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## THE PECULIAR MARKET FOR COMMERCIAL PROPERTY: THE ECONOMICS OF IMPROVING A RENTAL PROPERTY<sup>28</sup>

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### Abstract

*Various types of commercial property are leased throughout the world. The leasing market is simplified in this paper to consider only two types of property: improved and unimproved. While a prospective tenant may simply lease either type of property, that tenant may also choose to lease an unimproved property and improve it himself. This paper examines under what circumstances the owner should choose to improve the property and, similarly, when the tenant should choose to improve it.*

*Under the assumptions of this model, no tenant would ever make improvements, since if it were economically rational to do so, the owner would already have made the improvements.*

### Introduction

Commercial property is leased throughout the world. This paper will focus on the leasing markets and the

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<sup>28</sup> An earlier version of this paper was also presented at The Southwestern Economics Association Meeting in Houston, Texas: March 20-23, 1996.

improvements of properties in these markets. Improvements to a leased property might include:

- putting in new carpeting or overhead lights in an office building;
- constructing internal walls to designate individual offices; or
- installing a modern sewage system in an industrial plant.

These improvements (and any others that could be made to any type of commercial property) may be made either by the owner of the property (the owner) before leasing the property or by the tenant after renting it.<sup>29</sup>

The interaction between owners and potential tenants in this market is a complicated one. Owners must continually be looking for new tenants and must decide whether to make short or long term leasing agreements. Tenants must consider location, size, and other amenities of the available properties before entering into an agreement. In addition, while some types of property are somewhat standard (downtown office space)<sup>30</sup>, other types of property must often be tailored to the specific needs of an industry (i.e., high-tech industrial plants). Thus, the strategic thinking and decision-making processes of both the owners and potential tenants might involve:

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<sup>29</sup> The types of improvements that a tenant is allowed to make will vary by rental agreement. If the improvements are general – the improvements would be seen as a benefit to all future tenants – (i.e., putting in new carpeting) it is likely that the owner would allow such improvements to be made. If, however, the improvements would only specifically benefit the tenant making the improvements (i.e., installing a new front door with the name of the tenant's company engraved), the owner would be less likely to allow such improvements to remain with the property after the expiration of the lease.

<sup>30</sup> Although downtown office property may be somewhat standardized, individual properties (and their competitive rental rates) may vary tremendously based upon their location within the city.

- the owner deciding whether (and where) to advertise its property;
- the tenant's consideration of a long or short term lease; or
- the tenant's decision of whether to get space downtown or in the suburbs.

While these points, and many others, are interesting topics to consider in these markets, this paper will focus only upon (1) whether (and when) an owner should make improvements to its property, and (2) whether (and when) a tenant of unimproved property should make improvements to it during the time of its lease.

Analyzing the problem of improvements to commercial property is quite complicated, and must begin with a simplified, normative model. Previous research in this field has been performed by academics as well as commercial property leasing industry experts.

The leasing market is simplified in this paper to consider only two types of property: improved and unimproved. Thus, an owner may lease either an improved or an unimproved property to a tenant. The tenant may choose to (1) lease an unimproved property and improve it himself, (2) lease an unimproved property and not improve it, or (3) lease an improved property. This paper examines under what circumstances the owner should choose to improve unimproved property and, similarly, when the tenant should choose to improve it.

From the perspective of the owner, the decision of whether to improve the property reduces to whether the up-front costs of improving are less than the present value of the increased rent that it will receive from renting an improved property (instead of an unimproved property)

during the life of the property. That is, the owner will only make the property improvements if it can recover the costs (including opportunity costs) of improvement (through increased rent) over the life of the property.

The decision making process for the tenant is slightly more complicated in that it must first determine whether it is more costly to rent an improved property and pay the increased rent throughout the term of the lease or to rent an unimproved property (paying the lower rent) and incur the up-front costs of improvement.<sup>31</sup>

Once the tenant has determined which of these two options would be less costly, it must then compare that option to the option of simply leasing an unimproved property and making no improvements to it. That is, even if it is extremely inexpensive to rent an improved property or to make improvements to an unimproved property, it will still only be rational for the tenant to pursue that option if it will profit through more revenue or lower operating costs) by operating out of an improved piece of property.<sup>32</sup>

While tenants would pursue any of the three options described above under different circumstances, the focus of this paper will be on cases in which the tenant rents unimproved property and makes improvements. In this case, (1) the up-front costs of improving are necessarily less (in present value terms) than the increased rent over the term of the lease and (2) the increased profit of operating in an improved property exceed the up-front costs of improving the property. This paper shows that whenever it would be rational for a tenant to improve a property, the

<sup>31</sup> Although the rental difference (improved rate less the unimproved rate) is the same for tenants and owners, the analysis of each party to the transaction is unique.

