	-.247	-2.086	-.353	-2.999
Constant	2.601	2.776	2.19	2.289	2.562	2.644
$\bar{R}^2$		.758		.756		.750
F-Statistic		78.476		77.451		77.055

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE 9

Estimated Hedonic Equations of Office Rent by Other Functional Forms
Using a Sample of 322 Leases*

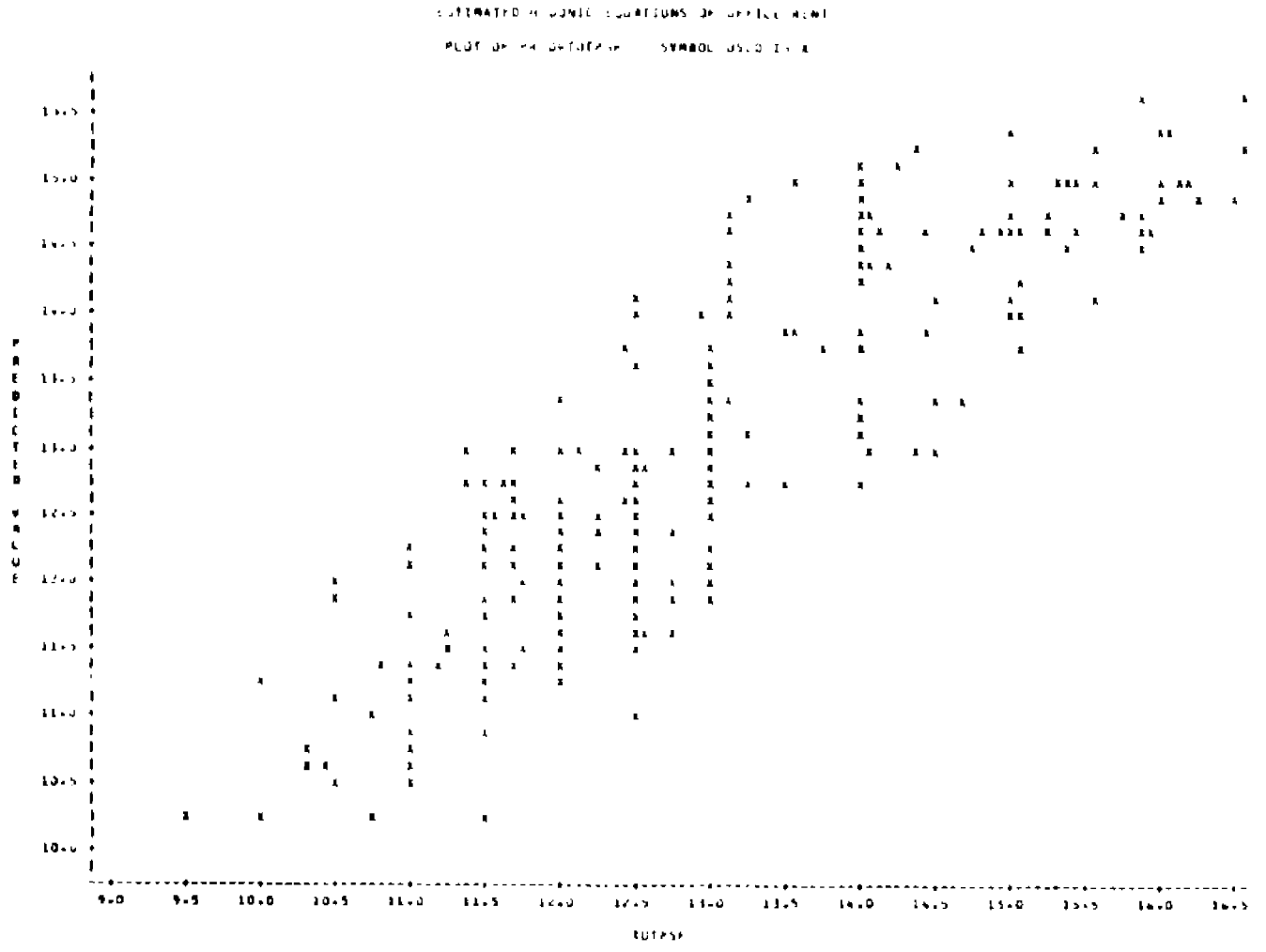
Variable**	Semi-log		Quadratic	
	Parameter Estimate	t-Statistic	Parameter Estimate	t-Statistic
Equilibrium Lease Payment (ELP)	.083	12.983	1.011	11.957
Lease Terms:				
Lease Term in Months (L*TERM)	.023	7.906	.266	6.752
Spatial Characteristics:				
Square Feet in Thousands Leased (SQFT)	-.005	-1.845	-.277	-3.587
Square Feet in Thousands Leased Squared ($SQFT^2$)			$.188 \times 10^{-4}$	3.179
Keyman Office Space (KEYMAN)	092	8.438	1.162	7.825
Lessee Characteristics:				
Above Average Tenant (ABOVE)	-.078	-7.351	.921	-6.410
Average Tenant (AVGTNT)	-.045	-5.404	-.565	-4.913
Out-of-State Tenant (OUTSTATE)	.047	5.270	.564	4.757
Existing Tenant (EXTNT)	-.021	2.787	-.259	-2.662
Covenants:				
Security Deposit in $M (DEPOSIT)	-.014	-1.851	-.100	-.976
Lease Not Assignable (NASSIGN)	-.024	-2.344	-.363	-2.671
Contingencies:				
Operational Allowance in $M (OPERALL)	.002	2.764	.031	3.373
Construction Delay Release (DELAY)	.023	2.725	.279	2.668
Landlord Relocation Right (RELOCATION)	-.017	-2.004	.341	-2.868
Constant	1.687	24.432	2.596	2.832
$\bar{R}^2$		.767		.767
F Statistic		82.111		76.351

