MSRE Master Thesis

Valuation of Vacant Properties

Serge Schiltz

Master of Science in Real Estate Study Program
Amsterdam School of Real Estate

January 2006

Tutor: F.G. Van Hoeken

Preface

This thesis has been written as part of the Master of Science in Real Estate study course at the Amsterdam School of Real Estate.

The appraisal of vacant properties is often experienced by practitioners as an area of unusual difficulty and uncertainty. It is also an issue that regularly raises questions and causes discussions amongst the recipients of valuation reports. It is furthermore a field where only little scientific research has been undertaken.

Formalizing and quantifying the risk of vacancy is however essential to get a deeper understanding of real estate's unique and idiosyncratic investment characteristics. This study intends to contribute to such understanding.

I would like to thank all those who have assisted me in this study, namely my tutor Mr. Frans Van Hoeken, but also all those appraisal practitioners who where instrumental in the realization of this investigation.

Amsterdam, January 2006

Serge Schiltz

Executive Summary

In this study it has been attempted to gain insight into how vacancy affects the perceptions of property values by appraisers, how vacancy is dealt with in the current appraisal practice and whether there are alternative approaches that would be worth considering. The central question of the study is: "What impact does vacancy have on the appraised market values of commercial properties and how can this impact be modeled quantitatively for the purpose of valuation?"

Existing appraisal literature has been reviewed on the problem of the valuation of vacant properties. Only little room is given to the issue in practice manuals. The appraisal of vacant property is not treated as a subject requiring specific approaches. Published research papers in academic journals about the theme are scarce and are mainly concerned with cash flow related impacts of vacancy.

Although the concept of vacant possession value is widely used in practice, none of the major valuation guidelines gives a definition of it. It may however be useful or even necessary in the future to agree on such a definition. It has therefore been proposed to define the concept of Vacant Possession Value as the market value of a property under the assumption that it is unlet, vacant and available for occupancy. It has subsequently been shown that the vacant possession value of a property is characterized by a significantly greater volatility throughout the market cycles than the market value. It has also been shown that the market value evolution of a given property normally oscillates between the market value of that property if assumed fully let and the vacant possession value. It has finally been stipulated that in difficult markets, transactions of vacant properties tend to dry out. The reason hereof lies in a growing gap between the worth perceptions of sellers and buyers. Empirical studies have shown that this gap widens as the remaining lease term of a property becomes shorter.

In interviews with employees of a representative sample of Dutch commercial appraisal firms the difficulties in appraising vacant properties due to the absence of sufficient market evidence were unanimously confirmed.

By means of a case study submitted to the interviewed appraisal firms it was attempted to gain insight into the methods and techniques employed by professional appraisal firms, and to grasp what impact the risk of vacancy may have on the outcomes of value estimations and on the spread of the outcomes. The case study consisted in the assessment of the market value of an existing property under different assumptions of occupancy and lease terms.

All approached appraisal firms returned estimates of the required values. The results of the case study have confirmed that valuers face considerable uncertainty when estimating vacant properties. The variance in outcomes is significantly higher than for let properties, and the spread in the outcomes grows with shorter lease terms.

According to a majority of valuers the value- and yield shifts between a property let on a lease with a short remaining term and a vacant property are proportionally more important than between properties let on leases with differing remaining terms. This implicitly reflects the probability that a sitting tenant might renew the lease.

The yield- and value shifts in function of the physical occupancy of a property can be considered to be approximately proportional to the occupancy rate.

In the appraisal literature different methods have been suggested to deal with valuing properties in illiquid markets, or when no comparables are available. These methods were reviewed and it was especially expanded on the depreciated replacement cost- and the discounted cash flow methods. Eventually none of these two approaches offers any particularly adequate solution to the problem of valuing vacant property.

Building on the traditional direct capitalization method and extensions of it like the term and reversion method and the arbitrage method developed by French and Ward, a valuation model that explicitly separates different risk components, amongst which the vacancy component, was developed. In this model the value is expressed as the sum of the value of the current lease plus the renewal-probability weighted discounted value after lease renewal plus the break-probability weighted discounted vacant possession value. It has been shown that this model allows to relate the vacant possession yield to the yield shifts for fully let properties with differing remaining lease term. If these yield shifts can be observed in the market, the implicit vacant possession yield can be determined given an estimated lease renewal probability.

Although a vacant possession yield determined in this way through, observed yield shifts, is not directly obtained from market evidence, it is nevertheless implicit in the yield shifts observed in the market. The yields at which fully let properties are traded in the market imply already a vacant possession yield, even if this latter one is not directly observable.

The application of the model necessitates estimations of lease renewal probabilities and a range within which lease renewal probabilities are deemed reasonable has been delimited.

The application of the model furthermore requires the estimation of the value of leases. Extensive coverage was therefore given to the valuation of cash flows from signed leases. Leases were compared to long-term corporate debt regarding legal structure, default risk, liquidity and inflation hedging. An appropriate discount rate for lease cash flows was estimated by reference to the bond market.

The earlier developed valuation model was then applied to the case study and the results were compared to the outcomes that had been returned by the appraisal firms. It could be shown that the results produced by the valuation model were largely in line with the empirical outcomes of the appraisal firms, and that the model therefore appears to adequately describe the perceptions of a representative sample of valuation practitioners.

Table of Contents

Introduction

In 2000-2001 the majority of the European commercial property rental markets entered into a downward phase of the cycle. By 2004 this movement had translated into considerable increases in the amount of vacant space in the affected markets, and namely in the Dutch office market. If vacancy rates for the Amsterdam region have been below friction level in the late 1990es, the 2004 figures have put Amsterdam on one of the top European ranks in terms of vacant space. The overall supply on the Dutch office market has reached historic levels, and at the same time the amount of structurally vacant spaces shows a growing tendency.

Under these circumstances the issue of the valuation of vacant spaces has gained new relevance. Market participants are increasingly confronted with properties that have remained or are expected to remain vacant for a considerable amount of time. This phenomenon evidently puts a challenge to traditional valuation approaches.

In space markets that are at or close to equilibrium, vacancy can be considered as a temporary status for a given property, assumed the building comprises space that is in principle marketable. The property is therefore merely subject to the usual real estate re-letting risk, and sales of vacant properties are not totally uncommon in balanced space markets.

In a space market with a significant supply surplus however, the situation presents a qualitative difference. Not only is the re-letting risk now of a different nature, as it includes the risks attached to the temporary market disequilibrium, but in addition sales of vacant properties very often dry out completely, as the typical investors (and their lenders) are unwilling to take-over such increased risks.

This presents a dilemma to current valuation practice, which is fundamentally reliant on the availability of appropriate market evidence. Sufficient comparable transaction data would allow appraisers to quantify the re-letting risk in market disequilibrium with a reasonable degree of confidence. In the absence of such data however, appraising becomes a highly speculative and uncertain exercise.

These observations set the scene for the proposed study. They may serve to underline the importance and usefulness of investigating current valuation approaches to vacant properties and possible alternative techniques.

Purpose of the study

To gain insight into how vacancy affects the perceptions of property values by appraisers, how vacancy is dealt with in the current appraisal practice and whether there are alternative approaches that would be worth considering.

Central question of the study

"What impact does vacancy have on the appraised market values of commercial properties and how can this impact be modeled quantitatively for the purpose of valuation?"

The focus is on the micro-level, i.e. the individual property level, and has only indirect implications for portfolio level considerations. The study will be concerned with assets that can in principle be let. It does not therefore treat properties that, although still being counted as part of the stock, are no longer marketable due to technical or economical obsolescence. Furthermore the study will be concerned exclusively with investment property, i.e. assets destined to be let to third parties in order to achieve rental income. Finally the emphasis will be on commercial real estate, and namely the office sector.

Structure of the study

The following general structure of investigation is proposed:

1. Vacancy in the existing appraisal literature
2. Conceptual framework for the concept of vacant possession value
3. Vacancy in the current appraisal practice
4. Alternative approaches
5. Market Implied Vacant Possession Values
6. Conclusions

The different chapters are each outlined in what follows.

1. Vacancy in the existing appraisal literature

In this chapter, existing appraisal literature will be reviewed with regard to the issue of vacant properties. The focus will be limited to literature that is concerned with valuation techniques in the narrow sense. This includes a number of well-known practice manuals as well as relevant papers published in academic journals.

The method of investigation in this chapter will be based on literary research. The aim is to gain an overall view of the methods and techniques that have been suggested in the past to face the problem of appraising vacant properties.

2. Conceptual framework for the concept of vacant possession value

In this chapter a formal definition of the concept of "vacant possession value" will be proposed. A theoretical model will then be developed, which will allow to explain the

relation between market value and vacant possession value throughout different phases of the market cycle. Subsequently it will be shown how the relation between market value and vacant possession value changes for a property in function of the remaining life of a lease.

The method of investigation will be theoretical analysis: on the basis of a set of definitions, assumptions and hypotheses a theoretical conceptual (not quantitative) model will be developed. The aim is to provide a conceptual framework for the interpretation of the vacant possession value. This model will be useful as a guide for the remaining chapters of the study.

3. Vacancy in the current appraisal practice

After having reviewed the techniques for valuing vacant properties that have been brought forward in the appraisal literature, the currently prevailing appraisal practice will be compared to these. For practical reasons, only the Dutch appraisal practice for commercial properties will be subject of analysis.

The method of investigation will be by enquiries and interviews. Interviews will be lead with employees of 6 major commercial appraisal firms in the Netherlands. At the same time, these firms will be asked to undertake desktop value calculations for a predetermined office property, assuming varying states of occupation, from fully let to 100% vacancy, as well as varying lease expiry terms. The aim is to gain insight into the methods and techniques currently employed by practitioners for valuing vacant (or partly vacant) properties. The quantitative effect of vacancy on the appraised market value of a given property will be shown. Furthermore, the question whether the variance in the outcomes between different appraisers changes with increasing vacancy, and if so by what degree, will be addressed.

4. Alternative approaches

The valuation of vacant properties is a special case of the more general issue of the valuation of real estate where no market evidence exists or only limited market data is available. This subject has been investigated by a number of scholars and two alternative methods are recurrently brought forward if traditional direct capitalization models fail: the depreciated replacement costs method, and the discounted cash flow method. Both these methods will be reviewed, and their appropriateness and usefulness for the valuation of vacant properties will be critically examined.

The method of investigation in this chapter will be based on literary research and general analysis.

5. Market Implied Vacant Possession Values

In this chapter the traditional direct capitalization valuation model will be modified and extended in a way as to make vacancy and the associated risk explicit. It will then be shown that the yield shift for properties let on differing remaining lease terms implies a vacant possession yield, and that if the yield shift can be observed in the market, the corresponding market implied vacant possession value can be determined.

As the proposed valuation model requires the correct determination of the present value of rent payments resulting from a signed lease, the determination of the appropriate discount rate for such cash flows will be a special part of the investigation.

The model is subsequently tested by applying it to the case study of chapter 3. The results from chapter 3 will also allow other interesting cross-relations and verifications.

The method of investigation will be a quantitative analysis backed by financial economics theory.

6. Conclusions

The main findings of the study will be summarized in this chapter. Suggestions and proposals concerning future developments in both the prevailing appraisal practice as well as concerning future research will be made.

1. Vacancy in the existing appraisal literature

In this chapter, existing appraisal literature will be reviewed with regard to the issue of valuing vacant property. The focus will be limited to literature that is concerned with valuation techniques in the narrow sense. This includes a number of well-known practice manuals as well as relevant papers published in academic journals.

PRACTICE MANUALS

We will limit our review of practice manuals to three books that can be regarded as representative for the appraisal practice in their respective countries of origin. Our choice may appear arbitrary, but all three manuals represent well-established and comprehensive standard works.

Kenneth M. Lusht: Real Estate Valuation, Principles and Applications (2001)

Whilst a huge number of textbooks and manuals about real estate investment theory, many of which also cover the basic appraisal principles and techniques, are published on the American market, few true appraisal practice manuals exist. Lusht is a notable exception and the original 1997 edition was updated in 2001.

Vacancy as a special issue for valuation is however not given any specific coverage. Some comments are given about necessary vacancy allowances that have to be considered as cash flow corrections. An interesting concept regarding differing appropriate discount rates for leasehold and freehold valuations is introduced at a later stage but without explicit reference to vacancy. This is nevertheless a concept that may prove useful when dealing with vacancy, as will be seen later in this study.

Tony Johnson, Keith Davies, Eric Shapiro: Modern Methods of Valuation (2000)

This is one of the UK's practice manuals with the longest track record, as the first edition dates from 1943, and none of the authors of the current ninth edition contributed to the original edition. This book can thus be regarded as a truly collective enterprise over a long time horizon.

The book is however nearly completely silent over the issue of vacancy. Vacancy is only mentioned in one paragraph: "In some areas and for some properties, it is customary to make an allowance for those periods when a property will be unlet and non-revenue producing." The paragraph further advises to treat costs normally recoverable from tenants as outgoings in respect of vacant parts of a property. For the remainder of the book, vacancy is not mentioned anywhere.

George T.M. Ten Have: Taxatieleer vastgoed 1 (2002) and 2 (2003)

This has now become the undisputed standard appraisal manual for the Dutch market. The first edition appeared in 1992, and the current third edition has been revised and extended comprehensively.

This book makes useful differentiations between initial vacancy, structural vacancy and frictional vacancy and gives orientations on how to treat these different forms in the value calculations. The concept of financial vacancy is defined, and the issue of the yield estimation in illiquid markets is briefly touched. Generally however, vacancy is not treated as a valuation case that would require a qualitatively different approach.

RESEARCH PAPERS

Whilst vacancy as market phenomenon has been the subject of innumerable articles and papers, the valuation of vacant properties as a specific problem for appraisal has not encountered much attention in the academic press.

The most complete contribution has come from Wincott (1997). The different types of vacancy are reviewed and very detailed technical advice is given on how to deal with these different types in both direct capitalization and discounted cash flow methods. The article is centered on how to make reasonable assumptions for vacancy as cash flow correction.

Rabianski (2002) follows a similar track but enriches the analysis by considerations on how to correctly use market data for the cash flow forecasts.

