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**LEASE LENGTH AND THE CARE OF  
PROPERTIES**  
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**Abstract:** This paper explores how lease length influences the allocation of responsibilities for leased premises. The reasons why longer leases usually give tenants more control over their premises than short leases are explained. Both international comparisons and variations within markets confirm this tendency.

However, it is impractical to use available leasing data to measure a mathematical relationship between lease length and the allocation of responsibilities. Instead, this paper describes an algebraic model of the (agency) costs of leasing on different bases and how these costs vary with the length of the lease. Simulations using the algebraic model estimate the lease length at which landlords and tenants may benefit from switching responsibilities for the property under several scenarios.

Typical lease lengths for non-residential properties are changing in some countries, either as a result of legislation or market forces. Therefore, it is timely to consider whether the property responsibilities will or should be allocated differently in future. The observed variations in the bases of leasing and these simulations suggest that there are approximate lease lengths, above which responsibilities for the property should be changed.

# Lease length and the care of properties

## 1 Introduction

One of the functions of a lease is to define the responsibilities of the landlord and tenant in managing and maintaining the property. This paper explores the relationship between lease length and the allocation of these responsibilities. It analyses the reasons why long leases would be expected to give tenants more control over their premises than short leases.

It is generally accepted that tenants do not have the same incentive as owner-occupiers to care for their buildings. Many writers have recognised that leased premises are likely to be neglected because lease covenants are only enforceable at significant cost. Less attention has been given to the potential neglect by landlords who have granted long leases or to the potential overspending by landlords recovering costs by way of service charges. Further, most of the literature is not explicit as to how the length of leases influences both the likelihood of neglect and the lease covenants that might encourage proper care of the premises.

Observed variations in lease lengths are compared with the allocation of responsibilities across and within markets. From these patterns and an algebraic model, approximate threshold lease lengths, above which major responsibilities are or should be shifted to the tenants, are derived.

Typical lease lengths for non-residential properties are changing in some countries, either as a result of legislation or market forces. Therefore, it is timely to consider by whom the care of the property is likely to be (or should be) handled under leases of different lengths.

## 2 The control of leased premises

### 2.1 From the perspective of landlords and tenants

Both landlords and tenants recognise that an adequately managed and maintained building is essential to meet their investment and business objectives. However, inadequate management may not affect the parties equally, giving them different incentives to agree to look after the property. Because some operating expenses are partly for future benefits, the length of the lease appears to be the main factor determining which party gains most from proper management. The frequency of rent reviews and any rights for the tenant to renew the lease are related factors.

For landlords, the quality of property management makes no immediate difference to the rent receivable which has been fixed by the lease. Therefore, landlords may show little interest in the care of single-tenanted properties in the early years of long leases. Under shorter leases, landlords have a stronger incentive to protect the residual (or reversionary) value of the property by taking proper care during the lease (Catterill 1993, p.80). Raftery (1991, p.73) states that maintenance may have only a minor effect on depreciation (compared with effects of technological obsolescence and market conditions) with the exception that “where a tenant is nearing the end of a lease, he or she may not consider it

to be worthwhile to carry out certain items of maintenance which are capable of being postponed”.

For the tenant, poorly managed premises may reduce the efficiency of business operations, failing to protect equipment or stock, creating danger or discomfort for employees and discourage clients or customers. However, tenants are likely to have little interest in those property operating expenses which protect the building after the lease has expired. Therefore, tenants under short leases will not be inclined to spend as much as owner-occupiers would on their premises. Some authors have commented on the potential damage to the landlord and tenant relationship because tenants may be reluctant to carry out repairs and how this may hasten depreciation (Salway 1986, p.113; Baum 1991, p.38).

As well as differences in their benefits from adequate management, landlords and tenants often do not agree on what are appropriate maintenance solutions, provisions for insurance and building management strategies. The party that carries out the repairs can ensure that the standards, methods and timing of the works match their personal or corporate objectives (Lee 1987, pp.18 & 56). Again, the length of the lease appears to be the dominant factor in determining which party will be keener to impose its approach to maintenance and management.

Service charges go some way to solving the landlords' problem of enforcing covenants by the tenant to manage and repair. They enable the landlord to retain control of the property whilst recovering the costs from the tenant(s). However, tenants are often suspicious of leases with provision for recovery of landlords' expenses by way of service charges. Landlords may be over-zealous in their care of the premises, “seeking to improve their buildings (and rental value) at the tenants' cost” (Silman 1998, p.116). The potential for overspending in service charges may be more severe in shorter leases because landlords will be aware of the imminent change in rent and possibly tenant. Landlords are also more concerned to avoid the risks of uncertain costs in longer leases.

It only matters which party cares for the property because there are substantial difficulties and costs in enforcing the lease covenants. The costs begin with the drafting of precise, and what are hoped to be binding, covenants. However, it is impossible to anticipate every eventuality or to define in a lease exactly how the other party should fulfil its obligations. During and at the end of the lease, there are further costs of monitoring compliance. If a breach of covenant is detected, enforcement action is expensive and sometimes unsuccessful. The definition of adequate repair is often contentious, with blurred distinctions between maintenance and improvement leading to many disputes.

There is clear evidence from some countries that covenants defining liabilities for the management of properties, particularly for those for maintenance, are difficult to enforce. The English Law Commission writes of “serious shortcomings in the law which governs the repair and maintenance of leasehold property” (Law Commission 1996, p.2). There is anecdotal evidence of landlords (and tenants) becoming so exasperated with the delays in rectifying defects that they have carried out repairs themselves (Producers 1992, p.102). The enforcement of long “full repairing” leases typically requires the production of Schedules of Dilapidations at the end of each lease. These Schedules are expensive to prepare and prosecute. They may result in only partial recover of the costs of repair or

illegitimate claims for substantial refurbishment at the expense of the outgoing tenant (Taylor 1997, p.77).

In Australia, the inadequacies of the law of repair of leased business premises are highlighted by the volume of disputes continuing to reach the higher courts (Rowland 2000a, p.27). In Australia (and probably others with an English common law heritage), the law lacks a satisfactory standard of repair, lacks any implied covenant to repair and has weaknesses in the remedies for disrepair.

For many years, tenants have expressed concerns about their inability to verify that all recoverable expenses are legitimate (McGee 1984). As Rubin (1997, p.185) points out “the service charge is controlled by the landlord and leases often limit the scope for challenging costs”. Recent cases<sup>1</sup> and ongoing unease confirm that this remains a point of friction between landlords and tenants (Standing Committee on Industry, Science and Technology, 1997, p57). Tenants continue to contend that some landlords are implementing service charges unfairly (Lewison 1999, p.35; King 2001, p.74). Retail tenancy legislation in all Australian States prescribes how service charges are to be administered and audited. There are significant administrative costs in providing accurate operating expenses statements and this may discourage their use for very short leases.