*Source: Data from five office buildings in Greensboro, North Carolina.

**See text for definition of variables.

TABLE 9

Plot of Predicted Office Rent by Actual Office Rent (TOTPSF)
Using the Final Model Based on a Sample of 322 Leases



NOTE: 12W 3B5 HIDDEN

TABLE 5

Normality Tests for Final Office Rent Multiple Regression Residuals
Using Residuals from the Final Model Based on a Sample of 322 Leases

NORMALITY TESTS FOR RETAIL REGRESSION RESIDUALS

UNIVARIATE

VARIABLE=RESID RESIDUALS

MOMENTS

N	322	SUM WGTS	322
MEAN	1.3546E-14	SUM	4.361E-12
STD DEV	0.731461	VARIANCE	0.535035
SKEWNESS	-0.0354713	KURTOSIS	-0.642001
USS	171.746	CSS	171.746
CV	99999	STD MEAN	0.0407627
T:MEAN=0	3.322E-13	PROB>|T|	1
SGN RANK	31.5	PROB>|S|	0.985206
NUM ^= 0	322		
D:NORMAL	0.052071	PROB>D	0.033

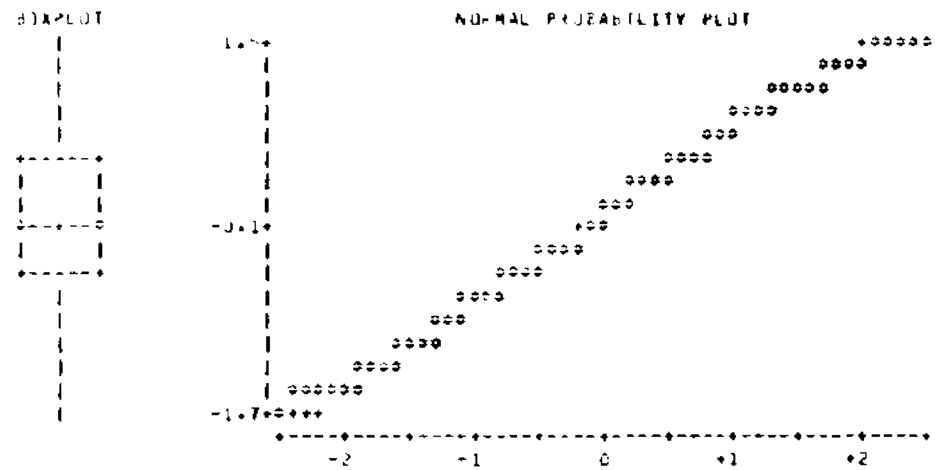
QUANTILES(DEF=4)

100% MAX	1.57761	99%	1.45894
75% Q3	0.52731	95%	1.13919
50% MED	-0.0219139	90%	1.0384
25% Q1	-0.49705	10%	-0.971203
0% MIN	-1.68642	5%	-1.22035
		1%	-1.59451
RANGE	3.26403		
Q3-Q1	1.02436		
MODE	1.05741		

EXTREMES

LOWEST	HIGHEST
-1.68642	1.44194
-1.66245	1.44497
-1.59605	1.46311
-1.59066	1.50532
-1.55449	1.57761

```
STEM LEAF                                                   #
  14 444615                                                 6
  12 246667728                                              9
  10 04466667850555888889                                  19
   8 34455661223556689                                     17
   6 0311255688599133666883339                             25
   4 011222333335667589013333566999                        27
   2 014466666889001111234555677786666                     33
   0 333356688112344445555777 8559                         25
  -0 9766654333266644332210                                21
  -2 99985444433333222111399886665433333222221111110      44
  -4 99886555320099977766554332 0000                       33
  -6 876665433209995766554420                              24
  -8 98566664319854310                                     15
 -10 97609876590                                           11
 -12 654427211                                              9
 -14 954063                                                 5
 -16 960                                                    3
     ----+----+----+----+----+----+----+----+----+----
MULTIPLY STEM.LEAF BY 10**-01
```



APPENDIX 2

Rosen's Theory of Composite Product Pricing[190]

Rosen [1974] provides the seminal theory for pricing a composite product such as a shopping center or office building rental space by demonstrating how a market for a product with many characteristics operates and indicating the nature of the price function that clears the market. His theoretical framework originates from the exchange process that exists between lessors who wish to maximize their profit and lessees who wish to maximize their utility. Rosen's method determines the hedonic price function along with finding the parameters of the relevant supply and demand equations.