In an earlier article, Dreyer and Mathieson (1995) have pointed to the fact that assumptions concerning stabilized vacancy, lease term and re-letting periods need to be consistent between themselves in cash flow forecasts for discounted cash flow appraisals.

Whilst all these articles concentrate thus on cash flow related issues, Anglyn (2005), in a very original contribution, has highlighted that vacant property, as a category of distressed real estate, cannot only be approached solely by cash flow based corrections. The specific nature of more entrepreneurially oriented buyers of such property would imply risk compensations that cannot be modeled on a pure cash flow basis. Additional yield corrections are therefore necessary when appraising distressed property. In an earlier article (1992) this approach is illustrated by examples.

2. Conceptual framework for the concept vacant of possession value

In this chapter a formal definition of the concept of "vacant possession value" will be proposed. A theoretical model will then be developed which will allow us to explain the relation between market value and vacant possession value throughout different phases of the market cycle. Subsequently it will be shown how the relation between market value and vacant possession value changes for a property in function of the remaining life of a lease.

DEFINITION

None of the major valuation guidelines contains an explicit definition of what the "vacant possession" assumption means. Also is there no definition of a "vacant possession value", although this expression appears to be frequently used by practitioners.

If a formal definition for the concept of vacant possession value is proposed here, it is in the first place to clarify the expression for the remaining parts of this study. It is not the intention to add another "official" value definition to the plethora existing ones. It may however appear in the future that such a formal definition of vacant possession value would become useful or even necessary to avoid confusion.

The definition proposed here has been adopted from Fox (2005) with slight alterations and applies explicitly to investment properties, i.e. assets destined to be let to third parties in order to achieve rental income.

Vacant Possession Value is defined as

"The **Market Value** of a property, but on the assumption that the property is
- **unlet**,
- **vacant**, and
- **available** for occupancy"

The vacant possession value therefore is a market value, and all guidelines, methods, rules and techniques that govern the estimation of the market value are equally applicable to the vacant possession value.

The vacant possession value is however a market value based on certain assumptions concerning the property:

a) the property is assumed to be unlet: the use of the property has not been contractually fixed or specified in any form; the owner still has the freedom to negotiate a lease without restriction (this implies also that no letter of intent or heads of terms have been signed);

b) the property is vacant: the property is not occupied by any third party; occupancy by a new tenant would not be dependant on prior vacation by, or eviction of another party;
c) the property is available for occupancy: the property is in such a physical state that it could be occupied immediately, and no public-law stipulations would exclude immediate occupancy.

If these three assumptions correspond to the effective situation of a property, then the market value of that property will be equal to the vacant possession value (both values will cover the same reality). In all other cases, the vacant possession value will be a hypothetical value different from the actual market value of the property.

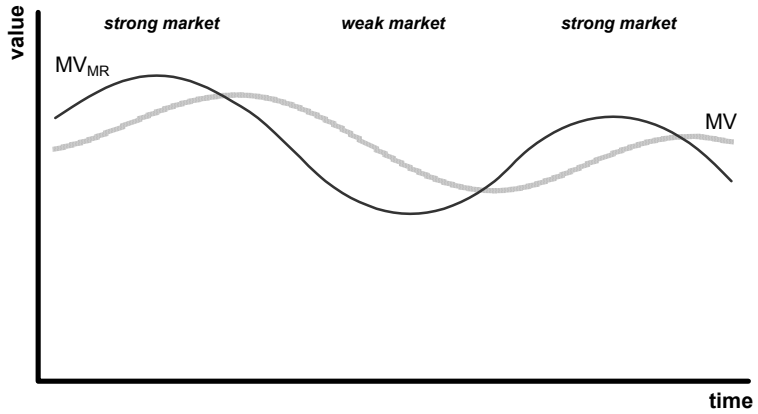
Market value and vacant possession value are however not completely unrelated to each other. Depending on the market cycle and on the letting status of the property, both values can differ to a greater or lesser extend from each other. We will start with an examination of the effects of the market cycles.

VACANT POSSESSION VALUE AND MARKET CYCLES

From a practical point of view, the vacant possession value can be understood as the market value of the property if let on the date of valuation, but corrected for certain losses and risks.

Therefore the starting point of any estimation of the vacant possession value will be the market value of the property if fully let at market rental level. The special assumption of vacancy will then have to be taken into consideration by applying the relevant corrections and allowances.

The evolution over time of the market value of a property constantly let at market rental level (MV_{MR}) could be represented schematically by the black line on the following figure:



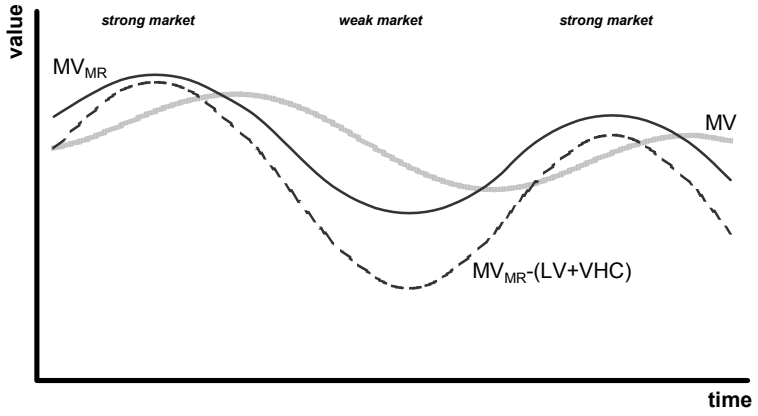
The grey line schematically represents the evolution of the "real" market value (MV) of the property if let to numerous tenants with well spread lease expiry dates. Whereas the evolution of MV_{MR} fully reflects the rental market cycles, the evolution of MV is lagged and smoothed due to the effect of the leases. The impact of the market cycles is weakened and delayed.

Technical and economical depreciation are reflected in the figure by a long term declining tendency in the value evolution.

Considering the corrections and allowances that need to be made to arrive from MV_{MR} at the vacant possession value (VPV), the most obvious and straightforward deduction that needs to be taken into consideration is a letting void, i.e. the loss of rental income until the property is let. This is directly dependent on the estimated re-letting period and can be expressed as the product of re-letting period x market rental value. A longer re-letting period automatically leads to a higher letting void deduction. The appropriate expected re-letting period would include an expected rent-free period in the given market.

A second correction closely dependent on the expected re-letting period consists in the vacancy related holding costs, i.e. costs related to the ownership of the property but which would normally be borne by the tenant. Here the applicable expected re-letting period would however not include an expected rent-free period, as tenants normally have to bear the respective costs from the starting date of the lease, regardless of any rent-free periods.

As both these corrections are directly dependent on the expected re-letting period, the resulting correction that needs to be applied to MV_{MR} will vary with the market cycle. In a strong rental market, the expected re-letting period will be short, and the correction due to letting void and vacancy related holding costs will consequently be small. In a weak rental market however, the expected re-letting period will be longer, and the correction will be more important. This is represented by the following figure:

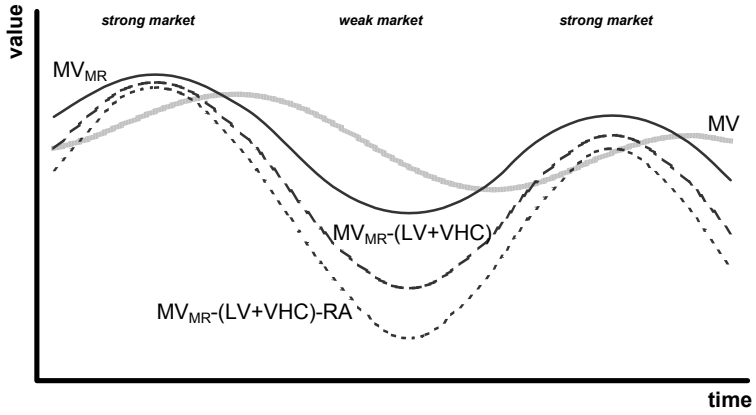


The dotted line corresponds to the evolution of the value of a property constantly let at market rental level MV_{MR} but taking into consideration the necessary corrections for

letting voids LV and vacancy related holding costs VHC. Conceptually the line represents the evolution of the market value of a property let at market rental level, but where the lease would only start after a period equal to the expected re-letting period. Although this is a highly hypothetical perspective, it is not an impossible one. A property could be let at market rental level but with a lease starting only after a period that by some coincidence would be exactly equal to the expected re-letting period for that property in the given market. Contrary to an unlet situation, there would be no uncertainty as to the moment when the lease starts and as to the agreed rent. Such a property will therefore bear considerably less risk than the same property in the same market, but unlet. In both cases however, the calculatory correction for letting void and vacancy related holding costs would be identical.

As a consequence, there needs to be an additional correction for the uncertainty surrounding unlet properties as regards the assumptions of the re-letting period and the market rental level. This correction could also be regarded as risk compensation in the sense of Anglyn (2005). It may be useful to recall that risk in modern finance is defined as the spread of the probability distribution of future outcomes, and not as the mean of the distribution. For instance, a market situation where there is an equal probability that a property will be let in either 6, 12 or 18 months is perceived to be more risky than a situation where there is en equal probability that the property will be let in either 9, 12 or 15 months, although the average calculatory re-letting period (the mean) is the same. Therefore, even after deduction of any costs and losses due to vacancy, a vacant property remains riskier than a let property and consequently requires an additional risk related correction.

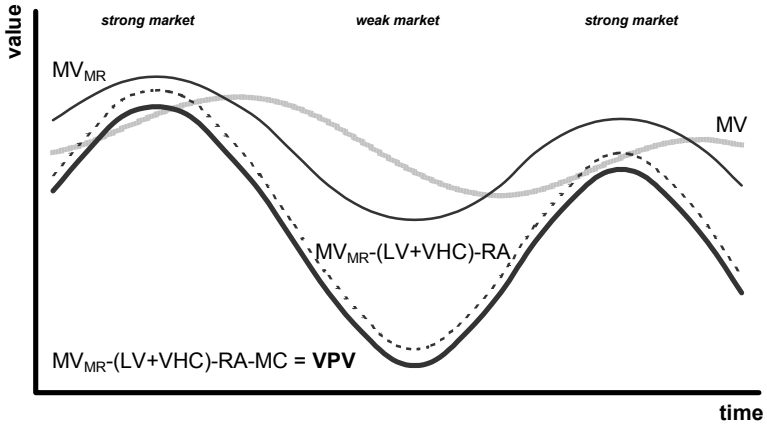
The amount of this correction will vary with the market cycle. In weak markets the re-letting risk will be higher than in strong markets, regardless of the expected re-letting periods. Therefore the risk adjusted evolution of the value of a vacant property will move with the general market cycle, as is represented by the following figure:



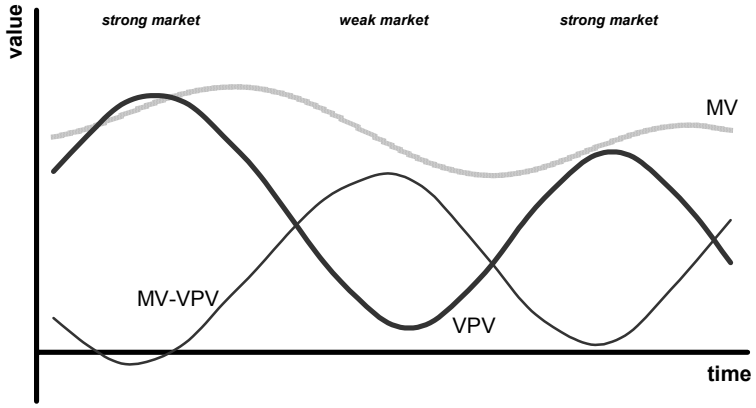
The second dotted line corresponds to the evolution of the value of a property constantly let at market rental level MV_{MR} but taking into consideration the necessary corrections for letting voids LV and vacancy related holding costs VHC as well as an appropriate risk

adjustment RA. The risk adjustment will be more important in weak markets than in strong markets.

A last correction concerns the costs to market the property on the rental market. These marketing costs normally comprise brokerage fees and may also include some refurbishment costs that have to be made in order to bring the property into a marketable state. What these costs have in common is that their amount neither depends on the expected re-letting period (as they are one-off costs), nor on the market cycle. They rather can be considered to be fairly constant over time. Deduction of these marketing costs MC from the earlier considered risk adjusted value MV_{MR}-(LV+VHC)-RA therefore leads to the vacant possession value (VPV), represented by the fat continuous line in the following figure:



As can be seen, the evolution of the vacant possession value of a property shows a considerable volatility over time. Compared to the evolution of the market value of the property when considered fully let to numerous tenants on leases with well spread expiry dates, the vacant possession value can either reflect a deep discount or could temporarily even exceed the market value. This can especially occur at the peak of the market cycle, when the expectation is that a vacant property will be re-let in a very short time, and when the market rental level can be above the rent passing of the let property. The effect of a higher rental income may then more than offset the negative corrections due to letting void, vacancy related holding costs, risk adjustment and marketing costs. In most cases however, and during most phases of the cycle, the vacant possession value can be expected to be lower than the market value of the fully let property:



The vacant possession value therefore is subject to the market cycles in a multiple way. Not only are the market rental level changes immediately translated into the vacant possession value, but the effects of varying expected re-letting periods and changing risk perceptions come to amplify the influence of the cycles on the vacant possession value.

The vacant possession value of a property at a given date is therefore far from being a long-term sustainable value figure. It does not represent some kind of secure fallback value at which a purchase could always be realized. Quite to the contrary, the vacant possession value of a property estimated at one point of the cycle may differ far more significantly from the vacant possession value of the same property estimated at a different point in the cycle than would be the case with the respective market values.