<sup>32</sup> While a consulting business could benefit by the improvement of an advanced phone system (through decreased labor costs), the benefit to a manufacturing company of carpeting the plant's floors would be less obvious.

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owner would have already made the improvement. However, while actual tenants often improve property they rent, no conditions exist under which a tenant will have the opportunity to rent an unimproved property and make improvements to it (under the restrictions of this model). While this result is admittedly restrictive to the model described above, it does pose the question of whether actual tenants are over-improving property, and conversely whether property owners are under improving such property.

### Literature Review

Substantial research has been performed in the analysis of leasehold improvements. Most of the literature in this area, however, focuses on actual real estate situations or the tax implications of making improvements. A small sampling of this research is provided.

An example of the industry research was conducted by Bratt (1992), who concluded, among other things, that many property owners still fail to value the time value of money when deciding whether to make improvements to their property. He feels that owners merely consider the increased rental rates they will receive from such improvements.

Dupee and Rummell (1993) provided a detailed analysis of the tax implications for the owner of a property making improvements to it. According to their article, construction costs (when making an improvement) are booked by the landlord as tenant improvements, which is a capital asset. As a capital asset, it would typically be depreciated over 31.5 years. Further, this article discusses the tax differences between general improvements and

significant improvements. More tax concerns relating to property improvements are offered by Byrnes and Plescia (1993).

Alexander (1989) suggests that one of the most attractive options to property owners in a tough rental market is to provide the prospective tenant an improvement allowance specifying certain items to be included. The specific types of improvements that he suggests will benefit the landlord in the long run consist of adding restrooms, air-conditioning, a new store front, or upgrading light fixtures. Improvements that would have less of a direct benefit to the landlord include painting, carpeting, or tenant signs.

The above commentary shows that the topic of leasehold improvements has been discussed in a number of forums both from a tax perspective and a business perspective. There appears, however, to be little research regarding the tenant's decision of whether to improve the rented property. The following model may provide the genesis of this work.

### Modeling Improvements to Commercial Property

Modeling the commercial property market is simplified in this paper to assume that:

- all commercial property is identical except that it may only be classified as improved or unimproved. That is, any improved property is exactly the same as any other improved property. Similarly, there is only one improvement that may be made, so that any

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- the life of the property is  $L$  years and the term of all leases is  $l (<L)$  years;
- the benefits (increased revenue/decreased operating costs) to the tenant (defined as an annual benefit of  $p$ ) of operating in an improved property over the life of the lease are not significantly greater than the annual rental difference ( $\delta$ ) in the market for these two types of property over the life of the property;<sup>33</sup>
- the up-front cost to making the improvement is defined as  $IP$ ; and
- the rental market is assumed to be competitive with the annual rent of an unimproved property defined to equal  $t$  and the annual rent of an improved property defined to equal  $t + \delta$ .

### Decision of the Owner

The owner must decide whether to improve the property before renting it. As a profit maximizer, the owner will improve the property if it will earn more revenue, net of the improvement costs, than it would by leasing an unimproved property. The rental revenue (in net present

<sup>33</sup> Specifically, the following relation is true, using an interest rate of " $r$ ":

$$\sum_{i=1}^L \frac{\delta}{(1+r)^i} > \sum_{i=1}^L \frac{P}{(1+r)^i} \quad (*)$$

value terms using an interest rate of  $r$ ) earned by leasing an improved property over the life of the property, net of the up-front costs, will equal:

$$\sum_{i=1}^L \frac{t + \delta}{(1+r)^i} - IP \quad (1)$$

This could be rewritten as:

$$\sum_{i=1}^L \frac{t}{(1+r)^i} + \sum_{i=1}^L \frac{\delta}{(1+r)^i} - IP \quad (2)$$

Thus, the owner will earn its discounted annual rent of  $(t+\delta)$  over the  $L$  years of the property's life. To earn this improved rental fee, the owner must, however, incur an up-front cost of  $IP$ .<sup>34</sup>

If the owner, however, chooses to rent its unimproved property, it will then only derive annual rental fees of  $t$ , but it will not incur any up-front costs. Thus, its revenue would equal:

$$\sum_{i=1}^L \frac{t}{(1+r)^i} \quad (3)$$

As a profit maximizer, the owner would only choose to rent an improved property if the following condition held:

<sup>34</sup> This assumes, for the purposes of simplicity, that the improvement, and payment for the improvement, are made immediately.