Rosen employs a vector of objectively measured characteristics to describe a class of differentiated products. Accordingly, the specific amounts of characteristics associated with each product and observed price can define a set of hedonic prices. In his study, market clearing conditions are explained by a vector of product characteristics, $Z = (Z_1,..., Z_n)$, which form a bundle of goods and services, and the price function of that composite product, $p(Z)$, which reflects the joint pricing of the bundle of goods and services. Usually $p(Z)$ is non-linear, and landlords and tenants accept the price function as given in the competitive commercial leasing environment. The lessee composite product decision can be described by a utility function $M = M(X,Z,\alpha)$, where the variable X is a composite product whose price is unity and α is a parameter for differences between tenants. Tenant utility maximization is subject to the non-linear budget constraint: $Y = p(Z) + X$. Resulting first order conditions are:

$$dP/dZ_i = P_i = M_{zi}/M_X \qquad \text{where } i = 1,...,n.$$

---

[190]Adapted from Follain, J. R. and Emmanuel Jimenez [1985].

A tenant utility function for valuing alternative packages of characteristics for commercial space can be developed when a bid-rent function $\theta(Z_i, M, Y, \alpha)$ describes dollars a tenant is willing to spend for alternative values of commercial space characteristics, Z, at a given level of utility and income:

$$M = M(Y-\theta, Z, \alpha),$$

where for the commercial rental space market Y is income, θ is a bid for rent ($Y-\theta = X$) and α is a parameter for differences between tenants such as business plan, operational experience, size, etc.

Rosen's framework employs bid-rent functions for lessees and offer functions for lessors where both participants are indifferent given commercial space characteristic prices and quantities. Tenant bid-rent functions provide mixtures of characteristic price and quantity for which utility is constant to the tenant based upon his tastes and income. The offer function provides mixtures of characteristic price and quantity which give the landlord constant profits under a certain level of technology and production. The activities of lessors maximizing profit and lessees maximizing utility enables the determination of the hedonic price function for commercial space. Further, it has been demonstrated that compensated supply and demand curves and equilibrium conditions can be developed from lessee bid-rent and lessor offer functions. Thus, taking the tenant utility function and solving for θ_i, it can be demonstrated that θ_i is the compensated marginal bid function for tenants, or the additional expense that a lessee would pay on another unit of Z_i and be equally as well off.

Utility is maximized when the minimum price a tenant would pay, p(Z), is described as:

$$\theta(Z^1; M^1, Y, \alpha) = p(Z^1)$$

and

$$\theta_i(Z^1; M^1, Y, \alpha) = p_i(Z^1)$$

with 1 denoting optimum quantities.

Lessors will supply at p(Z) and have constant returns to scale and convex costs per unit supplied. However, the marketplace determines p(Z) and landlord profit maximization per unit occurs at:

$$\pi = p(Z) - C(Z;B).$$

where C(Z;B) is the cost function per unit and B denotes factor prices and production function parameters. The supplier or landlord maximizes profit only if the additional cost of providing the i^{th} characteristic, C_i, equals the additional revenue gained or $P_i = C_i$.

Rosen suggests that to establish a relationship that describes tenant's bid-rent functions, let $\phi(Z; \pi, B)$ be the landlord's offer function. The landlord would be willing to offer or rent commercial space with a set of characteristics at a constant profit per unit or $\pi = \phi - C(Z,B)$. Accordingly, it can be demonstrated that the marginal cost of providing another unit of a characteristic will define the short-run supply curve.

Profits will then be maximized where

$$\text{and} \qquad \begin{aligned} \phi(Z^1; \pi^1, B) &= p(Z^1) \\ \phi_i(Z^1; \pi^1, B) &= P_i(Z^1) \end{aligned}$$

with ^{1} denoting optimum quantities.

Where supply equals demand, equilibrium price will result. The following equalities can be shown to exist on price-characteristic space:

$$\text{and} \qquad \begin{aligned} \theta(Z^1; M^1, Y, a) &= \phi(Z^1; \pi^1, B) \\ \theta_i(Z^1; M^1, Y, a) &= \phi_i(Z^1; \pi^1, B). \end{aligned}$$

Thus, the relationship between observed prices or rental rates and characteristics of the leased space becomes obvious once price differences among composite products are recognized as equalizing differences for the alternative packages of characteristics.