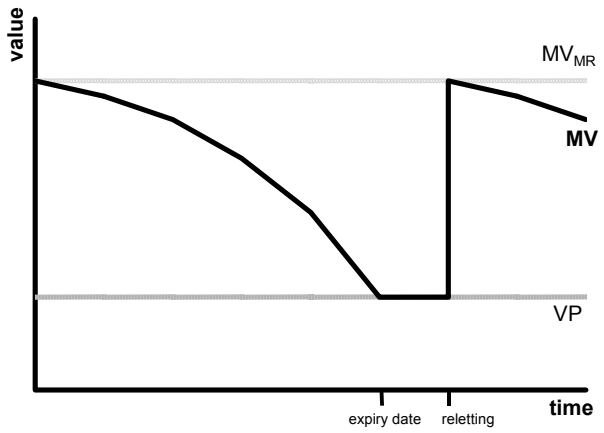
VACANCY AND LETTING STATUS

So far the evolution of the vacant possession value of a given property throughout different phases of the market cycle has been analyzed, and it has been compared to the evolution of the market value of the same property but assumed fully let. We will now consider how the market value of a property would evolve over time in function of its letting status and how this relates to the vacant possession value. To isolate the effects of the letting status, it will be assumed that the market situation remains constant over time.

Let us consider a property that has been fully let at market rental level to one single tenant on a lease with a term of x years. At the start of the lease the property's market value will be MV_{MR}, i.e. the market value of the property if fully let at market rental level on a lease with a remaining term of x years. As the market situation is assumed to be constant over time, MV_{MR} will be constant over time as well (for the sake of clarity the effects of technical and economical depreciation of the property are not taken into account here). The same holds true for the vacant possession value VPV of the property.

Under unchanged market conditions, the vacant possession value will remain constant over time (if depreciation effects are neglected).

If it would be entirely clear from the start of the lease, that after the expiration of the initial contractual term the tenant would effectively vacate the property, than the evolution of the market value MV of the property would correspond to the black line in the following figure:

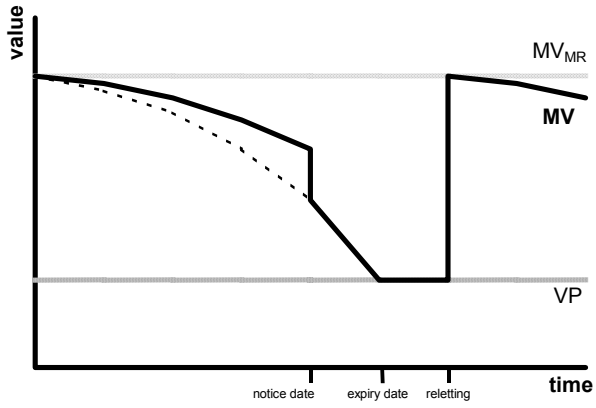


The market value would continuously decline until it would have reached the vacant possession value on the expiration date of the lease contract. The property would then remain vacant for some time until a new lease would be signed. During this vacant period the market value would per definition remain equal to the vacant possession value. Upon re-letting (assumed to be at market rental level and on a lease with a term of x years) the market value would again rise momentarily to MV_{MR} and the cycle would repeat itself.

This evolution of the market value of a property is however based on the assumption that from the start of the lease and throughout the entire term it is unequivocally clear that the tenant will vacate the property upon lease expiry. This situation may effectively arise in certain cases, e.g. where a tenant temporarily rents spaces in one property until spaces in another property (either new development or refurbished) become ready to use. At the start of the lease it however normally unclear, whether the tenant will actually leave the property after the expiration of the contractual term or not. Many leases provide automatic renewal options to the benefit of the tenant, and in such a case the tenant has to formally terminate the lease before a certain contractually fixed notice date if the renewal option is not to become effective. But even in the absence of a contractual renewal option, there is normally a certain probability that the tenant in place might rather stay in the property and sign a new lease than vacating the property. Moving to new premises is not cost neutral for tenants, and therefore it is often preferable to remain in the occupied property when compared to moving to an equivalent property on an identical lease.

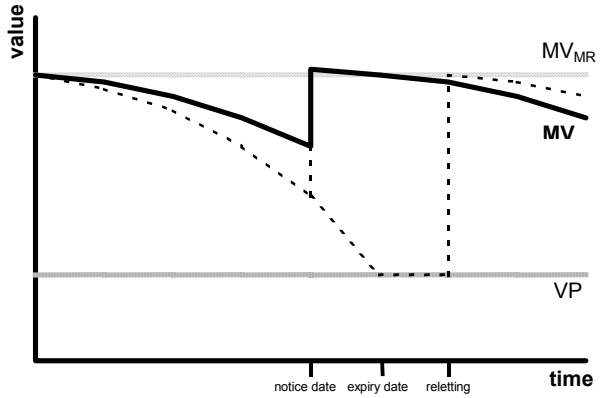
As the market value results from the aggregate expectations of the market actors, the evolution of the market value according to the letting status of a property will include an expectation element with regard to a potential renewal of the lease of a tenant in place.

As long as the tenant in place has not formally served notice to end the lease, the probability that the property will fall vacant after the expiry of the initial lease term will be perceived to be lower than 100%, and therefore the market value will be higher than in the situation illustrated above, where the probability of vacancy after expiry of the initial term was 100% from the start. Only once the tenant in place has formally terminated the lease, will the market value revert to the evolution described above. This is illustrated by the following figure:



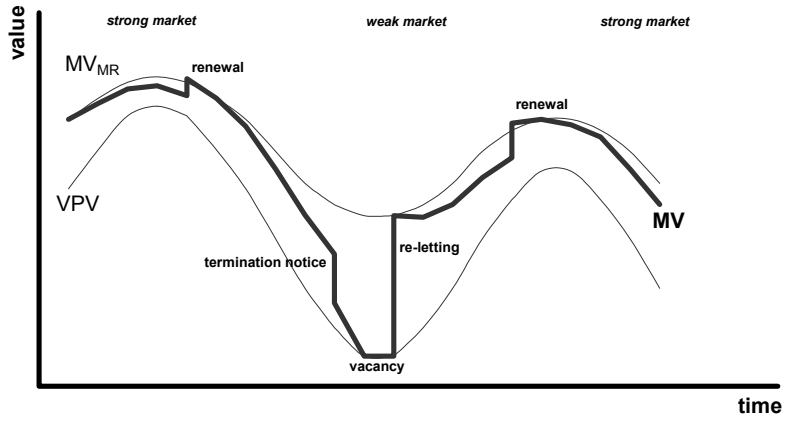
Until the notice date it remains unclear whether the tenant will effectively vacate the property, and therefore the expectation that the lease might be renewed exerts a positive influence on the value evolution. Once the lease is formally terminated, the probability of renewal abruptly falls to 0% and the value will revert to the level as in the earlier scenario.

If, on the other hand, the lease is renewed, the evolution of the market value will show a different picture. If for example a lease has an automatic renewal option and is not terminated by the tenant, the evolution of the market value of the property will show the evolution illustrated by the following figure:



Once the notice date has elapsed without the lease having been terminated, the market value of the property will instantly rise to an amount slightly higher than MV_{MR}, as the remaining lease term will now not only extend over x years but include the time period between the notice date and the expiry date of the initial term.

Combining the effects of the market cycle and the letting status, the value evolution of a notional single-tenant property could be represented as follows:



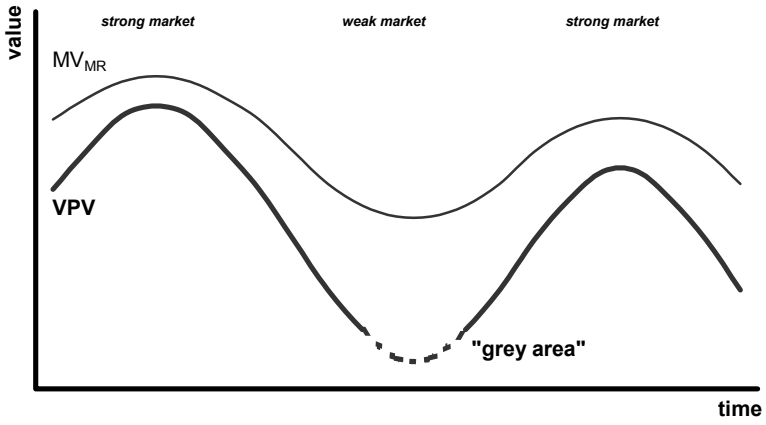
This figure gives an idea of the potential volatility of a single tenant property. This volatility can be evened out to a large degree by constituting portfolios with a large spread in lease expiry dates and with properties subject to different market cycles.

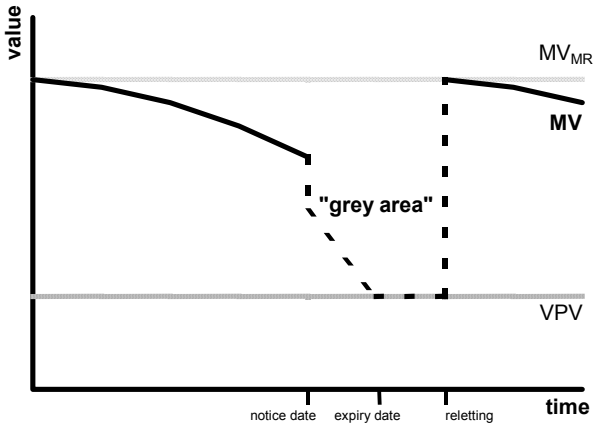
"GREY AREAS"

As has been shown above, the discount of the vacant possession value to the market value of the same property but assumed fully let is especially pronounced in downward phases of the market cycle. Selling a vacant property under such circumstances therefore potentially implies a significant loss when compared with a sale of the let property, and may therefore be regarded as an unattractive option by many owners. On the other hand, purchasing fully vacant properties at the bottom of the market surely is only something for very opportunistic investors. Although these exist, they certainly do not make out a large part of the investment market. In downward market phases, market sales of vacant properties therefore have a tendency to dry out. (It has to be remembered in this respect, that any forced sale, and indeed any sale where the seller does not act without compulsion, cannot be taken as market evidence for the determination of market value.) This creates a sort of "grey area" for property valuation, as the available market evidence may simply become insufficient to reasonably conduct a value estimation of a vacant property.

This is true not only of effectively vacant properties, but also applies to properties that are known for certain to become vacant within a short period (i.e. properties where the tenant has given notice to terminate the lease), and may extend to properties that could reach this status soon (i.e. properties where the notice date is close).

The phenomenon of "grey areas" for valuation may be illustrated by the following figures:





The cause for these grey areas is to be searched in increasing divergences between a seller's and a buyer's subjective worth perception of a property. The following figure is based on an analysis of sales negotiations carried out by DTZ Zadelhoff and illustrates the growing bid-ask spread as the remaining lease term of a property shortens:

source: DTZ Zadelhoff

For properties with remaining lease terms of less than 5 years, the gap between asking price and bid-price becomes increasingly unbridgeable. Hence there are nearly no transactions observable for such properties.

It might be argued that solely the bid-prices are relevant for the determination of the market value, as it would not be possible to sell above the highest bid-price anyway. Such reasoning would however reflect a one-sided interpretation of the concept of market value, which is explicitly based on the assumption that both parties in a transaction act without compulsion. If therefore no seller would be prepared to sell at a buyer's bid-price, the latter cannot correspond to the market value.

Estimating vacant possession values, especially in difficult letting markets, may therefore be considered as a specific case of the more general problem of the valuation of assets in illiquid markets. We will review the approaches to this issue that have been proposed in the past in chapter 4.

3. Vacancy in the current appraisal practice

After having reviewed in chapter 1 the techniques for valuing vacant properties that have been brought forward in the appraisal literature, the currently prevailing appraisal practice will be set off against these. For practical reasons, only the Dutch appraisal practice for commercial properties will be subject of analysis.

The method of investigation will be by enquiries and interviews. Interviews will be lead with employees of 6 major commercial appraisal firms in the Netherlands. At the same time, these firms will be asked to undertake desktop value calculations for a predetermined office property, assuming varying states of occupation, from fully let to 100% vacancy, as well as varying lease expiry terms.

SAMPLE CHARACTERISTICS

The appraisal firms contacted included:

- Boer Hartog Hooft Consultancy B.V.
- CB Richard Ellis Valuations B.V.
- Cushman & Wakefield Healey & Baker
- DTZ Zadelhoff Taxaties B.V.
- Jones Lang LaSalle Vastgoed Taxaties B.V.
- Troostwijk Taxaties B.V.

Interviews were conducted with staff at either director or adjunct-director level, and the case-study responses were undertaken under the supervision of these persons.

There are no publicly available figures about the total volume of the commercial appraisal market in the Netherlands, and it is therefore difficult to estimate the market share of the contacted firms. According to their own information, they were responsible in 2005 for an aggregated appraisal volume corresponding to a total market value of more than € 60bn. This figure may be compared to the total capital invested in Dutch real estate of € 133bn (DTZ Zadelhoff, 2005). The six firms employ a total number of 125 full time employees in charge with property valuation. All six firms are providing valuations for participants of the ROZ-IPD index, and all six firms count international investors and financiers as their clients.

We are therefore confident that this sample conveys a representative picture of current commercial real estate appraisal practice in the Netherlands.

INTERVIEWS WITH PRACTITIONERS

All interviewed persons confirmed the existence of what had previously been defined as "grey areas", namely the fact that in difficult rental markets, like the current Dutch rental

market for offices, transaction evidence for vacant properties is only very scarcely available. One interviewee reported that bid-ask spreads in negotiations on the sale of vacant properties appeared to be such that sellers were unwilling to sell below a price corresponding to 9 times the rental value, and potential purchasers normally bidding at a maximum price equal to around 6 times the rental value.

All interviewees confirmed that in appraising vacant properties, they could not normally base a value estimation on a similarly clear-cut market picture than was the case with most long let investment properties. In no case however did interviewees report the use of a specific calculation method to assess the value of vacant properties. Instead the income-based methods generally used for investment property are also applied when appraising vacant property. Consequently, most interviewees confirmed that a high amount intuition would flow into the value calculations, significantly higher than in the case of let properties.

CASE STUDY

A case study was submitted to all appraisal firms. The outline handed out to the firms is included in appendix 1. The case study consisted of the assessment of the market value of an existing property under different assumptions on occupancy and lease terms. The aim was to gain insight into the methods and techniques employed by professional appraisal firms, and to grasp what impact the risk of vacancy may have on the outcomes of value estimations and on the spread of the outcomes.