## 2.2 From an academic perspective

Many writers have recognised that leased premises are likely to be neglected because lease covenants are only enforceable at significant cost. Whenever the bundle of property rights is split, contractual arrangements must be devised to minimise the potential conflicts between those with interests in the property.

The literature on financial leases acknowledges that the level of maintenance is an economic decision and short-term lessees have little incentive to minimise depreciation of the asset, failing to protect its salvage value (Miller and Upton 1976, p.766; and Flath 1980, p.253). Smith and Wakeman (1985, p.903) consider how lease provisions may alter the incentives for both parties, citing the use of service leases (in which the lessor provides the maintenance) as one way of avoiding the lessee’s tendency to neglect the asset.

The lack of incentive for tenants to take care of their premises has been used frequently in the housing economics literature to explain tenure choice (Henderson and Ioannides 1983, p.98) and the observed lower rents on lease renewal than new tenancies (Hubert 1995, p.631). Kanemoto (1990, p.7) believes that the problem lies in proving to a third party (typically a court) that the tenant has neglected or overused the premises. The author shows how different forms of contracts for the use of property will alter the likelihood of inappropriate standards of maintenance.

A model of under-maintenance by tenants proposed by Benjamin, de la Torre and Musumeci (1995, p.179) is a comparison between the present values of owning and leasing premises. The contrast between the care of premises taken by owner-occupiers and by tenants highlights the overuse by tenants during the lease, with adverse

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<sup>1</sup> In the UK, a number of significant cases since *Postel Properties Ltd v Boots the Chemist* (1996 2EGLR60) have interpreted service charge clauses.

consequences for the residual value. The authors describe various ways in which leases might be amended to lessen or remove the effects of the tenant's incentive to abuse the premises, such as contracts obliging the landlord to maintain, giving the tenant an option to buy, requiring security deposits or adjusting the rent according to the intensity of use (Benjamin, de la Torre and Musumeci 1995, p.184).

Their model can be generalised as there may also be an element of under-maintenance under (gross) leases which require landlords to care for their properties. This is because, after the rent is fixed, landlords will only increase operating expenses if it increases the present value of the residual sufficiently. Service charges create an incentive for landlords to overspend, provided that this will enhance the residual value.

### 2.3 Control as an agency issue

Because the actions of landlords (or tenants) affect but cannot be fully controlled by tenants (or landlords), their conflicts may be modelled as agency problems. In the economics literature, the concept of agency encompasses any occasion when the owner of an enterprise contracts with someone else to operate the enterprise (Holmstrom 1979, p.74; Rees 1985, pp.3 & 75; Ross 1973, p.134). Agents are assumed to maximise their own welfare which may involve neglect ("moral hazard"). Whenever principals cannot monitor easily the actions of their agents (because of "information asymmetry"), there will be agency costs (Hirshleifer and Riley 1992, p.295). Whenever principals suspect agents will shirk from their duties, they will adjust their contractual bids to reflect this potential loss. Only those agents intending to shirk will remain in the market on these terms ("adverse selection"). Other forms of contract may emerge which give more incentive for the agent to work in the principal's best interests.

In the context of shareholders and managers of public companies, Jensen and Meckling (1976, p.308) define agency costs as the sum of:

- the costs that the principal incurs in monitoring the activities of the agent;
- the costs for the agent of giving bonds or guarantees that the agent will try to meet the objectives of the principal; and
- the costs of any residual loss for the principal caused by the divergence of the interests of the parties.

Landlords can be seen as agents acting on behalf of tenants in providing building services which influence the tenants' utility. Tenants can be seen as agents acting to ensure that the landlords' residual values are protected. Agency costs are present in any lease because the party that is responsible for the property is acting partly as an agent to protect the interest of the other party. The relative values of their interests in the property are a function of the length of the lease. The allocation of responsibilities that minimises the agency costs will be influenced by the length of the lease. This is the basis of model in Part 4 below.

### 2.4 The expected allocation of responsibilities

These market and academic perspectives suggest that the allocation of responsibilities is related to the length of the lease. Although there are innumerable ways of sharing the duties between landlords and tenants, the bases of leasing can be thought of as three

archetypal leases. A gross lease is defined as one for which the landlord is responsible for all aspects of the management and maintenance of the property. A net lease is defined as one for which the landlord is responsible for all aspects of the management and maintenance but recovers all the costs from the tenant. A tenant-repairing lease is defined as one for which the tenant is responsible for all aspects of the management and maintenance of the property. The expected effects on these three types of lease on the behaviour of the parties and the likely length that will minimise agency costs are set out in Exhibit 1 below.

### Exhibit 1

#### Lease lengths and incentives for landlords and tenants

| Type of lease    | Party in control | The effect of shortening the lease is to...                    | Minimum agency costs arise from... |
|------------------|------------------|--|------------------------------------|
| Gross            | Landlord         | lower the incentive for the landlord to neglect the property.  | the shortest leases.               |
| Net              | Landlord         | increase the incentive for the landlord to overspend.          | longer leases.                     |
| Tenant-repairing | Tenant           | increase the incentive for the tenant to neglect the property. | the longest leases.                |

## 3 Comparisons of lease structures

To find out whether markets follow the leasing patterns summarised in Exhibit 1 above, the types of leases and their lengths can be compared across markets and within markets. Both comparisons are made difficult by two factors. First, data on lease covenants is rarely available for a significant unbiased sample of commercial or industrial premises. Even in those jurisdictions with public records of property sales, lease transactions are treated as confidential. In some markets, reasonable samples of agreed rents are available but the terms and conditions of the leases are often not recorded. Secondly, the allocation of responsibilities is often shared or blurred, rather than falling into the neat categories of Exhibit 1 above.

### 3.1 Comparisons across markets

Exhibit 2 below provides international comparisons of what are believed to be the usual bases and lengths of lease for substantial lettings of city office space. Many large businesses make international comparisons in deciding where to locate their regional or global offices. In some cities, multi-tenanted office buildings dominate the leasing market and there are more likely to adopt service charges than single tenanted buildings. The

information for Exhibit 2 below has been gathered from a variety of written sources<sup>2</sup> and enquiries of practitioners in several countries.