VITA

JOHN D. BENJAMIN

AREAS OF INTEREST

Teaching: Corporate Finance and Real Estate
Research: Agency Issues, Mortgage Pricing, and Real Estate Investments

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EDUCATION

Louisiana State University	Finance	1983-	PhD (1988)
University of Houston at Clear Lake City	Finance	1981-83	MS
University of North Carolina at Chapel Hill	History	1974-78	BA

HONORS

Alumni Federation Fellowship	Louisiana State University	1983-87
Financial Honor Society	University of Houston	1982-83
Phi Beta Kappa	University of North Carolina	1978

DISSERTATION

Topic: "A Theory and Empirical Test of Retail and Office Lease Contracting."

Retail and office lease provisions can be written to minimize contracting issues between transacting parties. Testable hypotheses regarding the allocation of risks and the reduction of opportunistic behavior, by lease provisions, are proposed. An empirical model which uses Rosen's [1974] well-known theory of hedonic price estimation is developed to test for the economic impact of specific retail and office lease provisions. The empirical results provide strong evidence that the lessening of contracting problems associated with the retail and office lease process is important in understanding how landlords and tenants structure leases, including provisions.

EXPERIENCE

Research

Louisiana State University	Research Fellow	1983-88

Teaching

Louisiana State University	Corporate Finance and Real Estate	1983-88

PUBLICATIONS

"An Empirical Evaluation of the Probabilistic Bid Rent Model: The case of Homogenous Households," (with David J. Gross and C. F. Sirmans), *Regional Science and Urban Economics*, forthcoming, 1989.

"Financing and House Prices," (with J. Sa-Aadu and C. F. Sirmans), *Journal of Financial Research*, forthcoming, 1988.

"Flood Insurance, Wealth Redistribution, and Urban Property Values," (with James D. Shilling and C. F. Sirmans), *Journal of Urban Economics*, forthcoming, 1988.

"Who Benefits from Mortgage Revenue Bonds?," (with C. F. Sirmans), *National Tax Journal*, Vol. 40, No. 1, March 1987, pp. 115-120.

"On Option-Pricing Models in Real Estate: A Critique," (with James D. Shilling and C. F. Sirmans), *AREUEA Journal*, Vol. 15, No. 1, Spring 1987, pp. 742-752.

"Contracts as Options: Some Evidence from Condominium Developments," (with James D. Shilling and C. F. Sirmans), *AREUEA Journal*, Vol. 13, No. 2, Summer 1985, pp. 143-152.

"Adjusting Comparable Sales for Floodplain Location," (with James D. Shilling and C. F. Sirmans), *The Appraisal Journal*, Vol. 53, No. 3, July 1985, pp. 427-436.

PRESENTATIONS AT PROFESSIONAL MEETINGS

"A Theory and Empirical Test of Retail and Office Lease Contracting," presented at the 1988 ARES Meeting, San Francisco.

"Financing and Single-Family House Prices," (with J. Sa-Aadu and C. F. Sirmans), presented at the 1987 ARES Meeting, Orlando.

"Estimating the Demand for Housing Characteristics: Empirical Support for the Bid-Rent Approach," (with David J. Gross and C. F. Sirmans), presented at the 1986 AREUEA meetings, New Orleans.

"Who Benefits from Mortgage Revenue Bonds?," (with C. F. Sirmans), presented at the 1986 AREUEA meetings, New Orleans.

"An Empirical Application of the Option Pricing Model to Real Estate Purchase Contracts," (with James D. Shilling and C. F. Sirmans), presented at the 1984 AREUEA meetings, Dallas.

WORKING PAPERS

"A Theory and Empirical Test of Retail Lease Pricing," Working Paper, Real Estate Research Institute, LSU, 1988.

"The Pricing of Mortgage Covenants -- A Theory in Search of Empirical Evidence," (with George M. Frankfurter and C. F. Sirmans), Working Paper No. 8802-91, Real Estate Research Institute, LSU, 1988.

"A Theory and Empirical Test of Land Option Pricing," (with James D. Shilling, C. F. Sirmans, and Geoffrey K. Turnbull), Working Paper No. 8708-73, Real Estate Research Institute, LSU, 1987.

"An Examination of the Mortgage Foreclosure Decision and Financial Institution Behavior," (with James D. Shilling and C. F. Sirmans), Working Paper No. 8612-56, Real Estate Research Institute, LSU, 1986.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: John Durland Benjamin (Student Number 438-68-0534)

Major Field: Business Administration (Finance)

Title of Dissertation: "A Theory and Empirical Test of Retail and Office Lease Contracting "

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

July 15, 1988