The participants were asked to give their opinion of market value of an office property under the following letting assumptions:

- fully let on a lease with a remaining term of 5 years,
- fully let on a lease with a remaining term of 2,5 years,
- fully let on a lease with a remaining term of 1,25 years,
- 50% let on a lease with a remaining term of 5 years, 50% vacant,
- 25% let on a lease with a remaining term of 5 years, 75% vacant,
- 100% vacant.

The estimations had to be done on a desktop basis, but the property was extensively described and specified in the handout to the appraisers. The case study was based on an existing property, but for the purposes of the analysis the building specifications had been adapted in some minor details. Generally, the case study referred to the real life property.

The subject property dates from 1988 and consists of a self-containing office building with external parking spaces and greenery. The technical specifications can be regarded as fairly standard for a property of this type and age. The state of maintenance is good, and the vacant spaces are supposed to be readily marketable.

The property is located on the Beukenhorst-West estate in Hoofddorp, within the municipality of Haarlemmermeer. According to the latest market reports from DTZ

Zadelhoff (2006), Haarlemmermeer is one of the most difficult office markets in the Netherlands, with a vacancy rate of 20,7% (against a national average of 13,8%) and a supply take-up ratio of 4,6 (against a national average of 3,9).

The property is assumed let on standard ROZ commercial leases with no special or unusual clauses. The rent passing is assumed to be equal to the market rental value. The lease provides for successive 5-year renewal options after the initial term. Tenant and landlord may terminate the lease at the end of the remaining term and of every renewal period with 12 months notice. The rent is adjusted to market level upon each renewal.

Value calculations for each of the six letting assumptions were returned from all of the 6 appraisal firms. We will analyze the most salient results in the following paragraphs. We refer to appendix 2 for a complete overview of the numerical results. The results have been rendered anonymous by giving a number from 1 to 6 to each appraiser in a random way (and without relation to the alphabetical order by which the firms are listed above).

1) Generalities

All appraisers submitted direct net capitalization calculations, two participants additionally provided also discounted cash flow calculations.

The average estimated re-letting period for the property if 100% vacant is 28 months, with outcomes ranging from 24 to 36 months. This includes rent-free periods that are deemed necessary to let the property at the estimated market rental level.

The estimated market rental level ranges from € 520.000 p.a. to € 602.000 p.a. with a mean of € 558.000 p.a. The spread between the minimum and maximum outcomes is thus 15% of the mean, which is not particularly surprising if we bear in mind that the estimations were done on a desktop basis (i.e. without inspection of the property).

The market value estimates of the fully let property with a remaining lease term of 5 years vary between € 6.310.000 and € 7.525.000 with a mean of € 6.965.833. The resulting spread between minimum and maximum outcomes is 17% of the mean, insignificantly higher than the spread in market rental values. Most of the variance in the outcomes can therefore be explained by the differences in estimated rental values. This is confirmed by a comparison of the gross yields (here understood as: gross rental income / gross value, or BAR v.o.n.) which vary from 7,1% to 7,8% with a mean of 7,5%. With 8,4% of the mean, the spread between extreme outcomes is significantly lower than was the case for the market rental values and the market values. There appears to be a quite secure feeling in the appraisal community about the appropriate yield for a fully let property of this type with a lease with a remaining term of 5 years.

The estimated market values of the property assumed 100% vacant (i.e. the vacant possession value) show a far greater variance and range from € 3.540.000 to € 5.450.000 with a mean of € 4.535.000. The spread between minimum and maximum outcome is

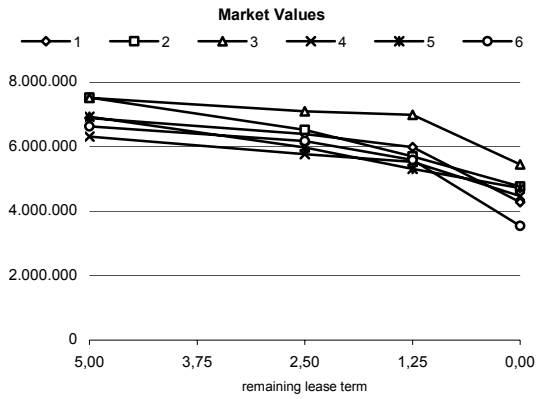
here no less than 42% of the mean. A more appropriate way to analyze the effects of vacancy on the variance of outcomes would be to concentrate on the value shifts, i.e. the percentage change between the market values of the fully let property and the vacant property. In this way the initial differences between the values of the fully let property are removed and the mere effect of vacancy on the estimated values is made clear. The minimum value shift in the outcomes is a vacant possession value equaling 73% of the market value if fully let for 5 years. The maximum value shift is a vacant possession value equal to 53% of the market value the fully let property with 5 years remaining lease. The mean of the value shifts is 65% and the spread between maximum and minimum value shift is 29% of the mean.

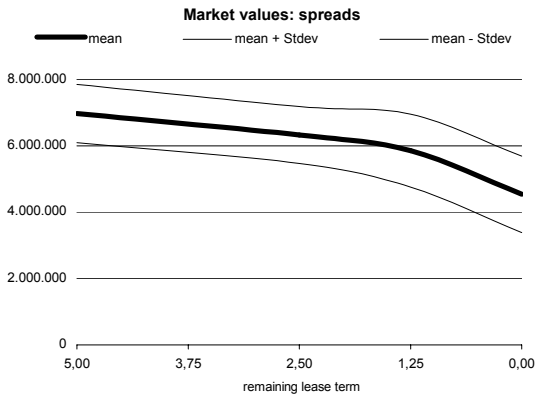
These figures are a clear indication of the difficulties that valuers face when appraising vacant properties. A difference of 20% in the value shifts is quite considerable and could have far reaching effects. On a portfolio with 20% vacancy, a value shift of either 53% or 73% on the estimated value of the vacant properties compared to the fully let properties would result in an overall difference of the estimated value of the portfolio of 4,5%, a magnitude that would not be without consequences for the appreciation of the portfolio performance and total return.

A similar analysis can be done for the yields. In absolute terms the gross yields for the property assumed vacant show outcomes ranging from 10,3% to 13,7% with a mean of 11,6%. The spread between highest on lowest outcome is 29,3% of the mean, compared to a mere 8,4% for the fully let property. The yield shifts (yield if vacant / yield if fully let) vary from 138% to 187%, the mean being 155%. The minimum-maximum spread as percentage of the mean is 32%, even higher than the 29% spread of the value shifts.

2) Results according to varying lease expiry terms

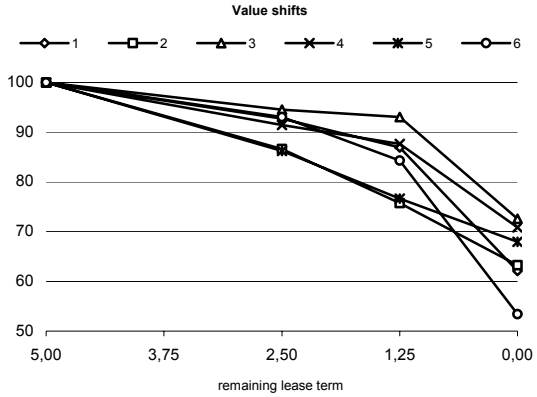
We will now consider how the outcomes differ according to varying lease expiry term assumptions. The following figures represent the market value outcomes for each of the 6 valuers and the mean of the outcomes together with the standard deviation as a measure for the spread:

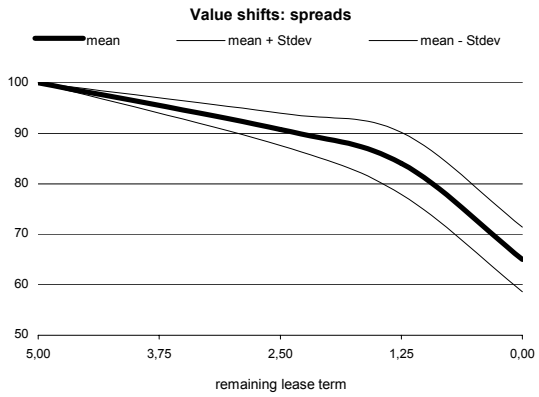




The evolution of the values shows a characteristic bend between 1,25 years remaining lease term and the vacant status. This seems to confirm our conjecture made in chapter 2, that if a sitting tenant might still renew her lease, this possibility will be reflected positively in the value. Only once the tenant has served notice, and vacancy thus becomes an inevitable fact, will the value fully reflect all the risks attached to vacancy.

The following figures represent the evolution of the value shifts:

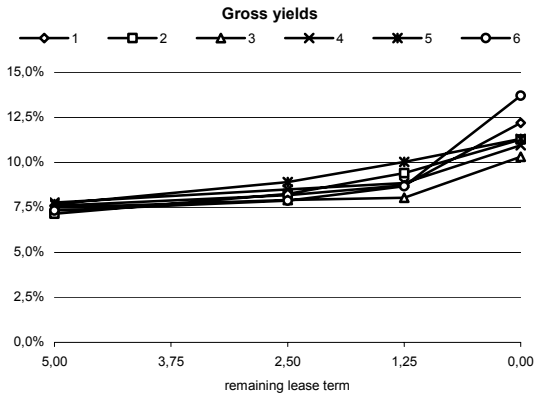


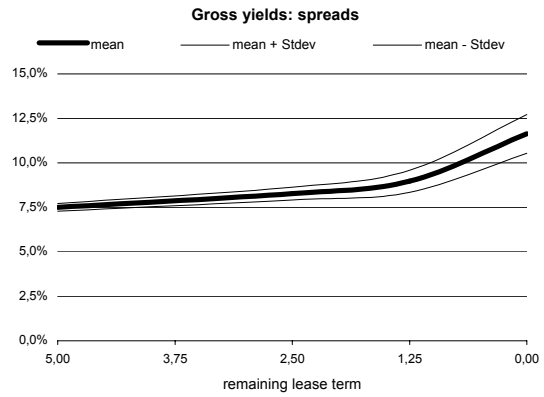


We notice here that with two valuers (nrs. 2 and 5) the value shifts do not show the otherwise typical bend between the property with a 1,25 years lease and the vacant property. We will come back to this phenomenon later.

An interesting fact to note is furthermore that the standard deviation of the outcomes for the 1,25 years let property and the vacant property is the same (namely 6), suggesting that the uncertainty in valuing properties in either one of these two states does not differ. As the mean of the vacant property is however a lower figure, the standard deviation as percentage of the mean is still higher for the vacant property.

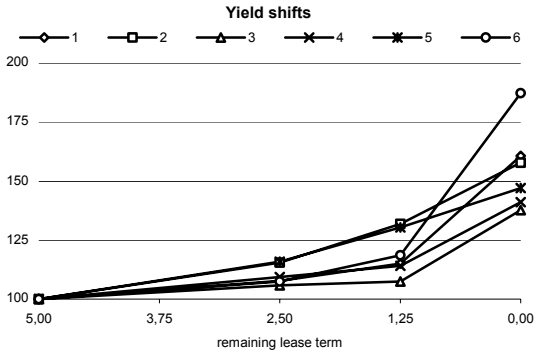
The following figures represent the evolution of the gross yields:

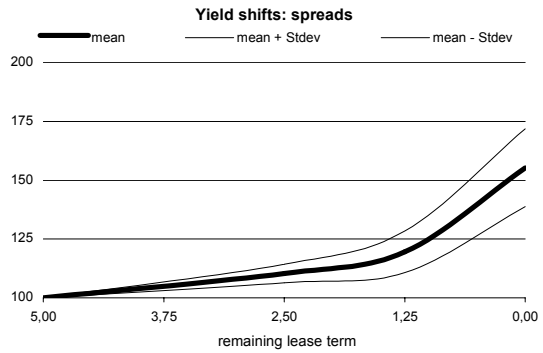




It is well visible that the 5-years fully let property does not pose a particular problem concerning the estimation of an appropriate yield. All outcomes are within a narrow range. That range becomes evidently larger the shorter the remaining lease terms are.

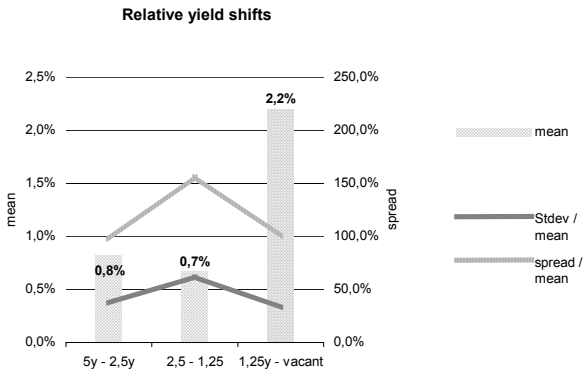
As with the values, the yield shifts give an even better picture of the evolution according to remaining lease term:





As could be expected, the yield shift is by far the most important between the property with a 1,25 years lease and the vacant property. As with the value shifts, we can notice that with two valuers the yield shift evolution follows a nearly linear pattern, and this is a marked contrast to the other four valuers.

It may be useful to consider the relative yield shifts, i.e. not the shifts as percentages of the initial 5-years fully let status, but the shifts from one status to the next. This is represented by the following figure:



Interestingly, the maximum-minimum spreads and standard deviation as percentage of the mean are higher for the relative yield shift from a 2,5-years let property to a 1,25-years let one, than from the latter to a vacant property. Valuers seem to be more confident in estimating the last yield shift than the preceding one. This may be implied by the fact that due to the uncertainty about a possible lease renewal, a property let on a lease with a remaining term of 1,25 years and a 12 months notice period does indeed present a very high uncertainty, not only for valuers but also for investors.