### Exhibit 2

#### Single-tenanted City offices: Common bases of leasing

| Country                | Responsibilities of landlords                                |                                  |                               |                               | Length of lease                    |
|------------------------|--|----------------------------------|-------------------------------|-------------------------------|------------------------------------|
|                        | Structure  | Servicing                        | Insurance                     | Taxes                         |                                    |
| Australia<br>E. States | Yes  | Yes, recovery of increased costs |                               |                               | 3-10 years + option                |
| Western<br>Australia   | Yes  | Yes, full cost recovery          |                               |                               | 2-5 years + option                 |
| England                | Not if single tenancy; full cost recovery if multi-tenanted. |                                  |                               |                               | 15 years                           |
| France                 | Yes  | Yes, full cost recovery          | Yes, occasional cost recovery | Yes, full cost recovery       | => 9 years, 3yrly break for tenant |
| Germany                | Yes  | External, partial cost recovery  | Yes, full cost recovery       | Yes, full cost recovery       | 5-10 years + option                |
| Hong Kong              | Yes  | Yes, full cost recovery          | Yes                           | Yes, cost recovery            | 3-5 years                          |
| India                  | Yes  | Varied, some cost recovery       | Yes, occasional cost recovery | Yes, occasional cost recovery | 2-3 years                          |
| Italy                  | Yes  | Yes, full cost recovery          | Yes                           | Yes                           | 6 years                            |
| Japan                  | Yes  | Yes, most costs recovered        | Yes, generally cost recovery  | Yes                           | 2 years                            |
| Mexico                 | Yes  | Yes                              | Yes                           | Yes                           | 3-5 years                          |
| Singapore              | Yes  | Yes, some                        | Yes                           | Yes, possibly                 | 2-5 years, +                       |

<sup>2</sup> Adair, A., Downie, M.L., McGreal, S. and Vos, G. (1996) *European Valuation Practice Theory and Techniques*, E & FN Spon.  
 Centre for European Property Research (1993) *International Leasing Structures*, Royal Institution of Chartered Surveyors, London.  
 Colliers (1995) *Worldwide Office Leasing Guidelines*, Colliers International, Boston.  
 Corgel, J.B., Jaffe, A.J. and Lie, R.T. (1992) "Modeling the Economics of Leasing Provisions: Some Cross Cultural Comparisons of European Contracts", Working Paper Series in Real Estate, Penn State University.  
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 Hurndall, A. (Ed., 1998) *Property in Europe: Law and Practice*, Butterworths, London  
 Royal Institution of Chartered Surveyors (1987) *The Maintenance of Commercial Tenanted Properties*, R.I.C.S., London. [p.7]  
 Worzala, E.M., Newell, G. and Lizieri, C.M. (1996) "The Convergence of International Leasing Markets", paper presented at the 5<sup>th</sup> International AREUEA conference, Orlando. [in particular, see Table 5]

|            |     |  |  |                       |            |
|------------|-----|--|--|-----------------------|------------|
|            |     | costs recovered  |  | recovery of increases | option     |
| <b>USA</b> | Yes | Yes, some leases recover costs, possibly of increases only |  |                       | 3-10 years |

There is an element of subjectivity in describing types of leases as usual or normal in a particular market. The bases and length of leases also depends upon the size and quality of the space, the state of the market and the attractiveness of the tenant. Further, there appear to have been minor changes in the bases and length of leases during the 1990s in some countries.

Whilst no firm conclusions can be drawn from such international comparisons, they reveal some traits of leasing markets that are broadly consistent with the expected link between lease length and the allocation of responsibilities for the property. Commercial leases tend to be shortest in Asian countries where landlords look after the properties, with partial or no recovery of operating expenses is common. In Western Europe, leases in many countries are longer (with statutory minima or renewal rights in some countries). Landlords manage and maintain their premises but, since the 1980s, service charges have become the norm in many countries. The Civil Codes often dictate that the landlord is responsible for structural repairs. In the USA, there is more variety in the bases of leasing offices, with the full range of gross to “triple net” leases negotiated in each city.<sup>3</sup>

The very long leases in England usually pass all responsibilities, including structural repairs and inherent defects, to the tenants. Many landlords of single tenanted properties leased for 15 to 25 years have shown little interest in their buildings, arguing that they do not receive the benefits of good management until the lease expires (Greenwood, 1982: 109). In fact, the traditional stance of institutional investors in England has been that any involvement with the property detracts from its characteristics as a passive, trouble-free investment (Neat, 1984: 293; Taylor, 1990: 18). These patterns are summarised in Exhibit 3 below.

**Exhibit 3**

**Broad patterns of prime office leases**

|                             |                                  |                                |                                      |
|-----------------------------|----------------------------------|--------------------------------|--------------------------------------|
| <b>Many Asian countries</b> | <b>Australia and New Zealand</b> | <b>Many European countries</b> | <b>England</b>                       |
| <b>Gross</b>                | <b>Almost net</b>                |                                | <b>Tenant-repairing or fully net</b> |
| <b>2 years</b>              | <b>5 years</b>                   | <b>10 years</b>                | <b>15 years</b>                      |
| <b>Common lease lengths</b> |                                  |                                |                                      |

Although it is not evident from this information, in those countries where leases permit frequent adjustments to rent, there is less emphasis on full recovery of operating costs. This is most noticeable in countries where the rents are linked to either consumer price or

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<sup>3</sup> Zankel (1991, p.11 & p.244) suggests that gross leases with recovery of increases on each operating expense, limited by “stops”, were probably the most common for offices at that time.

construction cost indices. In markets for which changes in the basis of leasing have occurred over time, shifts in responsibilities that benefit landlords coincide with temporary shortages and shifts that benefit tenants coincide with surplus space. It appears that the dominant party takes advantage of the market conditions to improve basis of leasing as well as to increase the rent.

### 3.2 Within markets

Two examples of the relationship between lease length and the responsibilities for the property within particular countries are provided below.

#### 3.2.1 Australia

The basis of leasing properties in Australia varies according to the use of the property, its size and its State. As in most countries except England, it is the practice in Australia for service charges and tenant-operating leases to exclude liability for “fair wear and tear” (Barnett, 1990: 66; Duncan, 1993: 103) and structural repairs.<sup>4</sup> In self-contained shopping centres, landlords operate the property and recover the costs from the tenants (except for some items for which State laws prohibit recovery), whereas leases of single shops tend to give tenants more responsibilities if the letting is for a longer period. Office buildings in Perth are mostly leased net, whereas in the Eastern cities, they are predominantly leased on a “gross plus increases” basis. In oversupplied markets in the early 1990s, government departments led a push for gross leases with no recovery of increased costs.

Single tenanted leases of offices and industrial properties for more than ten years are not common but would often require tenants to operate the premises. Single tenanted leases of less than three years are often gross. Exhibit 4 below shows the portion of net and gross leases of different length for some 697 leases over commercial and industrial properties in Port Adelaide (South Australia).<sup>5</sup> The Table confirms that leases of one or two years are significantly more likely to be gross than leases of 3 to 5 years which are normally net. The column headed “Other” contains a mixture of leases with partial recovery of operating expenses and those for which tenants carry out some repairs and insurance themselves.