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This could be rewritten as:

$$\sum_{i=1}^L \frac{\delta}{(1+r)^i} - IP > 0 \quad (5)$$

Thus, the owner would only improve a property if the following condition were met:

$$\sum_{i=1}^L \frac{\delta}{(1+r)^i} > IP \quad (6)$$

### Decision of the Tenant

The decision making process for the tenant is slightly more complicated in that it must first determine whether it is more costly to rent an improved property and pay the increased rent throughout the term of the lease or to rent an unimproved property (paying the lower rent) and incur the up-front costs of improvement. Since the term of the lease must always be no greater than the life of the property, this analysis of the tenant is slightly different from the analysis performed by the owner. The tenant's discounted rent payments for an improved property over the  $L$  years of the lease would equal:

$$\sum_{t=1}^I \frac{t + \delta}{(1+r)^t} \quad (7)$$

This could be rewritten as:

$$\sum_{t=1}^I \frac{t}{(1+r)^t} + \sum_{t=1}^I \frac{\delta}{(1+r)^t} \quad (8)$$

If the tenant were to rent an unimproved property, it would incur lower annual rent, but it would need to incur up-front costs of improving. For this option, the costs to the tenant of improving an unimproved property can be defined as:

$$\sum_{t=1}^I \frac{t}{(1+r)^t} + IP \quad (9)$$

Canceling out like terms from the two options described above, renting an improved property will be less costly than improving an unimproved property if equation 8 is less than equation 9:

$$\sum_{t=1}^I \frac{t}{(1+r)^t} + \sum_{t=1}^I \frac{\delta}{(1+r)^t} < \sum_{t=1}^I \frac{t}{(1+r)^t} + IP \quad (10)$$

After simplifying, this becomes:

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$$\sum_{t=1}^I \frac{\delta}{(1+r)^t} < IP \quad (11)$$

Once the tenant has determined which of these two options would be less costly, it must then compare that option to the option of simply leasing an unimproved property and making no improvements to it. That is, even if it is extremely inexpensive to rent an improved property or to make improvements to an unimproved property, it will still only be rational for the tenant to pursue that option if it will profit (through more revenue or lower operating costs) by operating out of an improved piece of property. In this sense, the tenant has three options (1) renting an improved property; (2) renting and improving an unimproved property; and (3) renting, without improving, an unimproved property. Thus, for a tenant to rent an improved property, the following two conditions must exist:<sup>35</sup>

(8) 
$$\sum_{t=1}^I \frac{\delta}{(1+r)^t} < IP \quad (12)$$

(9) 
$$\delta < p \quad (13)$$

(10)

<sup>35</sup> This equation describes the relation that an improved property is cost efficient if its annual increased revenue/cost savings (p) exceed its increased rental payments (r).

Similarly, for a tenant to improve an unimproved property, the following two conditions must hold:<sup>36 37</sup>

$$\sum_1^i \frac{\delta}{(1+r)^t} > IP \quad (14)$$

$$IP < \sum_{t=1}^i \frac{P}{(1+r)^t} \quad (15)$$

There is one other important condition that must hold for the tenant to improve an unimproved property. An unimproved property must be available to be rented.<sup>38</sup> That is, owners must have incentive to rent unimproved property. As shown previously in equation (6), the owner will only choose to rent improved property if:

$$\sum_{t=1}^L \frac{\delta}{(1+r)^t} < IP \quad (6)$$

<sup>36</sup> Since the tenant only has three options, if the two conditions do not hold for renting an improved property or for improving an unimproved property, the tenant will choose its third option and rent an unimproved property.