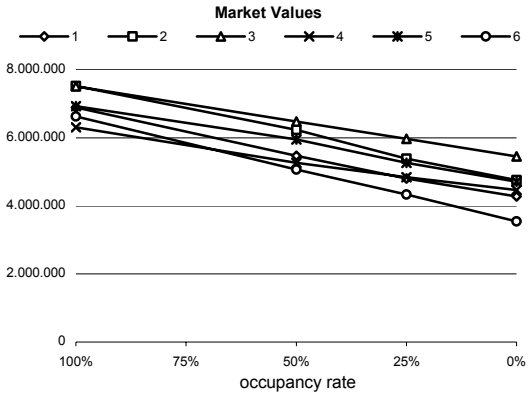
As we have commented, in the case of two valuers, the evolution of value- and yield shifts showed a nearly linear pattern as opposed to the estimations of the remaining valuers, which were all characterized by a marked bend between the 1,25 years remaining lease status and the vacant status. Such a linear pattern implies that the market would make no difference in risk between a property let on a very short lease and a vacant property, or put differently: that the market would consider a property let on a short lease but with the possibility of a renewal to be no different than a property let on a short lease, but where the tenant has already served notice. One of the two valuers in case explicitly wrote in a comment to his calculations that "investors are not likely to pay much more than the vacant possession value plus the benefit of 1,25 years rental income".

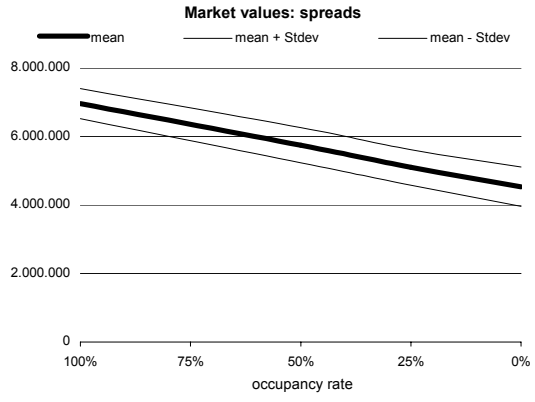
In a highly efficient and liquid market, the yield shift could not follow such a linear pattern for any longer time period, as this would open up the possibility of arbitrage. Speculative investors could buy large numbers of properties with short remaining lease terms for a price close to the vacant possession value plus the present value of the remaining lease. Once the notice period has passed the properties could be resold at prices either close to the purchase price if the tenant has served notice, or significantly above if the tenant has renewed. Even with a low percentage of renewals considerable profits could be achieved.

Property markets are probably not that efficient and liquid for this mechanism to take place, and so it may well be that the yield shift follows a rather linear pattern, thereby reflecting information inefficiencies and illiquidity. A majority of four out of six valuers seems however to purport a different interpretation.

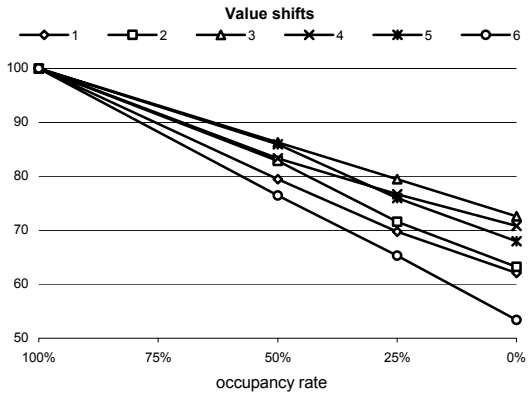
3) Results according to varying occupancy rates

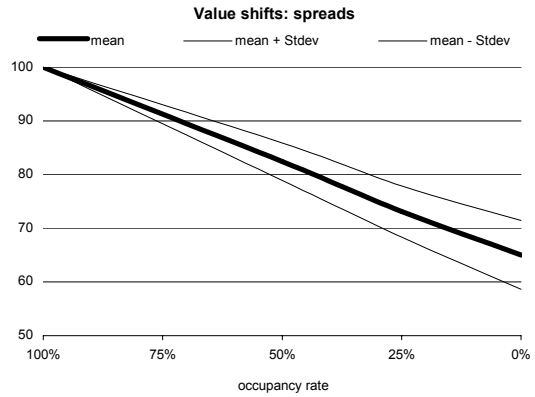
The following figures represent the estimations of market value according to different states of occupancy:





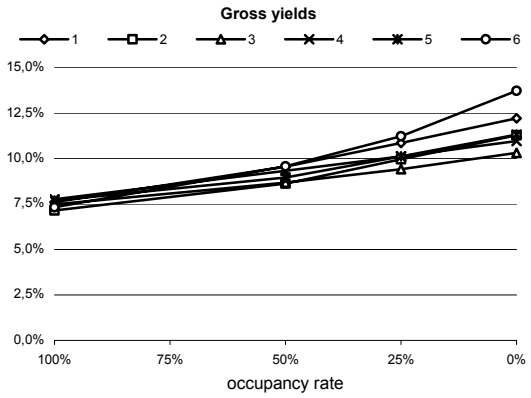
These figures strongly suggest a linear relation between occupancy rate and value. This is confirmed by the value shifts shown on the following figures:

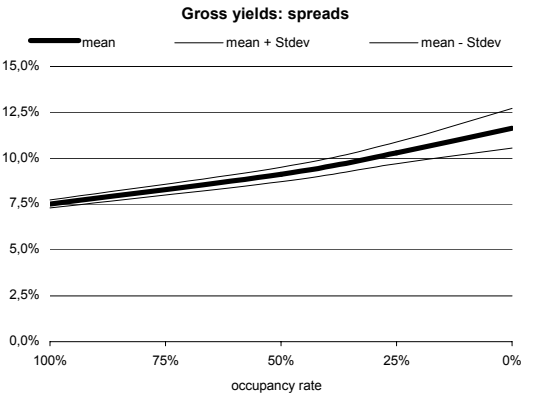




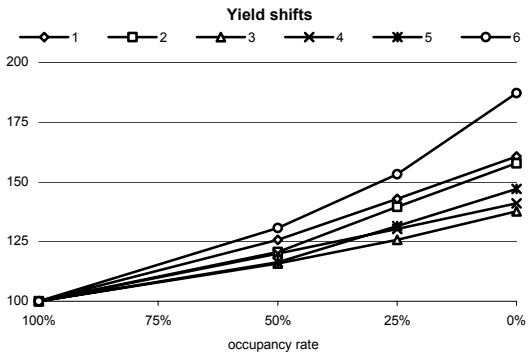
In a few instances there are very slight discontinuities in the linear pattern. One valuer explained these by the fact a 50% or 25% let property had the additional disadvantage of no longer allowing a one-tenant solution. This is certainly a valid point considering the size of the property. It would probably be a less important factor with larger properties.

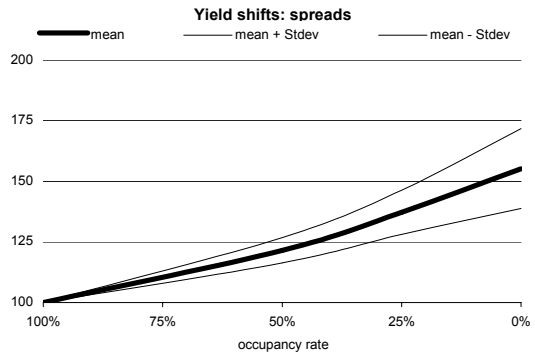
The following figures show the yields in function of the occupancy rate:





The respective yield shifts are represented by the following figures:





Here as well the yield shifts show a largely linear behavior in relation to the occupancy rate. In some cases the line is slightly upwards bending suggesting a proportionally higher risk for a completely vacant property. The magnitude of this phenomenon is however small.

4) Conclusions

The results of the case study have confirmed that valuers face considerable uncertainty when estimating vacant properties. The variance in outcomes is significantly higher than for let properties, and the spread in the outcomes grows with shorter lease terms.

According to a majority of valuers the value- and yield shifts between a property let on a lease with a short remaining term and a vacant property are proportionally more important than between properties let on leases with differing remaining terms. This implicitly reflects the probability that a sitting tenant might renew the lease.

The yield- and value shifts in function of the physical occupancy of a property can be considered to be approximately proportional to the occupancy rate.

4. Alternative approaches

GENERALITIES

The central difficulty in the valuation of vacant properties has been identified as the lack of sufficient transaction evidence ("grey areas"). This in turn is a consequence of an apparent illiquidity prevailing in the respective segment of the real estate investment market. It may therefore be useful to review how this more general issue has been dealt with in the appraisal literature, and whether any of the suggested approaches may be relevant to the question investigated here.

Two articles from the mid 1990es propose what can be regarded as essentially similar methods for valuing real estate assets in illiquid markets or markets in disequilibrium:

Gorlow and Parr (1994) introduce a real estate valuation model inspired by the dividend discount model used to value corporate stocks. Cash flows until market equilibrium has been reached are to be estimated and discounted separately. Upon market equilibrium, the residual value will be derived from the replacement value after various corrections.

A broadly similar approach is put forward by Hendershott (1996). The model presented is analogous to the valuation of a default-free bond. The value in overbuilt markets is shown to be equal to replacement costs less the present value of expected below – equilibrium rents. Equilibrium rents are defined as those that cover financing costs, economic depreciation, and operating expenses.

Both these papers concern income-producing property, and vacancy is not a specific issue in either of them (at least not as concerns the effect of vacancy on the appraised value). The proposed methods are rather destined to be of help if the market as a whole is in disequilibrium, lacks liquidity and does not produce sufficient transaction evidence. The approaches are therefore not suitable to solve the specific problems posed by vacant properties.

In a later paper, Axcell and Rodney (2001) have investigated the issue of valuation in the absence of market evidence from a more general perspective, although they do not explicitly cover the issue of vacant properties. Their review of methods that could be applicable if traditional direct capitalization approaches fail includes the depreciated replacement costs method and the discounted cash flow method. The authors then turn to the issue of increased variance in valuations under conditions of low transaction markets, and finally suggest some statistical techniques to quantify valuation uncertainty.

The paper remains at a general level of discussion and the authors do not develop any detailed calculation methodology for tackling specific valuation problems. The merit of the study therefore lies in highlighting and discussing two alternative approaches that can be useful in general terms, if traditional direct capitalization, the most established and widespread approach for valuing investment property, fails.

Both methods, the cost approach and the discounted cash flow method, will be reviewed in what follows.

COST APPROACH

The cost approach has traditionally been the dominant valuation method in the accountancy branch, where asset values are still very frequently reported at historic costs minus depreciation. With the recent advent of the International Financial Reporting Standards (IFRS) however, even in the accountancy world a shift in emphasis from the cost model to a more market based fair value model is now underway. And where the cost model remains applicable, it is increasingly infiltrated by elements of the market oriented fair value approach (Berkhout, 2005).

As opposed to accountancy, the cost approach in property valuation was never based on historic purchase costs, but rather on replacement costs, i.e. the costs necessary to replace the property to be valued by an equivalent property. In practice the depreciated replacement costs correspond to the value of the land plus the development costs of the building minus technical and economical depreciation. This implies that the depreciated replacement costs may well differ from the historic costs, as the depreciated replacement costs refer to the current construction and land markets, the condition of which can be quite different from when the property was constructed (and the land purchased).

It is intuitively evident that the depreciated replacement costs do not necessarily have to equal the market value of an asset. The market for the production of the asset (the land and construction markets) is different from the market in which the finished asset is traded (the investment market). Traditionally therefore, the depreciated replacement cost approach has been used in property valuation only for types of properties for which no investment market exists. This implies in most cases that no free rental market exists for these properties either. The rationale for applying this method in such cases is that a purchaser would acquire such a property for her own use and would not be prepared to pay a higher price than it would cost to build an equivalent property.

For property types for which an investment market exists, the depreciated replacement cost approach is not normally appropriate to determine the market value. This remains valid, even if the market becomes temporarily illiquid due to special circumstances, like market disequilibrium. Such a special circumstance is also represented by vacancy, although this is a circumstance affecting an individual property and not the market as a whole. Vacancy is not a permanent characteristic of a given property (properties that have to be considered as structurally vacant or no longer lettable are outside the scope of this investigation), and therefore, although vacancy may temporarily limit the liquidity of an asset, it does not mean that the property will be permanently illiquid.

There is nevertheless a theoretical relation between replacement costs and market value that is underlined by the 4-quadrant model of the real estate system that has been developed by Di Pasquale and Wheaton (1996). According to this model, if the market is in equilibrium, the replacement costs of newly built property equals the market value.

This recognition has been the basis for the methods proposed by Grolow and Parr (1994) and Hendershott (1996) that have been mentioned above.

For the valuation of vacant properties however, the depreciated cost approach appears to provide no specific help. It might only be noticed that, as in all other valuation cases, if the land value minus demolition and clearance costs exceeds the value as estimated by other methods, then the former one equals the market value. The site value minus demolition and clearance costs therefore acts as a natural bottom to the vacant possession value, just as it does for the market value in general.

DISCOUNTED CASH FLOW METHOD

The discounted cash flow method has its origins in the field of corporate finance were it is more commonly known under the name of net present value method (NPV). It is today the predominantly used capital budgeting technique. As such it has to be considered rather as an investment decision technique than a valuation method in the sense this term traditionally has assumed in real estate. In fact a capital budgeting or investment decision of an individual market participant is in itself not yet equivalent to the behavior of the market as a whole, as this latter results from the interplay of numerous individual investment decisions. It is therefore not self-evident that a technique supporting individual investment decisions would as well be appropriate and suitable for describing the market, and this apparently improper use of the net present value method in property valuation has been the source of sustained criticism. Therefore, the discounted cash flow method would presumably only be suitable to produce en estimate of Worth, or Investment Value (the former term is used and defined in European literature and guidelines, whereas the latter is widely employed in the American market), i.e. an individual investor's subjective assessment of the value of an asset. Nevertheless, the market results from the interactions of individual agents, and therefore the investment behavior of a "typical" investor is likely to match the market picture closely. As Geltner and Miller (2001) put it, "Market Value equals the Investment Value of the marginal participants in the asset market." These marginal investors are conceptually the "typical" buyers and sellers in a well functioning asset market. Simulating the investment behavior of such market participants by employing similar techniques may therefore be a legitimate valuation approach if other methods fail, for example due to lack of appropriate more direct market evidence.

The fundamental principle of the discounted cash flow method consists in discounting every single future cash flow an investment asset procures to today's value by using an appropriate discount rate. The calculation therefore is dependent on two major input categories: cash flow estimates and discount rates.