Net or Gross (South Australian leases)

| <b>Length</b>     | <b>Gross</b> | <b>Net</b>   | <b>Other</b> |
|-------------------|--------------|--------------|--------------|
| 1 year or less    | 47.7%        | 41.4%        | 10.9%        |
| 2-3 years         | 21.0%        | 74.4%        | 4.6%         |
| 4-5 years         | 17.1%        | 73.6%        | 9.3%         |
| more than 5 years | 15.4%        | 78.8%        | 5.8%         |
| <b>Total</b>      | <b>28.7%</b> | <b>63.7%</b> | <b>7.7%</b>  |

<sup>4</sup> In some instances, neither the lease nor legislation specifically make the landlord liable for these repairs and, as a consequence, neither party is liable.

<sup>5</sup> Data kindly supplied by Grant Simpson, Valuer to the City of Port Adelaide.

### 3.2.2 England

Single tenanted prime properties in England are held generally under full repairing and insuring leases. Recent new lettings are typically for 15 years with some for longer periods. Multi-tenanted commercial, retail and industrial properties are leased with service charges recovering all operating expenses (although some tenants have been able to negotiate a ceiling on the service charge). Gross or “internal repairing” leases are more common for small secondary properties on short leases, not owned by institutional investors. Exhibit 5 below summarises information about 1616 leases over properties which were auctioned in England and Wales during 1998 and 1999.<sup>6</sup> The information was collated from auction particulars and in many instances the repair responsibility was unclear. The link between lease length and who has control of the premises is clouded because the data does not distinguish between tenant-repairing leases and net leases with service charges. However, it is clear that internal repairing leases are rarely used for tenancies of more than ten years.

#### Exhibit 5

#### FRI/Net or Internal Repairing (UK auction particulars) by number of leases

| Length       | Unknown      | FRI          | IR          |
|--------------|--------------|--------------|-------------|
| < 10         | 35.3%        | 49.4%        | 15.3%       |
| 10-14        | 27.0%        | 69.0%        | 4.0%        |
| 15-19        | 21.7%        | 75.7%        | 2.6%        |
| 20-24        | 18.2%        | 81.3%        | 0.5%        |
| 25 or more   | 17.5%        | 82.5%        | 0.0%        |
| <b>Total</b> | <b>26.2%</b> | <b>67.4%</b> | <b>6.4%</b> |

Note: This data does not distinguish FRI (Full repairing and insuring) leases from net leases with service charges; IR (internal-repairing) leases are partly gross.

The typical lease length for “institutional grade” property in England has fallen from 25 years to 15 years since the 1980s. Some (but not all) evidence suggests that this has been accompanied by more use of internal repairing leases.<sup>7</sup> It appears that there may be no less use of full repairing and insuring (or net) leases for what are loosely called prime properties. A survey of corporate tenants by Crosby, Gibson and Oughton (2001, p.22) revealed that some felt that the full repairing and insuring lease was no longer appropriate with shorter leases (particularly for 10 years or less). A recommended short-term lease<sup>8</sup> endorsed by landlord and tenant representatives is intended for use in leases up to three

<sup>6</sup> This data was kindly supplied by Professor Neil Crosby of the Department of Land Management and Development at the University of Reading.

<sup>7</sup> The analysis of Valuation Office data for the DETR report (2000, p.80) suggested a declining use of FRI and net leases for a variety of commercial and industrial properties.

<sup>8</sup> published as the *BPF Short-Term Commercial Lease* (1999) by Sweet and Maxwell Limited.

years and it provides for full care by landlords with no service charges except for payment of utilities.

Both the comparisons across and within markets confirm, in a limited way, the expected link between lease length and the allocation of responsibilities for the property. Because of the shortcomings of the data, the complexity of leasing arrangements and the danger of generalising from specific markets, an algebraic model is proposed below to supplement these findings.

## 4 An algebraic model

### 4.1 The framework of the model

A model suggesting how property responsibilities should be allocated for leases of different lengths is outlined below. The foundations of the model are that:

- landlords seek to maximise the present value of their net income during the lease and the value of the property after the lease expires; and
- tenants seek to maximise the present value of their benefits of occupation, net of all occupancy costs, during the lease.

The model shows why shifting responsibilities does more than shift value from one party to the other. Shifting responsibilities may change the combined present values of the interests of the landlord and tenant.

The landlord seeks a lease that maximises:

$$\sum_{i=1}^t \frac{L_i}{(1 + k_d)^i} - \sum_{i=1}^t \frac{(X_{ri} - S_i)}{(1 + k_r)^i} - \frac{C_r}{(1 + k_r)^t}$$

**Equation (1)**

where  $L_i$  is the rent per annum in year  $i$ ;

$i$  are the years of the lease;

$t$  is the length of the lease in years;

$k_d$  is the annual interest rate on medium or long term debt of the tenant;

$X_{ri}$  are the property operating expenses paid by the landlord in year  $i$ ;

$S_i$  are the landlord's operating expenses recovered from the tenant in year  $i$ ;

$k_r$  is the annual discount rate appropriate for uncertain liabilities of the landlord; and

$C_r$  is the effect on the residual value of the building of an inappropriate level of operating expenses (neglect or overspending).

During the lease, the landlord will receive rent,  $L$ , which is fixed or linked to some index during the lease or at least until a rent review to the current market rental value. The landlord may be responsible for some or all of the operating expenses,  $X_r$ , although some

may be recovered from the tenant as a service charge,  $S$ . The operating expenses are uncertain when the lease is signed.

The discount rate for the rent reflects the return on medium or long term debt issued by the tenant. The landlord receives lease payments that are the equivalent to payments on a corporate bond or other debt instrument issued by the tenant, with the residual value akin to an equity stake in the property (Graff 1992, p.449; French and Ward 1996, p.48).

The discount rate for uncertain liabilities such as the operating expenses should reflect the risk that they may be greater than expected. Because the elements of the cash flow are discounted separately in Equation (1) above, risky *liabilities* are discounted at a *lower* rate than certain receipts or liabilities.<sup>9</sup>

At the end of the lease, the landlord is entitled to the unencumbered value of the property which will largely be determined by market conditions at that time. However, the residual value of the building may be affected by neglect of (or overspending on) the property during the lease. The effect on the residual value arising from changes to the operating expenses is termed  $C_r$ . Except for this effect, it is assumed that the value of the property after the lease expires is not influenced by the current lease.