<sup>37</sup> Actually, if there is only a market for unimproved property (the owner has no incentive to improve the property), then only the second condition below must hold. However, this model assumed previously (see equation \*) that the increased benefit to the tenant must be less than the increased rent to an owner of an improved property. Thus, if an owner's increased rent cannot justify making improvements, the tenant's benefits cannot justify the tenant making improvements.

<sup>38</sup> In a real market, unimproved properties may exist that the tenant is unaware of. Further, all of a city's unimproved property may be rented at the time the tenant is entering the market. While both of these cases may occur, it is assumed that if someone is renting an unimproved property, the tenant will be able to rent that property for an annual fee of  $t$ .

However, if the first of the two conditions for the tenant to improve an unimproved property holds (equation (13)), it must be the case that equation (6) also holds and owners will only rent improved property. That is:

$$\sum_{i=1}^l \frac{\delta}{(1+r)^i} > IP \rightarrow \sum_{i=1}^L \frac{\delta}{(1+r)^i} > IP \text{ since } L > l \quad (16)$$

Given the interaction between the decision of the owner and tenant, one of the following three situations must occur:

1. Owner improves property and tenant wants to improve it himself: As shown in equation (15), situations occur in which the owner makes improvements, although the tenant would prefer to improve an unimproved property (i.e., equations (6) and (13) both hold). The result is that the tenant will rent an already improved property.
2. Owner improves property and tenant wants to rent improved property: When equation (6) holds, but equation (13) does not, the owner will improve its property, and the tenant would prefer to rent an improved property instead of improving an unimproved property. The result is that the tenant will rent an improved property.
3. Owner does not improve property and tenant has no incentive the property: When equations (6) and (13) do not hold, the owner will make no improvements and the tenant will have no incentive to improve the

property.<sup>39</sup> The result is that the tenant will rent an unimproved property and will not improve it.

Thus, the peculiar result is that under this normative model, the tenant will never improve property that is rents. This result, of course, does not accurately describe the actual markets for commercial property in which tenants often make improvements to their property. The following examples illustrate each of the three situations described above:

- (1) Suppose that a owner's property has a life of 10 years and leases run for 5 years. Annual rent for an unimproved property is \$500, and for an improved property is \$600. The cost of an improvement is \$350. The annual benefit to a tenant of renting an improved property is \$150. Using an interest rate of 10 percent, the owner has incentive to improve as:

$$\sum_{i=1}^{10} \frac{\$100}{(1.1)^i} = \$614.50 > \$350 \quad (17)$$

In this case, the tenant also has incentive to improve, as it would recover \$379.10 over the 5 years of the lease,<sup>40</sup> but all of the potential rental property will be improved, so it will be forced to rent improved property.

- (2) Using the same example while increasing the cost of improvement from \$350 to \$500, the owner has

<sup>39</sup> The tenant would prefer to operate in an unimproved property, as equation (6) does not hold. This, combined with equation (\*), also implies that the tenant prefers an unimproved property (i.e., Equation 14 does not hold.)

<sup>40</sup>  $[\sum \$100/(1.1)^i] = \$379.10 > \$350$

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incentive to improve since it recovers \$614.50 over the life of the property (\$614.50 > \$500), but the tenant has no incentive to improve the property. In any event, only improved property is available for the tenant, so it will rent improved property.

- (3) For the final case, assume that the cost of improvement has increased to \$700. The owner cannot recover its improvement costs (\$614.50 < \$700), so it will not improve the property. The tenant will only improve the property if it (a) can recover the costs by decreased rent or (b) can recover the costs through the \$150 annual benefits of operating in an improved property. For the tenant, the first case does not exist since the tenant can only recover \$379.10 of the \$700 improvement cost. Since the second condition does not hold either due to equation (\*), the tenant will rent an unimproved property and choose not to improve the property.<sup>41</sup>

$$\sum_{t=1}^5 \frac{\$150}{(1.1)^t} = \$568.60 < \$700 \quad (18)$$

<sup>41</sup> In this example, this equation (\*) suggests that:

$$\sum_{t=1}^5 \frac{\$150}{(1.1)^t} = \$568.60 < \$614.50 = \sum_{t=1}^{10} \frac{\$100}{(1.1)^t}$$

## Actual Markets for Commercial Property

When renting unimproved property, however, the tenants often make improvements to unimproved property. This is in direct conflict with the result of the normative model described above which showed that tenants would never improve property.