The cash flows an asset produces can be more or less predetermined. In the case of contractually fixed cash flows, as for example with coupon payments of a bond, the estimation of the future cash flows is straightforward and not subject to uncertainties. Stock cash flows on the other hand are difficult to predict with any degree of certainty

and depend largely on future market conditions. Real estate cash flows should be seen somewhere in between these two extremes, with cash flows from signed leases being very much similar to bond cash flows (although in many cases an inflation indexation component introduces another non-contractual and uncertain element), and cash flows from potential future leases which bear lots of uncertainties and future market risk. Furthermore, negative cash flows in the form of operating costs have to be estimated, which adds to the overall uncertainty. All in all the estimation of real estate cash flows is very much dependent on the individual characteristics of each property and is therefore not open to any generalizations.

The choice of an appropriate discount rate on the other hand is most commonly considered to be not so much dependent on the individual asset's characteristics, but rather a result of the risk of a type of investment in general (e.g. shares of a given industry sector, bonds of a given sovereign state, properties of a given sector). Idiosyncrasies of individual assets should be adequately reflected in the cash flow projections rather than in the discount rates. The discount rate therefore has a general character that transcends the individual case, and it could consequently be considered as a market data. In the highly developed North American market for example, discount rates for the major property types, classes and markets are regularly published by the most important research consultancies. The application of the discounted cash flow method is therefore freed from many of the uncertainties surrounding one of the two major input categories. Unfortunately in most other countries discount rates are not published in a similar way, and there remains a lot of opaqueness around the determination of the appropriate rate (see also Van Hulst, 2004).

In the most general sense, the discount rate r can be thought of as the sum of a risk-free component r_f and a risk premium RP:

$$r = r_f + RP$$

The risk premium is thereby dependent on the investment market's perception of the risk or volatility of the asset type's returns relative to the returns of alternative asset types. In an efficient and liquid market this perception should not differ widely amongst the market participants.

In its general form the discounted cash flow method can thus be expressed by the following formula for the value V of an asset:

$$V = \sum_{i=1}^{n} \frac{CF_i}{(1+r)^i}$$

where CF_i corresponds to the expected net cash flow in time period i, and r corresponds to the discount rate.

This is in fact the most widely used form of the discounted cash flow method in corporate finance as well as in real estate investment and valuation. It implies the use of one single

discount rate for a given asset type, regardless of whether the asset procures cash flows of different characteristics and nature (i.e. from either signed leases or expected future leases), and regardless of the time period in which the cash flows arise.

The discounted cash flow method possesses the undisputed advantage of explicitly making clear a maximum of assumptions that underlie the value calculation. With regard to any initial vacancy however, the method does not differ fundamentally from the more traditional direct capitalization methods. An estimated initial vacancy period will have to be taken into account in the calculation, and the corresponding costs related to the vacancy (holding costs as well as marketing costs) will need to be considered as negative cash flows.

Analogous to the problem of estimating the appropriate yield for vacant properties when employing the direct capitalization method, the question arises whether a different discount rate would be appropriate for vacant properties when compared with fully let properties with the discounted cash flow method. Intuitively the answer would be yes, as vacancy bears increased risks. This would however leave us with exactly the same dilemma as with the direct capitalization approach: in the absence of sufficient market evidence, the appropriate discount rate could not be easily determined.

The discounted cash flow method poses however even deeper problems. It is very questionable from a methodological point of view whether an initial vacancy should result in a higher discount rate for all subsequent cash flows (implying that all these cash flows exhibit above average risk, something which is difficult to accept). On the other hand, we commented earlier that idiosyncrasies of individual assets should be adequately reflected in the cash flow projections rather than in the discount rates. This would suggest that all the negative effects vacancy has on value are purely cash flow related, which in turn contradicts the fact that vacancy does indeed bear increased risks that cannot be accounted for by pure cash flow corrections (e.g. the risk due the fact that the corrections themselves are based on uncertain forecasts needs to be accounted for).

This apparent contradiction indicates that the discounted cash flow method does not offer a superior approach to the problems related to vacancy than the more traditional direct capitalization methods.

5. Market Implied Vacant Possession Values

In this chapter the traditional direct capitalization valuation model will be modified and extended in a way as to make vacancy and the associated risk explicit. It will then be shown that the yield shift for properties let on differing remaining lease terms implies a vacant possession yield, and that if the yield shift can be observed in the market, the corresponding market implied vacant possession value can be determined.

As the proposed valuation model requires the correct determination of the present value of rent payments resulting from a signed lease, the determination of the appropriate discount rate for such cash flows will be a special part of the investigation.

The model is subsequently tested by applying it to the case study of chapter 3. The results from chapter 3 will also allow other interesting cross-relations and verifications.

THEORETICAL FRAMEWORK

Vacancy is a risk inherent in all real estate, whether let on long term leases or not. It is an eventuality that will occur sooner or later for any property (with the possible exception of prime retail units) and the corresponding risk must be reflected in the price of real estate, albeit implicitly. None of the existing valuation methods is suitable to isolate and quantify the premium the investment market puts on the risk associated with vacancy in an explicit way. Even the discounted cash flow method, though reflecting the consequences of vacancy on the cash flows, does not account specifically for the increased risk of vacancy. We will therefore, in what follows, develop a method that makes the impact of vacancy on the value of property explicit. Our approach is derived from the traditional direct capitalization method. In fact it is nothing else than a specific variant of direct capitalization, just as the well-known term-and-reversion and topslice-layer methods. although our method may appear excessively complicated from a formal point of view, it is soundly rooted in the most common valuation technique prevailing today.

The direct capitalization method in its most basic and simple form is based on the use of a yield. The value of a property is understood to correspond to the market rental value divided by the yield (for the sake of clarity we will not, in what follows, differentiate between gross and net values, i.e. before or after deduction of purchaser's costs; when speaking of value we intend the gross value, as the deduction of the purchaser's costs to arrive at the net value is a final step that is identical to any of the methods we treat; it is in how to arrive at the gross value, where the differences lie):

$$V = \frac{MRV}{Y}$$

where:

V: value of the property

MRV: market rental value
Y: yield

Comparable properties are understood to trade at the same yield. If market evidence from recent sales is available, properties that are sufficiently comparable to the sold properties can be valued by using the resulting yield from the transaction evidence. For properties to be qualified as sufficiently comparable, they must at least fulfill the following criteria:

- similar legal and tax status,
- similar location,
- similar physical characteristics,
- similar lease terms,
- let at market rental level,

If these criteria are fulfilled, the above formula may be applied. The yield can then be considered as an all-risks-yield, i.e. all risks inherent in the property as an investment are reflected in the yield. No specific deduction for any risk component is made. The approach can furthermore be qualified as both static and non-growth oriented. This means that the yield would be equal to the rate of return if the initial rental income would be static and fixed. If the rental income is supposed to grow, this growth is included in the yield. In the case of a constantly growing income with growth rate *g*, the rate of return on the investment would be equal to $Y+g$.

In a liquid enough market, there will probably be most of the times sufficient properties trading which fulfill the first three of the above criteria. The lease terms may however differ frequently, and due to the specific structure of most commercial leases (with rents indexed to consumer price evolution), the rent passing under a given lease is very often different from the market rental level. The valuation discipline has developed specific approaches to tackle these problems. The ones most commonly used are known as the term-and-reversion method and the topslice-layer method. We will here only expand on the term-and-reversion method, as this is the basis for our further developments.

In the term-and-reversion method, the current rental income is considered separately from the rental income after any special event. Such a special event may be a rent review where the contractual rent is adjusted to market rental level, a renewal of the lease with a simultaneous rent review, or a lease expiry with subsequent re-letting at market rental level. In any of these cases, the rent passing will at some point reach the market level, and in the term-and-reversion method the rental income up to that point (the "term") is split from the remaining rental income (the "reversion"). The "term" is valued as an annuity, the "reversion" is valued according to the above formula as a perpetuity with an all-risks-yield and discounted to the length of the term:

$$V = \left(\frac{RP}{Y_T} - \frac{RP}{Y_T(1+Y_T)^i}\right) + \frac{MRV}{Y(1+Y)^i}$$

where:
V: value of the property
RP: initial rent passing

Y_T: term yield
i: length of the initial term
MRV: market rental value
Y: all-risks-yield

The total value of the property is here decomposed into two elements. The static non-growth nature of the direct capitalization method is well illustrated by the fact that the market rental level and all-risks-yield of the reversion component are those as per the date of valuation, and not any forecasts of the market after expiry of the term. Any expected changes in the market as well as the risk associated with the uncertainty of these expectations are already reflected in the yield.

The choice of the appropriate yield for the term income has been subject to many discussions. For comparison purposes however, the equivalent yield has become the most widespread measure in valuation practice. In analyzing a sales transaction, the equivalent yield is the single yield that, if applied to both the term and reversion components, produces the sales price. Similar properties but with differing lease terms and initial rent passing are deemed to be comparable on an equivalent yield basis.

It has been widely recognized that the equivalent yield method is only an approximation and that it suffers from a number of shortcomings and inconsistencies. According to Brown and Matysiak (2000) "The economic meaning of the equivalent yield is not clear. (…) There are clearly a number of problems with the equivalent yield model and it is tempting to abandon it as not being economically defensible".

French and Ward (1995) summarize the problems with this approach as follows: "The inconsistencies stem from the now common practice of using one equivalent yield to discount both the (relatively low risk) known cash flows of the first term and the higher risk cash flows following future reversions. Whilst the use of a single average or target yield is useful to provide a benchmark for comparative purposes, it can be misleading if the investor whishes to analyze the individual worth of the component cash flows." It might be added that the same holds true for valuers who want to correctly determine the individual value components, rather than just estimating a total value figure.

Having recognized the inconsistencies of the equivalent yield method, French and Ward (1995, 1996 and 1997) introduce what they called the arbitrage method. It is based on the central assertion that contractually fixed rental income is always to be considered as less risky than cash flows from future leases, or after a rent review. This is due the fact that the income is contractually fixed and therefore not subject to any market risk. Consequently, a lower yield for the term income is appropriate. Whilst this had already been incorporated to some degree in the simple term and reversion method, French and Ward demonstrate that the choice of a lower yield for the term income automatically implies a different yield as well to discount the reversion component to the present. This is the deferred capital yield DCY, and the method is summarized by the following equation:

$$V = \left(\frac{RP}{Y_T} - \frac{RP}{Y_T(1+Y_T)^i}\right) + \frac{MRV}{Y(1+DCY)^i}$$

where:

V:	value of the property
RP:	initial rent passing
Y_T:	term yield
i:	length of the initial term
MRV:	market rental value
Y:	all-risks-yield of the property
DCY:	deferred capital yield

If the initial rental income is equal to the market rental value, then the value of the property is equal to the market rental level divided by the all-risks-yield, and the formula can be rewritten as:

$$\frac{MRV}{Y} = \left(\frac{MRV}{Y_T} - \frac{MRV}{Y_T(1+Y_T)^i}\right) + \frac{MRV}{Y(1+DCY)^i}$$

By algebraic transformation the deferred capital yield may then be expressed as:

$$DCY = \sqrt[i]{\frac{1}{1-Y\left(\frac{1}{Y_T} - \frac{1}{Y_T(1+Y_T)^i}\right)}} - 1$$

The deferred capital yield can therefore be determined in function of the term yield and the all-risks yield. The deferred capital yield is a measure of what an investor wants to be compensated for, for taking the risk that at the end of the term the value of the property may not be equal to the expected value implied by the all-risk-yield.

This model assumes that upon reversion, the property is again let at market rental level for a new term *t*. This assumption works well with long UK type leases of up to 25 years and rent reviews every 5 years. At the end of the first 5 year term, the rental income automatically reverts to market level, and it is an acceptable approximation to consider that the all-risks-yield of a property let at market rental level with 20 years to lease expiry does not differ substantially from the all-risks-yield of a property let at market rental level with 25 years to lease expiry. Therefore it is legitimate to apply the all-risks-yield of the property itself to the reversion component.

In most other European markets commercial leases have a different structure. They are normally shorter but comprise renewal options. We will in what follows extend the model of French and Ward in a way as to take into account a lease structure characterized by an initial term followed by several subsequent renewal options. On each renewal the rent passing is adjusted to the market rental level. Renewals are however optional, i.e. the tenant may also terminate the lease. This is a lease structure that is widespread in the Dutch market, and it is also the structure upon which the case study in chapter 3 has been based.

Under such a lease structure, upon expiry of the initial term, the lease is either renewed for a term *t*, or terminated. This means that within the framework of the term and reversion method, the value of the reversion component is either the value of the property if let on a term *t*, or the vacant possession value. The valuation model can therefore be written as:

$$V = \left(\frac{RP}{Y_T} - \frac{RP}{Y_T(1+Y_T)^i}\right) + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{VPV}{(1+DCY)^i}$$

where:

V:	value of the property
RP:	initial rent passing
Y_T:	term yield
i:	length of the initial term
MRV:	market rental value
Y_t:	all-risks-yield of the property let at MRV on a lease with a term t
DCY:	deferred capital yield
VPV:	vacant possession value
α:	lease renewal probability

For reasons of convenience, we will henceforth denote the value of the term as V_{CL} or value of the current lease:

$$V_{CL} = \left(\frac{RP}{Y_T} - \frac{RP}{Y_T(1+Y_T)^i}\right)$$

The right hand side of the equation is, as has been mentioned before, the expression for the present value of a level payment annuity. This is again a correct approach for UK leases, where rent payments remain constant until the next rent review. If however, like is the case in many European markets, the rent payments are not constant but linked to some index, the level payment annuity formula would not be correct anyway. The essential fact is, that the term value in the term and reversion method corresponds to the present value of the rent payments from the current lease, regardless how this value is calculated. We will return later to the estimation of the present value of a lease.

Our valuation model then writes as:

$$V = V_{CL} + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{MRV}{Z(1+DCY)^i}$$

where:

Z:	vacant possession yield

We have now decomposed the total value as far into its constituent elements as to be able to isolate that single one component which reflects the vacancy risk, namely the vacant possession yield.

The total value is expressed as the sum of the value of the current lease plus the renewal-probability weighted discounted value after lease renewal plus the break-probability weighted discounted vacant possession value. We have not departed from the static non-growth framework of direct capitalization methods. The yield after expiry of the initial term *i* of the property let at market rental level on a lease with a term *t* is the same as it would be today, and the vacant possession yield of the property after expiry of the initial term *i* is the same as it would be today.