The tenant seeks a lease that minimises:

$$\sum_{i=1}^t \left[ \frac{L_i}{(1 + k_d)^i} + \frac{X_{ni} + S_i}{(1 + k_n)^i} + \frac{C_{ni}}{(1 + k_n)^i} \right]$$

**Equation (2)**

where  $X_{ni}$  are the property operating expenses paid by the tenant in year  $i$ ;

$k_n$  is the annual discount rate appropriate for uncertain liabilities of the tenant; and

$C_{ni}$  is the effect on the benefits of occupation in year  $i$  arising from an inappropriate level of operating expenses (neglect or overspending).

The tenant benefits from occupying the premises until the lease expires, subject to the payment of the agreed rent,  $L$ , and possibly paying for uncertain operating expenses, either directly,  $X_n$ , or by reimbursing the landlord,  $S$ . The benefits of occupation are uncertain when the lease is signed and will be reduced (or increased) if neglect of (or more spending) on the property. The change in the tenant's annual benefits of occupation is termed  $C_n$ .

The discount rate for the (fixed) rent is the cost of medium to long term debt issued by the tenant. The tenant should be indifferent to paying a (net) rent that is equivalent to the interest rate on borrowings to acquire the asset plus the expected depreciation (Miller and

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<sup>9</sup> It is logical to discount risky liabilities at a rate that is less than a risk-free rate, giving risky liabilities a higher (negative) present value than certain ones. The more risk, the lower the rate. This is consistent with the use of a higher rate to reflect the uncertainty of positive cash flows.

Upton 1976, p.764; Hendershott 1997, p.6). This cost of capital for the tenant is the same as the landlord's return on such debt. The discount rate for risky liabilities may be slightly different from the landlord's rate for the same liabilities, which may depend upon the landlord's cost of capital and degree of risk aversion.

## 4.2 Optimal allocation of property responsibilities

Both the landlord and the tenant will be striving for lease terms that define their responsibilities for the property in such a way that their own interests are maximised. Generally, changes in responsibilities that benefit one party will disadvantage the other, **but not necessarily by the same amount**. Whenever the parties see net benefits from switching responsibilities, the net benefit can be shared by adjusting the rent.

Provided that rent can be adjusted when negotiating different lease terms, landlords and tenants will cooperate to reduce their combined costs during the lease. In comparing two bases of leasing, the parties will opt for the one that minimises their combined costs. A simple numerical example in Exhibit 6 below demonstrates this. This example shows how, if the responsibilities are changed in such a way that the tenant's operating costs are lowered more than the landlord's costs are increased, the tenant will be willing to pay sufficient extra rent to cover the landlord's increased costs.

### Exhibit 6

Consider a property that the tenant has been offered to lease at \$80 per square metre per annum (psmpa) on the condition that the tenant is responsible for all maintenance and management. Operating the property would cost the tenant about \$35 psmpa until the lease expires but suppose that the landlord can operate the property for about \$30 psmpa.

The tenant would benefit by offering a (gross) rent of up to \$114 psmpa for the landlord to bear the responsibility for operating the property. The landlord would gain by taking responsibility for all maintenance and management at a gross rent of between \$111 and \$114 psmpa. This is because the operating costs are being borne by the party with the cost advantage.

In the example in Exhibit 6 above, the value of both the landlord's and the tenant's interests can be enhanced by changing the allocation of lease responsibilities. If a change in the allocation of lease responsibilities, with an associated change of rent, would increase the value of the interests of both parties, the revised basis of leasing is **more efficient** than the original allocation of rights and responsibilities. The potential to improve the combined values of the interests of both parties by changing the lease terms is realised by compensating adjustments to the rent.<sup>10</sup> Whenever one party to the lease

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<sup>10</sup> The notion of "efficient" contracts is explained by Cooter and Uren (1997, p.73) and Stephen (1988, p.57 & p.157).

would surrender rights or responsibilities for a smaller adjustment to the rent than the other party, a more efficient lease can be negotiated.<sup>11</sup>

Referring back to Equation (1) and Equation (2) above, each party will agree to changes in property responsibilities, provided that after compensating adjustments to the rent, the present value of their interest is increased. Because the appropriate discount rate for the agreed rent is the same for the landlord and tenant, the parties will adopt the basis of leasing which minimises:

$$\sum_{i=1}^t \left[ \frac{(X_{ri} - S_i)}{(1 + k_r)^i} + \frac{X_{ni} + S_i}{(1 + k_n)^i} + \frac{C_{ni}}{(1 + k_n)^i} \right] + \frac{C_r}{(1 + k_r)^t}$$

**Equation (3)**

The terms in Equation (3) above are the costs of leasing which may vary with the basis of leasing. This representation of the negotiation of leases captures two aspects of the relationship between landlords and tenants. On the one hand, they are adversaries striving to obtain the most from the property at each other's expense. This aspect of their negotiations is a "zero sum game". On the other hand, they are also partners, working together to enhance the total value of the property and hence increase both of their interests.

The property operating expenses,  $X_r$  and  $X_n$ , and the recoverable operating expenses,  $S$ , are determined by the basis of leasing. A convenient simplification is to define three types of leases in such a way that:

- under a gross lease,  $X_n = 0$  and  $S = 0$ ;
- under a net lease,  $X_r = S$  and  $X_n = 0$ ;
- under a tenant-operating lease,  $X_r = 0$  and  $S = 0$ .

These three bases of leasing are used to judge the effects of neglect or overspending under leases of different length.

### 4.3 The effects of neglect or overspending

The model defines how the basis of leasing will influence the incentive to under- or overspend on operating expenses. Changing the level of expenses influences both the residual value of the property and the benefits of occupation. There has been little empirical research as to how spending on the property influences the benefits of occupation or its residual value.

Vorst (1987, p.211) models maintenance as a stochastic variable having a declining positive influence of the quality of housing. Similarly, Benjamin, de la Torre and Musumeci (1995, p.179) assume that additional expenditure shows declining benefits.

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<sup>11</sup> Strictly, this only holds true if adjusting the rent has the same effect on the value of the interests of both parties across the negotiating range of rents. This is a reasonable assumption for non-residential leases, where the benefits are entirely monetary.

Dildine and Massey (1974, p.633) deduce an optimum level of expenditure (when marginal benefits are equated to marginal costs) and its effect on housing quality. They use a geometric rate of depreciation and show that as rents decline, less expenditure can be justified. They observe that some expenditure on the property does not influence depreciation (these are items such as insurance, taxes and fuel; p.632) and that, other things being equal, an increase in site values will lower the optimum level of maintenance expenditure (p.636).