While the normative model was intended to be generally robust to actual commercial markets, some of the model's restrictions/assumptions may not hold in all situations. Such restrictions/assumptions, that may explain why tenants improve property in actual commercial markets, include:

- improvements are not standard: the normative model assumed that only one type of improvement could be made. In actual markets, there are hundreds of different improvements that can be made, often customized by the tenant. If an owner were to make a specific improvement before renting the property, it would lose the chance to lease to potential tenants that desired other types of improvements.<sup>42</sup> In fact, some very specific types of improvements made by the owner could lower the rent it would receive, as many tenants might consider them a negative.<sup>43</sup>

<sup>42</sup> A owner, for example, might build numerous interior walls in a downtown office space to create many private offices. Many potential tenants, however, would not want such offices, or would want the private offices set up in a very different manner.

<sup>43</sup> An example of this might be an owner putting in new wall-to-wall, purple carpeting in an office. Many firms would view this as an expense, since they would have to rip it out and re-carpet.



- the costs of making improvements may differ: a particular tenant may have made similar improvements to numerous properties in the past. Through this experience, the tenant might have learned how to efficiently make these improvements. Thus, through lower improvement costs, the tenant may be able to recover its costs in situations where the owner could not recover its costs; and<sup>44</sup>
- specific value to a tenant: the normative model assumed that the benefits (increased revenue/lower operating costs) to a tenant of renting an improved property could not be significantly larger than the difference in rent between the two types of property. An actual tenant may derive benefit ( $p$  in the normative model) that significantly exceeds the rental difference ( $r$ ) for the two types of properties. This can produce a situation in which neither the owner nor tenant can recover the improvement costs through rent differences, but the tenant can recover the improvement costs through increased revenue/lower operating costs.

For these reasons, and others, the normative model does not capture all aspects of actual commercial markets for rental property.

### Summary

The normative model showed that a potential tenant would never rent an unimproved property and make

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<sup>44</sup> This situation is not likely to occur, as typically both the owner or tenant would hire a firm to make the improvements.

improvements to it. This result differs from the true behavior of leaseholders of commercial property who often make significant improvements. A number of reasons may exist for this discrepancy, including: (1) firms want different types of improvements; (2) some firms may be able to make improvements more efficiently; and (3) potential tenants gain different benefit (decreased costs/increased revenue) from operating in an improved property. Including any combination of these three points in an extension of the normative model would be an appropriate topic for future research.

While the above reasons may explain why tenants actually improve property that they rent, these markets also call for the coordination between owners and tenants. Owners need to be aware of the value of improvements to tenants before making their decisions over whether to improve property. That is, tenants will not improve property if they believe that the value of improvements to tenants is so small that they will not pay the increased rent ( $\delta$ ). In these cases, there is no way for the owner to recover its up-front improvement costs. Since owners do not know in actual markets the value to tenants of improved property, two potentially inefficient situations can occur:

- Owners underestimate value of improvements to tenants: This will cause there to be less than an efficient number of improved property available.
- Owners overestimate value of improvements to tenants: This will cause there to be more than an efficient number of improved property available.

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Modeling the potential coordination between owners and tenants may be very complicated, as owners do not know whether the tenants would be willing to pay the increased rent of improved property. In this sense, economics provides some tools for analyzing this problem. The problem could be simplified as a strategic interaction between one owner and one tenant. The owner would maximize its expected value based upon knowing that the tenant's internal value for improvements ( $p$ ) is distributed from 0 to  $P$ . Within the same context, there is the possibility that the tenant has ability to signal its preferences (value of improvements) to the owner. These ideas could also provide some insights for future research.

This paper has attempted to begin the process of modeling the market for the rentals of commercial property. While the result obtained in this normative model is not totally consistent with actual markets, there are numerous avenues to pursue extensions and future research.

## References

- Alexander, A., At What Price Concessions? , The Journal of Real Estate Development, Vol. 4, #4, Spring 1989.
- Bratt, M., Leasing to Maximize Cash Flow , Journal of Property Management, Volume 57, #2, March 1992.
- Byrnes, D., and Plescia, Tax Consequences of Tenant Leasehold Improvement Allowances, Journal of Property Management, Volume 58, #2, March 1993.
- Dupee, D. and Rummell, Landlord's Ability to Write off Discarded Tenant Improvements , Tax Adviser, Volume 24, #3, March 1993.