If the property is let at market rental level, the formula can be written as:

$$\frac{MRV}{Y_i} = V_{CLi} + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{MRV}{Z(1+DCY)^i}$$

where:

Y_i:	all-risks-yield of the property if let at *MRV* on a lease with a term *i*
V_{CLi}:	value of the current lease with remaining term *i*

If the property is let at market rental level, and if the initial term *i* is equal to the term after renewal of the lease *t*, then the model can be written as:

$$\frac{MRV}{Y_t} = V_{CLt} + \alpha \frac{MRV}{Y_t(1+DCY)^t} + (1-\alpha)\frac{MRV}{Z(1+DCY)^t}$$

where:

t:	length of the initial term = length of the term upon renewal
V_{CLt}:	value of the current lease with remaining term *t*
Y_t:	all-risks-yield of the property if let at *MRV* on a lease with a term *t*

If we consider that *t* and *i* are given, that *MRV*, Y_i and Y_t can be obtained from market evidence, that V_{CL} can be calculated (see further below) and that α can be reasonably estimated, *DCY* and *Z* remain the only unknown quantities in a system of two equations:

$$\begin{cases} \frac{MRV}{Y_t} = V_{CLt} + \alpha \frac{MRV}{Y_t(1+DCY)^t} + (1-\alpha)\frac{MRV}{Z(1+DCY)^t} \\ \frac{MRV}{Y_i} = V_{CLi} + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{MRV}{Z(1+DCY)^i} \end{cases}$$

This is thus a system that can be solved algebraically. There is one couple of Z and DCY that solves both equations.

If we define the yield shift between a property let at market rental value on a lease with a remaining term *t* and a property let at market rental value on a lease with a remaining term *i* as:

$$S_i = \frac{Y_i}{Y_t}$$

we can rewrite the system as:

$$\begin{cases} V_{CL\,t} + \alpha \frac{MRV}{Y_t(1+DCY)^t} + (1-\alpha)\frac{MRV}{Z(1+DCY)^t} - \frac{MRV}{Y_t} = 0 \\ V_{CL\,i} + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{MRV}{Z(1+DCY)^i} - \frac{MRV}{S \cdot Y_t} = 0 \end{cases}$$

In other words, the yield shift between a property let at market rental value on a lease with a remaining term *t* and a property let at market rental value on a lease with a remaining term *i* implies one single couple Z and DCY for any assumed renewal probability α. Thus, **if the yield shift can be observed in the market, the implicit vacant possession yield can be determined given an estimated lease renewal probability**.

Regardless of the rather complicated formal structure of our model, this conclusion is not surprising and can even be grasped intuitively. The yield shift is nothing else than an indicator of some change in overall risk. Value degradation due to vacancy is one of the constituent elements of the overall risk, and our model allows to isolate this specific component. The closer in time the eventuality of vacancy approaches, the more important is its impact on the overall yield.

Although a vacant possession value determined through observed yield shifts is not directly obtained from market evidence, it is nevertheless a value based on a vacant possession yield that is implicit in the yield shifts observed in the market. The yields at which fully let properties are traded in the market already imply a vacant possession yield, even if this latter one is not directly observable. We therefore would speak about market implicit vacant possession value: it is the vacant possession value implied by observed market yields for let properties. It is thus a vacant possession value implied by the market participants, even if this may not always be explicitly clear to them.

Further below, we will apply our valuation model to the case study of chapter 3. First however it will be necessary to study two input parameters necessary for the model to work. These are the determination of the value of a signed lease, and the estimation of the lease renewal probability.

LEASE RENEWAL PROBABILITY

There are no publicly available statistics on commercial lease renewal rates in the Dutch property market. In the UK the yearly Lease Events Review published jointly by Strutt & Parker and the Investment Property Databank (IPD) gives an indication of the renewal rates of expired leases on all the properties included in the IPD Index. According to the 2004 report the overall renewal rate was 42%, and the 6-years average appears to have been close to 40%. These rates need however to be set-off against the average lease term, presumably higher in the UK than in the Netherlands. The 2004 Annual Lease Review of all leases on properties included in the IPD Index, published jointly by the IPD and the British Property Federation (BPF), indicates an average lease length of 7,8 years.

These figures may give some orientation for the Dutch situation. For the case of a typical lease with an initial term of 5 years and subsequent renewal options of 5 years each, we would consider a renewal probability of between 50% and 66,66% to be reasonable. A 50% renewal probability corresponds to an average occupancy of 10 years ($5 + 5*0,5 + 5*0,5^2 + 5*0,5^3 + \ldots$), a renewal rate of 66,66% results in an average occupancy of 15 years. A renewal rate of 75% would imply an average occupancy of 20 years, which appears already very high, as any 10 years occupancy would have to be offset by a corresponding 30 years occupancy.

Of course the estimation of an appropriate renewal rate depends on the property specifics. Properties whose market are large corporate tenants are likely to have higher renewal rates than properties whose main market are smaller businesses. Furthermore, the renewal rate for an existing tenant needs to be estimated by taking into account that tenant's business perspectives, the history of the tenant-landlord relationship, the importance of the specific property for the tenant's business, communicated intentions of the tenant, etc.

For a notional tenant however, and in the absence of more reliable statistics, we will consider renewal rates between 50% and 66,66% to be reasonable for a typical Dutch office property.

VALUATION OF LEASES

We have noted earlier that expressing the value of a lease as a level payment annuity may be adequate for UK triple-net leases with constant rent payments, but that for commercial leases predominant in most other countries this approach would be inappropriate. In the most general sense, for a landlord, the value of a lease equals the present value of the net cash flows. There is no difference in this respect to any other financial asset. Essential steps for valuing leases are therefore an estimation of the cash flows and the choice of an appropriate discount rate. We will not expand on the estimation of the cash flows, as this poses no particular problems with regard to the discounted cash flow method.

It may appear incongruous to introduce a cash flow estimation based element into our model, which is otherwise based on a static non-growth approach. But due to the fact that

the total value has been split into independent components, this does not constitute a problem. Any of the three components, the value of the current lease, the value of the property if let on lease with a given term and the vacant possession value, can be estimated following different methods and without regard to the other components.

The problem to be discussed here is the question of the appropriate discount rate. As we have isolated in our model the value component of the lease from all other value components, the appropriate discount rate for lease cash flows will no longer reflect any property market risk. The gross rental cash flows are purely contractual obligations. The deductions required to arrive at the net cash flow comprise also non-contractual elements. These are however unrelated to the property market. As a consequence, the property market has no impact on the value of a signed lease (with one exception, see below).

Intuitively it appears evident that lease payments are very much like corporate obligations under a bond or a loan, and that the value of a lease could therefore be obtained by reference to the yield curve in the debt market. This would have the great advantage that we could draw upon a highly transparent and information efficient market to deduct the appropriate discount rate for rental cash flows. First the similarities and differences between leases and long-term debt need however to be analyzed more systematically. Differences in risk may arise from different legal structures, from differences in the default risk, and from differences in the liquidity.

1) Leases and long-term debt: similarities and differences in legal structure

Under an occupational lease the landlord has as major obligation to enable the tenant to occupy and use the rented space. The major material obligation of the tenant is to pay the rent to the landlord.

Under a term loan agreement, the major material obligation of the lender is to enable the borrower to draw down the loan amount. A bondholder has no essential obligation against the issuer, as with the initial purchase of the bond the due loan amount has already been paid. The major material obligation of the borrower or bond issuer in both cases is to service the debt (i.e. to pay interest and amortization).

Whilst the obligations of a tenant and of a borrower or bond issuer are therefore quite similar, as both consist in contractually specified payments during the term of the contract, the obligations of a landlord and a lender or bondholder are of a different nature. The landlord has to continuously enable the tenant to occupy the let spaces. This implies a type of risk that a lender or bondholder does not normally have to bear. In a standard situation the loan will be paid out initially as a one-off amount, leaving the lender with no major material obligation during the entire remaining term of the contract. The landlord however bears a true operational risk during the term of the lease. If for any reason outside the sphere of influence of the tenant it is no longer possible for the latter to use the leased premises, then the lease may be terminated and the landlord will lose the outstanding rent payments of the remaining contractual term. One may think in the first

instance about external calamities like fire, floods or other disasters, which may render the occupation and use of the leased premises impossible, but it could also be actions of landowners of neighboring plots that could infringe the enjoyment of the leased premises. Generally however, these risks can be largely covered by adequate insurance, and if the default risk of the insurer is equal or lower than that of the tenant, the default risk of the tenant remains the appropriate risk factor.

Leases also typically comprise stipulations about service and operating costs. In a triple-net lease all costs related to the operation and ownership of the property will be charged on the tenant and are to be considered as contractual payments. In many cases all or part of these costs will be estimated in advance for a given period and added to the rent payments as service charge. At the end of the estimation period, the difference between the paid service charges and the effectively incurred costs will be settled, which will either lead to an additional payment by the tenant or to a restitution of excess advance payments to the tenant. The service charge is then estimated anew. The landlord therefore may face a liquidity risk, as the estimated service charge may turn out to be lower than the effective corresponding costs, and the landlord then would have to fund the excess costs until settlement of the balance. Furthermore there could be differences of opinion between landlord and tenant as to the appropriateness of certain costs, and this brings with it risks of litigation. No comparable risks exist for a lender in a term loan or a bondholder. We do however consider these risks to be rather low. Professional facility managers should normally be able to estimate service costs quite adequately, thereby preventing any liquidity bottleneck for the landlord.

Landlords face additional risks if the lease is not triple-net. Costs arising from the ownership of the property are then to be borne by the landlord. In some instances costs related to operating the property may also have to be borne by the landlord, with no possibility of charging them to the tenant. In a typical Dutch ROZ office lease for example, costs arising from the sole ownership of the property and which are not passed through to the tenant include local taxes (real estate tax, sewerage rates and water authority rates) and insurance premiums. Operating costs not recovered from the tenant include management fees and structural maintenance.

The existence of such non-recoverable costs makes any direct comparisons between net cash flows arising from rent payments and debt service payments under a loan or a bond difficult. These non-recoverable costs are not contractual in nature but are subject to the risk of operating and owning the property, and therefore the net cash flow resulting from the (contractual) rent payments minus the (non-contractual) operating and ownership costs is itself no longer a purely contractually fixed income. On the other hand, most non-recoverable costs are either very well predictable or are characterized by low volatility. Costs for structural maintenance for example can be budgeted by professional engineering consultants with a great degree of certitude. As they are essentially building costs, they are not normally subject to any unforeseen rises or falls but can be expected to move closely with the general price level. Similar comments can be made about insurance costs and local taxes. These costs are not subject to any property market risks and can be regarded as evolving in a quite stable pattern over time. As for management

costs, they are normally directly tied to the rental income (in the form of a percentage of the rent passing) and are consequently of a quasi-contractual nature. We therefore consider that the increased risks inherent in lease cash flows due to the non-contractual nature of non-recoverable outgoings are not particularly high.

2) Leases and long-term debt: default risk

Default risk is the product of default probability and loss severity.

a) Probability of default

The probability of default is a characteristic of the specific debtor (borrower, bond issuer or tenant) regardless of the nature of the obligation. The probability of default of a given company will therefore be the same for its rent payment obligations and for its debt service obligations. It varies however with the time horizon and generally increases the further the payment obligation lies in the future. For example, the following table reproduces the cumulative default rates according to time-horizon and Moody's rating of European corporate bonds during 1985 and 2004:

Issuer-Weighted Cumulative Default Rates on European Corporate Bonds 1984-2004

Moody's Broad Rating Category	Year 1	Year 2	Year 3	Year 4	Year 5
Aaa	0,0%	0,0%	0,0%	0,0%	0,0%
Aa	0,0%	0,0%	0,0%	0,0%	0,0%
A	0,0%	0,1%	0,1%	0,2%	0,3%
Baa	0,2%	0,7%	1,3%	1,9%	2,4%
Ba	1,7%	3,2%	4,6%	5,2%	6,1%
B	4,3%	14,8%	23,1%	31,7%	40,5%
Caa-C	32,9%	49,8%	65,3%	68,7%	68,7%
Investment-Grade	0,0%	0,1%	0,2%	0,3%	0,4%
Speculative-Grade	7,2%	15,2%	21,8%	26,1%	29,6%
All Corporates	0,8%	1,5%	2,1%	2,5%	2,8%

Source: Moody's, 2005

The cumulative default rate gives the probability of defaulting by year T conditional on not having defaulted before.

If the tenant has a rating, the default probability can thus be determined. The question is however how to treat unrated tenants, and these will evidently constitute the large majority of occupiers in the commercial letting market. Wincott (1997) has suggested to take Baa rated bonds as a basis to assess the default risk of a notional tenant: "Of the various securities available, Baa bonds are most closely related to real estate as an investment. (…) If one assumes that the typical lease portfolio in place in an investment-

grade property is equivalent to a portfolio of Baa-grade bonds, analysis of the tenant mix around that basis can provide an effective point of reference."

Baa rated bonds are indeed at the lower end of what are still considered investment grade bonds. Moody's defines this rating as follows: "Bonds which are rated Baa are considered medium-grade obligations, i.e. they are neither highly protected nor poorly secured. Interest payments and principal security appear adequate for the present, but certain protective elements may be lacking or may be characteristically unreliable over any great length of time. Such bonds lack outstanding investment characteristics and in fact have speculative characteristics as well."

It is clear that this subject needs much more investigation, and that any specific tenant needs to be assessed individually as to how adequate the initial assumption of a Baa rating is. We will nevertheless for the rest of this study adopt the assumption that a Baa rating is an adequate basis for estimating the default probability of a notional tenant. However the risk attached to the uncertainty of not knowing the exact credit strength of an unrated tenant as opposed to a rated bond issuer must be reflected in the pricing of rent payments.