Little is known about rates of depreciation for properties.<sup>12</sup> This model does not specify a rate of depreciation for a properly maintained building. Instead, it defines changes in depreciation caused by neglect or overspending. A plausible relationship between changes in operating expenses and changes in the value of the property is:

$$C = \sum_{i=1}^b \frac{X_i u}{(1+k)^i} * (1 - ud)$$

**Equation (4)**

where  $C$  is the change in present value of the property arising from an inappropriate level of operating expenses;

$b$  is the length of the life of the building in years;

$X_i$  are appropriate property operating expenses in year  $i$ ;

$k$  is the annual discount rate for uncertain liabilities (for an owner-occupier);

$u$  is a percentage change in operating expenses; and

$d$  is a factor setting the severity of declining returns for additional expenditure.

The appropriate operating expenses would be an amount unaffected by any lack of incentive for the landlord or tenant. Therefore, the appropriate level of expenses are those that an owner-occupier would undertake (Benjamin, de la Torre and Musumeci 1995, p.180). By defining the percentage of unenforceable expenses as  $u$ ,  $C$  gives a measure of the potential effect on the value of either neglect or overspending.

The unenforceable elements of the operating expenses are mainly maintenance expenses, some of which may border on improvements. The fact that maintenance is often deferred under poor economic conditions (Williams 1994, p.17) suggests that some items are treated as discretionary. Tenants will seek to reduce any expenditure that gives benefits after the lease has expired, whereas landlords will give these expenses priority. However,

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<sup>12</sup> Recently published studies of rates of depreciation in non-residential properties include Dixon (1999) and Baum and McElhinney (2000). A review of the patterns and rates of depreciation in buildings can be found in Dixon, Crosby and Law (1999, p.153), showing marginally stronger support for exponential trends in depreciation with a constant compound rate, rather than constant linear trends in declining value (p.174).

it is not clear how expenditure in one period limits depreciation in later periods. Nor is it easy to define which expenses are for future benefits and which for today.

In this model, the changes in the present value of the property,  $C$ , caused by inappropriate expenditure are apportioned between the landlord and the tenant in accordance with the length of the lease,  $t$ , as a portion of the remaining life of the building,  $b$ . The changes in the landlord's residual,  $C_r$ , and the tenant's occupational benefits,  $C_n$ , are given by:

$$\frac{C_r}{(1 + k_r)^t} = C * \left(1 - \frac{t}{b}\right)$$

**Equation (5)**

$$\sum_{i=1}^t \frac{C_{ni}}{(1 + k_n)^i} = C * \frac{t}{b}$$

**Equation (6)**

#### 4.4 Different bases and lengths of lease

Using this model, the effects of the basis and length of lease on the value of the property can be tested. This is explained fully for a gross lease. Under a gross lease, the landlord will avoid unenforceable expenses that do not enhance the value of the residual sufficiently.

If  $u$  is the unenforceable element of the operating expenses, Equation (4) and Equation (5) above can be combined to show that the effect of this underspending on the residual,  $C_r$ , would be:

$$\frac{C_r}{(1 + k_r)^t} = \sum_{i=1}^b \frac{X_i u}{(1 + k_r)^i} * (1 - ud) * \left(1 - \frac{t}{b}\right)$$

**Equation (7)**

Under a gross lease, a landlord will have an incentive to reduce expenditure,  $X_r$ , to the level at which the present value of the reduction in expenses is the same as the present value of the resulting damage to the residual. This sets the minimum expenditure by the landlord to the level at which:

$$\sum_{i=1}^t \frac{X_{ri} u}{(1 + k_r)^i} = \sum_{i=1}^b \frac{X_{ri} u}{(1 + k_r)^i} * (1 - ud) * \left(1 - \frac{t}{b}\right)$$

**Equation (8)**

The left side of Equation (8) above represents the potential saving on expenses and the right side represents the damage to the residual value that would result.

The reduced expenditure by the landlord also lowers the value of the tenant's interest. Assuming that the lease cannot be designed to prevent the landlord lowering expenditure, the landlord will not consider this further loss. Combining Equation (4) and Equation (6) above, the tenant's loss in each year of the lease,  $C_{ni}$ , will be:

$$\sum_{i=1}^t \frac{C_{ni}}{(1 + k_n)^i} = \sum_{i=1}^b \frac{X_i u}{(1 + k_n)^i} * (1 - ud) * \frac{t}{b}$$

**Equation (9)**

The key to the model is that, either the landlord does not consider the tenant's loss in selecting a level of maintenance under a gross lease or that the tenant believes that the landlord will not consider the tenant's loss.

Adopting the same approach to a tenant-operating lease, the tenant will reduce operating expenses by the avoidable portion,  $u$  (subject to a minimum expenditure,  $X_n$ , that makes the present value of these expenses equal to the present value of the damages to the occupational benefits,  $C_n$ ). The tenant will not be concerned that this will lower the value of the landlord's residual.

Under a net lease, the landlord will overspend unless this can be contained by the tenant (subject to a maximum expenditure,  $X_r$ , that does not decrease the present value of the residual). The model assumes that the effects of overspending on the value of the interests in the property take the same functional form.

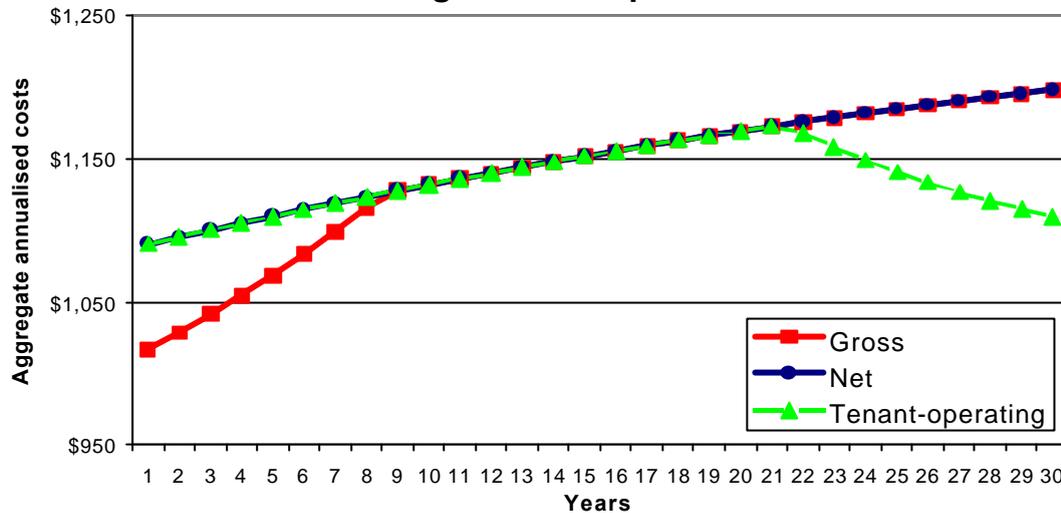
#### 4.5 Initial simulations using the model

One method of testing this model is to simulate the costs of leasing as reflected in Equation (3) above. These costs of leasing are the operating expenses plus any changes in the values of the interests of the landlord and tenant that are caused by neglect or overspending. Using the three simple bases of leasing defined above (gross, net and tenant-operating leases), the costs of leasing for any number of years can be evaluated. The level of operating expenses is set by the party responsible for the works (for example, in Equation (8) above for a gross lease) and ignoring the change in value of the other party (in Equation (9) above).

The initial simulation assume that 20 per cent variations in operating expenses cannot be controlled by the other party (and  $d$  was given a value of 2, reflecting sharp declines in returns for additional expenditure). The discount rate for both the landlord's and tenant's liabilities was set at 6 per cent per annum. Using an arbitrary \$1,000 per annum as the appropriate operating expenses and a building life of 30 years, the costs of gross, net and tenant-operating leases of between 1 and 30 years were calculated. These are displayed as annualised costs (using a cost of debt of 8 per cent per annum) in Exhibit 7 below. The lease type with the lowest costs would be preferred. The annualised costs above \$1,000 represent the aggregate loss created by the incentives to neglect or overspend during the lease (the agency costs).

**Exhibit 7**

**Lease length and responsibilities**



Gross leases show lower costs up to lease length of 8 years; tenant-operating leases show lower costs for leases of 22 years or more. In this simulation, leases between 9 and 21 years long add the same costs whichever basis of leasing is adopted. Increasing the uncontrollable variations in operating expenses or the severity of the declining returns reduces these neutral lease lengths. Decreasing the building life reduces the minimum lease length for which tenant-operating leases show the lowest costs. Variations in the discount rates have a dramatic effect upon the annualised costs but much less effect on which type of lease has the lowest costs at each lease length.

These initial simulations show gross leases to be suitable for leases of five years and more and show no advantage of net leases. Two other factors have been identified as important in the allocation of responsibilities for leased premises.

**4.6 Other factors influencing the basis of leasing**

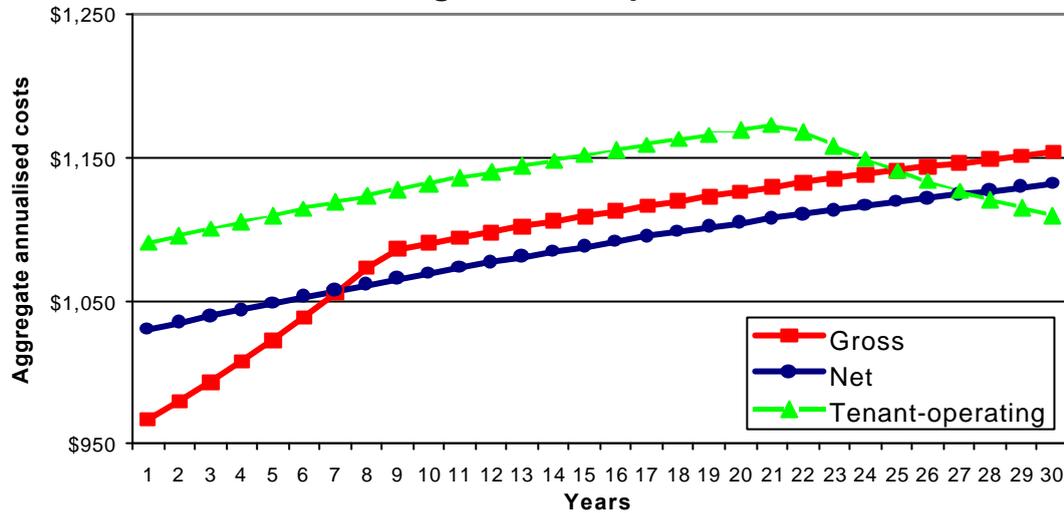
**4.6.1 Comparative operating advantage**

It may be cheaper for either the landlord or the tenant to manage and maintain the property for two principal reasons. First, only one of the parties may have specialised understanding of repair techniques, skills in the early detection of disrepair and knowledge of insurance, property taxes and maintenance contracts. Secondly, only one of the parties may have economies of scale in repairing, insuring or managing a portfolio of properties. Economies of scale have been recognised as one reason why leasing markets exist despite the agency effects (Benjamin, de la Torre and Musumeci 1998, p228). Provided that both the landlord and the tenant are aware of the comparative advantage, the responsibility for management and maintenance will be allocated to the party that can make savings. To simulate this, it was assumed that the landlord can run the property for 5 per cent per annum less than the tenant. Referring to Equation (3) above,  $X_{ri}$  is set out at

5 per cent less than  $X_{ni}$ , with the other variables unchanged. Exhibit 8 below shows the costs of leasing for different periods.

**Exhibit 8**

**Lease length and responsibilities**



Net leases are now cheaper than gross leases of more than 7 years. Tenant-operating leases now only minimise the costs of leasing for leases of 28 years or more. If these comparative advantage are more extreme, they determine the basis of leasing, irrespective of the length of the lease, outweighing the agency costs.

**4.6.2 Risk allocation**

Because operating expenses are unknown at the time when the rent is fixed, both parties would be averse to taking on the risk of escalating operating expenses. Under gross leases, landlords bear the risk; under net and tenant-operating leases, tenants bear the risk. Either party will only bear this risk if they are compensated. Therefore, the difference between a net and gross rent should be greater than the expected operating expenses.<sup>13</sup> If a hedge against the fluctuations in running costs was available, either party could avoid the risk for the same cost and they would be indifferent between gross and net rents.<sup>14</sup> However, such a hedge is not available and the risk must be borne by one party. In Equation (3) above, the present value of the costs will be lower if they are borne by the party which is less averse to these risks, other things being equal. This can be simulated in the model by lowering the discount rate for risky liabilities for the party which is more risk averse. Exhibit 9 below is based on a landlord more averse to risks than the tenant,

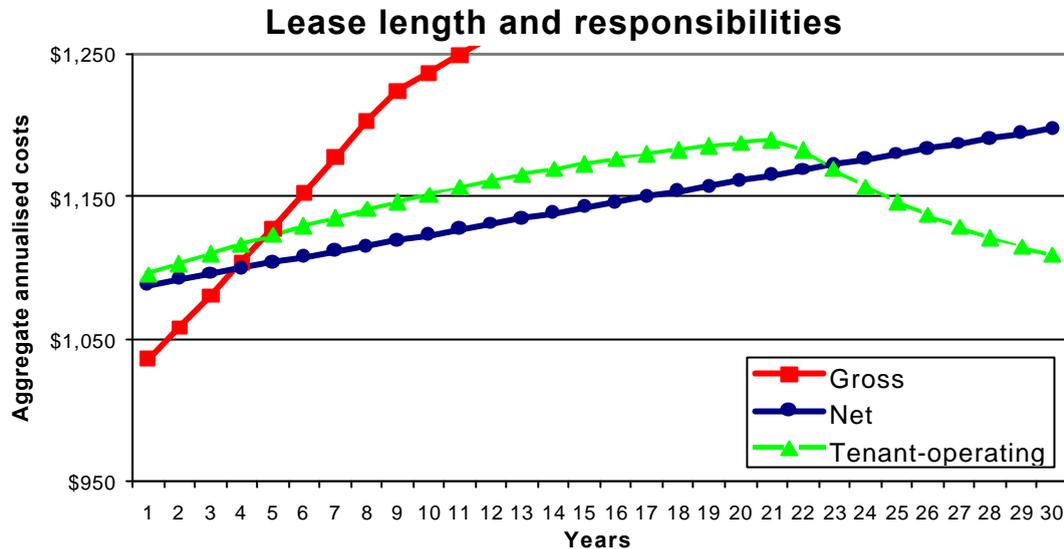
<sup>13</sup> From Equation (3), the difference between the gross and net rent would be

$$\sum_{t=1}^i \frac{S_i}{i} * \frac{k_d}{-t}$$

<sup>14</sup> Albert and McIntosh (1989: 89) demonstrate an equilibrium adjustment between net and gross rents which assumes that unexpected changes in operating expenses are perfectly correlated with unexpected consumer price inflation, which can be hedged using commercial paper.

lowering the landlord's discount rate for risky liabilities from 6 to 4 per cent per annum (whilst removing the comparative advantage).

**Exhibit 9**



If the landlord is more averse to bearing the risk of operating expenses, a gross lease is less suitable than a net one. In this simulation, the gross lease is only the cheapest basis for leases of 3 years or less. If the landlord's risk aversion is made stronger, even shorter net leases may be preferred. Although the potential for overspending in service charges is more severe in very short leases, the allocation of operating risks may more be more important than the agency costs in determining the basis of leasing. Tenant-operating leases remain the cheapest basis of leasing for 23 years or more.

#### 4.7 Limitations of the model

The costs of leasing are influenced by three principal factors – operating advantages, risk tolerance and incentives to care for the property. The outcome of the trade-off between their effects can be seen by simulating their likely effects. However, the ability of the simulations to predict the bases of leasing for different length leases is limited. First, there is a lack of information about how neglect or overspending influences the benefits of occupation and the residual value. Secondly, in practice, the magnitude of the change in the value of the landlord's and tenant's interests arising from neglect or overspending may be negligible in comparison with the other factors and the general changes in values and rents over time. Thirdly, there is little evidence of how landlords and tenants judge the benefits and risks of different lease structures.

There are further aspects of the relationship between landlords and tenants that are not captured by the model. The model assumes that the negotiation process is flexible enough for the rent to be adjusted to compensate for changes to the allocation of responsibilities. However, there is evidence in some markets that rents may be negotiated for new leases on assumed terms and those terms may be amended subsequently without the rent being renegotiated (Crosby and Murdoch 2000, p.430).

In some markets, leases may be treated as a small part of a larger relationship between the parties. If the parties have equal power, rents and lease terms may be set as a bilateral negotiation of a relationship that will develop during the lease and perhaps for subsequent leases (Williamson 1979, p241). In these cases, the incentive to avoid expenditure that is for the benefit of the other party may be countered by the advantages of preserving a cordial relationship between the parties.

It is not certain that the correct period of analysis is the length of the lease. There are arguments for extending the analysis to options or statutory rights to renew. There are also arguments for ceasing the analysis at the time of a market rent review or a break clause during the lease. If the tenant has an option to renew the lease at the then current market rent or has a break clause in the lease, the tenant (but not the landlord) can renegotiate the lease covenants as well as the rent. Provided that the initial lease is negotiated with a view to retaining the same covenants until the end of the lease, it is logical to model the costs of leasing over the period of the lease, excluding any options to renew or break clauses.

The implementation of rent reviews during the lease may also influence which party benefits more from good management and hence influence which party wishes to control management. If the rent after a market review is to reflect the standard of the property, the tenant pays over at least part of the benefit to the landlord, reducing the tenant's incentive to care for the building properly. However, if the rent at a market rent review will be set at a level that ignores disrepair (as is often the case if the tenant fails to comply with a repair covenant), the state of repair will not affect the rent until the lease expires. This suggests that the agency effects should be modelled over different periods for landlords and tenants.

The notion of efficient lease covenants for different length leases is a helpful abstraction. In reality, all that is observed in most property markets is a prevailing basis of leasing, allocating property responsibilities in a way that may appear to favour landlords or tenants. Except in markets in which the prevailing basis of leasing is changing or has changed, there may be no evidence that lease covenants are more efficient than the alternatives.

Leases are contracts with high costs in searching and evaluating alternative premises. These costs can be reduced by adopting the standard basis of leasing in the sub-market, even if the lease length is to be different to the norm. Standardisation makes rental comparisons easier. There are in fact no widely accepted methods for adjusting rents for variations in most lease covenants (Rowland 2000b, p.177). Leasing on an unusual basis also adds to the uncertainty of the value of the interest because there may be few subsequent buyers or assignees who share the preferences of the current landlord and tenant for the unusual covenants. On occasions, standardising leases may be more important than the other factors influencing the basis of leasing.

## 5 Conclusion

The assertion that longer leases are likely to give more responsibilities to tenants than short ones is intuitively obvious. International comparisons and empirical evidence within some markets confirm this. The incentives to neglect or overspend can be modelled as agency costs although this requires some plausible but unsubstantiated

assumptions about the effect of under- or overspending on the building. Simulating these costs of leasing gives insights into which basis of leasing is most suited to leases of different lengths. The impact of the age of the building is reflected but not the effects of the process and strengths in negotiation. The simulations also shows how comparative cost advantage and the allocation of operating risks may obscure the relationship between lease length and the allocation of responsibilities.

The simulations are broadly consistent with the observed usage of different types of leases, where evidence is available. The simulations suggest that gross leases are best suited to leases of 1 to 3 years. For risk averse landlords, net leases for 4 to 15 years are preferred. Tenant-operating leases are only clearly favoured if they are for 20 years or more. In practice, shorter (2 and 3 year) net leases are reasonably common in Australia and tenant-repairing 15 year leases remain the norm in England. Given the variety of institutional constraints in leasing markets around the world, it is unlikely that more precise conclusions can be drawn about the link between lease length and the allocation of responsibilities.

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