Another important difference between debt and leases consists in the existence of ongoing protective covenants that are often stipulated in loan contracts and bond indentures. The borrower or bond issuer is normally obliged to observe certain criteria (e.g. a maximum rate of indebtedness, minimum interest coverage ratios, etc.). The rationale of these covenants is to protect the lender or bondholder from a substantial degradation of the creditworthiness of the borrower or bond issuer, and thereby to contain the long-term risks for the lender or bondholder. No similar instrument exists in lease contracts. The landlord has no possibility neither to end the lease, nor to claim in advance payment of remaining due rent if the tenant's creditworthiness changes substantially. In view of this, the evolution in the future of a tenant's default risk is more uncertain, and therefore more risky, than for a bond issuer or borrower.

b) Loss severity

The second constituent element of default risk is the loss severity, or the loss given default. This is equal to 1 minus the recovery rate. According to Moody's (2005) the average issuer-weighted recovery rates for European issuers on senior unsecured corporate bonds between 1984 and 2004 was 26,0%, implying thus a loss severity of 74,0%. Bonds, like any other unsecured debt procures claims on the distribution of the proceeds of a liquidation following bankruptcy. A lease contract does not confer any similar protection to the landlord, as a receiver has the faculty to cancel the lease in case of bankruptcy, leaving the landlord with no claims at all. The loss severity upon default would therefore be 100%. This is however compensated by two other elements:

- Lease contracts normally stipulate that a rental guarantee of a certain amount (e.g. three to six months rental payments) has to be provided by the tenant. This can

take the form of either a bank guarantee or an escrow payment. This guarantee would reduce the extent of any loss suffered by the landlord in case of a tenant default.

- In the case of a tenant default, the landlord has the possibility to re-let the spaces. This faculty is unique for real estate and should mitigate the loss severity considerably. If for instance a tenant defaults after the first year on a five year lease, and the spaces are re-let at the same rent only three years later, the recovery rate would still be in the order of 40% (in fact slightly less, as the landlord would have to bear additional costs due to the vacancy). This specific feature of real estate has led Geltner and Miller (2001) to compare lease payment obligations with secured rather than unsecured debt. Indeed, according to Moody's (2005) the average issuer-weighted recovery rates for European issuers on senior secured corporate bonds between 1984 and 2004 was 52,7% against the already mentioned 26,0% on unsecured bonds. The recovery rate for leases is the only element where real estate market risk does indeed have an impact, albeit a very limited one, on the value of a lease: in a weak rental market, the recovery rate will be lower than in a strong market.

We therefore think that in general a lease offers loss protection at least equal to secured debt, probably even better in many cases.

c) Default risk

Lease contracts are fully amortizing, with no residual payment obligation at lease expiry, whilst long-term debt often only amortizes fully at the term of the contract ("balloon payment"). This is especially true if the debt comes under the form of a bond, where only coupon payments are due until maturity date, when the entire principal amount is restituted in one single payment. This difference in cash flow structure over time is not without consequences for the overall default risk. As we have seen, the default probability increases significantly with the time horizon. This implies that non-amortizing loans bear a considerably higher overall default risk than a fully amortizing loan.

In appendix 3 we show that the expected yield (i.e. the yield taking into account default risk) of a hypothetical Baa rated 5 years bond with 4% coupon is 0,40% below the expected yield of a 5 years fully amortizing loan with 4% interest. It appears in fact that the expected yield of the 5 years fully amortizing loan is nearly equal to the expected yield of a bond with a maturity of 3 years. This difference of course gradually reduces to zero as the maturity approaches one year.

It can furthermore be shown that if we increase the recovery rate for a 5-years annuity to 50%, the difference in expected yield to the bond increases to 0,64%.

3) Leases and long-term debt: liquidity

Rights on rent payments under a lease are illiquid. There is no secondary market for such titles, and the rights can therefore not be sold before they mature. This is a marked difference to the debt market, and there is no doubt that the illiquidity of rent payment claims commands a higher rate of return. The liquidity of term loans issued by commercial banks and private placement bonds (i.e. bonds that are not publicly traded) can be regarded as ranging between that of the highly liquid publicly traded bonds and of illiquid rent payment obligations. Ross, Westerfield, Jaffe (2002) report that the yield to maturity of private placement bonds was 0,46 percent higher than similar public issues. The illiquidity premium for lease payments should therefore be even higher.

4) Leases and long-term debt: inflation hedge

Rent payments are often adjusted according to the evolution of certain statistical indexes, namely the consumer price index. This introduces another incongruity in the comparison between leases and long-term debt, as debt payments under a term loan or bond are not normally tied to such indexes. There is however a category of government bonds issued by some states where the outstanding principal amount is adjusted in function of the evolution of the consumer price index. The most prominent examples are United States Treasury Inflation Protected Securities (TIPS), UK indexed gilts and French inflation-indexed Obligations Assimilables du Tresor (OATi). Other sovereign states have also issued comparable bonds, but according to Barclays Capital the issues of the three mentioned countries are responsible for an overwhelming share in the market of inflation-indexed bonds worldwide. No comparable debt instruments are however issued by the Dutch government.

Investors are eventually driven by real rates of return, i.e. rates of return after adjustment for inflation. The nominal rate of return on a default-free bond can be thought of as the sum of three different components: a real return component, an additional return or interest that corresponds to expected inflation, and an inflation risk premium that compensates for the uncertainty associated with future inflation (i.e. the risk that the actual future inflation exceeds the expected inflation). The risk for bondholders or borrowers is to correctly forecast future inflation, which, if higher than their expectations, leads to a return below the one anticipated.

Holders of inflation-indexed bonds are not subject to that risk. They consequently do not require an inflation risk premium in their returns and this would likewise apply to landlords in the case of inflation-indexed rents. As an example, French OATi's yielded at around 1,00% in January 2006, 1,90% below corresponding conventional government bonds. Inflation forecasts for France were however at just 1,7% for 2006, and even lower for 2007. The 0,2% difference can be thought of as the inflation risk premium.

Hammond (2002) suggests that the long-term inflation risk premium could be in the order of 0,50%.

5) The discount rate for rent payments from signed leases

After having analyzed in how far rent payments due under a lease can be regarded as similar to debt service payments under a loan, we can now attempt to derive an appropriate discount rate for rental cash flows by referring to the debt market. The rationale behind this investigation is the fact, that the debt market can generally be considered to be more efficient and more transparent than the property market. Furthermore, there does not currently exist any market for lease payment obligations from which to derive an appropriate rate. Our approach is nevertheless characterized by many assumptions, intuitive estimations and approximations. We are aware that much more research is needed in this area to arrive at a more scientifically sound basis for an appropriate discount rate.

The following table summarizes the main differences between debt and leases and indicates our estimates of the resulting impact on the appropriate discount rate for rent payments due under a signed lease:

Bond-Lease Comparison Table

Bond	Lease	Effects on lease discount rate	Estimated magnitude
No operational risks	Operational risks due to 1) obligation to assure the enjoyment of the rented spaces to the tenant 2) non-contractual costs that cannot be refunded from tenant	premium	+0,50%
Rated debtor and protective covenants	Non-rated debtor and no protective covenants	premium	+0,50%
No amortization	Fully amortizing	discount	-0,40%
Reduced recovery rate	High recovery rate	discount	-0,25%
No inflation hedge	Full inflation hedge	dsicount	-0,50%
Highly liquid	Illiquid	premium	+0,75%
TOTAL		**premium**	**+0,60%**

The discount rate for rent payments under a signed lease with a notional tenant should thus be some 0,60% above the yield to maturity of a Baa-rated corporate bond with a maturity equal to the remaining life of the lease.

We again want to emphasize that these figures are only best guesses, and that more research into this area is needed.

It is also clear that the 0,40% discount for the fully amortizing nature of leases would be reduced to zero as the maturity approaches one year, thus resulting in a higher overall premium. In what follows, we will assume that this premium will diminish in a linear way by 0,10% for each year of reduced maturity. The risk premium according to different maturities would therefore be as follows:

Lease premiums according to maturity

Maturity	1 year	2 years	3 years	4 years	5 years
Lease premium	1,00%	0,90%	0,80%	0,70%	0,60%

The following table indicates the yields to maturity on Dutch government bonds as per end October 2005 and the yield spreads of Baa-rated European corporate bonds with comparable maturity:

YTM on government bonds and corporate yield spreads

Maturity	1 year	2 years	3 years	5 years
YTM on Dutch government bonds	2,22%	2,39%	2,66%	3,24%
Yield spread on European corporate Baa-rated bonds				
Banks	0,60%	0,68%	0,74%	0,72%
Financial	0,60%	0,68%	0,74%	0,72%
Industrial	0,60%	0,66%	0,71%	0,68%
Transportation	0,60%	0,66%	0,71%	0,68%
Utilities	0,60%	0,66%	0,71%	0,68%
Average yield spread	0,60%	0,67%	0,72%	0,70%
Average YTM European corporate Baa-rated bonds	**2,82%**	**3,06%**	**3,38%**	**3,94%**

Source: RiskMetricsGroup, 2005

Adding the earlier determined risk premiums for leases to the yields on corporate bonds gives the discount rates for rental cash flows under a signed lease:

Discount rates for net rental cash flows under a signed lease

Maturity	1 year	2 years	3 years	5 years
Average YTM on European corporate Baa-rated bonds	2,82%	3,06%	3,38%	3,94%
Lease premium	1,00%	0,90%	0,80%	0,60%
Discount rates for net rental cash flows	**3,82%**	**3,96%**	**4,18%**	**4,54%**

These are the appropriate discount rates for the net rental income from signed leases with a remaining term equal to the maturity of the bonds. The value of a lease then corresponds to the sum of all the discounted net cash flows. There is no need to make any market rental level forecast. Only inflation may need to be forecasted, but for this purpose it can be relied on available forecasts from economic research institutes.

For countries where inflation-indexed bonds exist, these may be taken as basis instead of conventional government bonds if the lease payments are inflation-indexed as well. It would then not even be necessary to forecast inflation-indexed rent cash flows in order to arrive at the value of a lease. The lease premium would however have to be increased by 0,50% as the inflation risk premium is already excluded from the yield of the inflation-indexed bonds.

APPLICATION OF THE METHOD TO THE CASE STUDY

We will now apply our model to the case study of chapter 3. This will allow us to verify in how far the results it produces are in line with the market perceptions of a representative sample of appraisal practitioners.

We will start by determining the value of the lease in place for different remaining terms. For a detailed overview of the calculations we refer to appendix 4.

First we choose an initial rent passing. In accordance with the case study assumptions, it is considered that the initial rent passing is equal to the market rental value, and we adopt for this purpose the mean of the six estimates of market rental values of chapter 3. This results in an initial rent passing of € 558.000 p.a. This figure is then indexed to inflation for every subsequent year. The basis of the projected inflation rates is the latest forecast from Consensus Forecasts which is mandatory for discounted cash flow valuations for the ROZ-IPD index, and which is published twice a year by the ROZ-IPD.

Non-recoverable outgoings have to be deducted from the rental cash flow. Our estimates of these outgoings are in line with those from the valuers in the case study. Were these outgoings are not expressed as percentage of the rental income they are indexed to inflation as well.

The appropriate discount rate for a lease with 5 years remaining life has been determined above as 4,54%. For reasons of simplicity, we will apply averages of the above determined lease discount rates for fractional maturities. The discount rate for a lease with 2,5 years remaining life will thus be set at 4,07%, and the discount rate for a lease with 1,25 years remaining life will be set at 3,86%. Although this may not be entirely correct, it is an acceptable approximation for our purposes.

The resulting values of the leases are as follows (see appendix 4):

- lease with a remaining term of 5 years: € 2.287.001
- lease with a remaining term of 2,5 years: € 1.191.291
- lease with a remaining term of 1,255 years: € 606.162

The valuation model developed earlier consists in a system of two equations referring to the yield shift between two states with different remaining lease terms. We will solve the system by applying the yield shift between a property let on a 5-years lease and a 2,5 years lease. As initial- or all-risks yield of a property let on a 5-years lease we choose 7,5% which is the mean of the corresponding yields in the case study of chapter 3. The average yield shift between a 5-years and a 2,5-years let property was 110%, and we use this value for our application.

Finally, we assume the lease renewal rate to be 50%.

We now have quantified all the variables needed to solve the earlier mentioned system of two equations:

$$\begin{cases} V_{CLt} + \alpha \frac{MRV}{Y_t(1+DCY)^t} + (1-\alpha)\frac{MRV}{Z(1+DCY)^t} - \frac{MRV}{Y_t} = 0 \\ V_{CLi} + \alpha \frac{MRV}{Y_t(1+DCY)^i} + (1-\alpha)\frac{MRV}{Z(1+DCY)^i} - \frac{MRV}{S \cdot Y_t} = 0 \end{cases}$$

where:

t:	5 years
i:	2,5 years
MRV:	€ 558.000
V_{CLt}:	€ 2.287.001
V_{CLi}:	€ 1.191.291
Y_t:	7,5%
S:	1,10
α:	50%

Solving the system through iteration gives:

DCY:	3,18%
Z:	12,10%

Therefore, the market implied vacant possession yield, if the yield shift between a property with a 5-years lease and a 2,5-years lease is 110%, and if the assumed lease renewal rate is 50%, is equal to 12,1%.

Although this theoretical vacant possession yield is 0,5% above the mean of the respective figure from chapter 3, it remains well within one standard deviation of that mean. The theoretical model does not produce results that are in apparent contradiction to the empirical data of chapter 3.

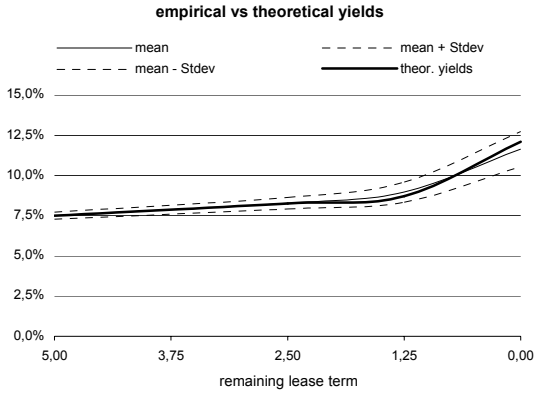
With DCY and Z known, it is possible to determine the yield for a property with any remaining lease term i:

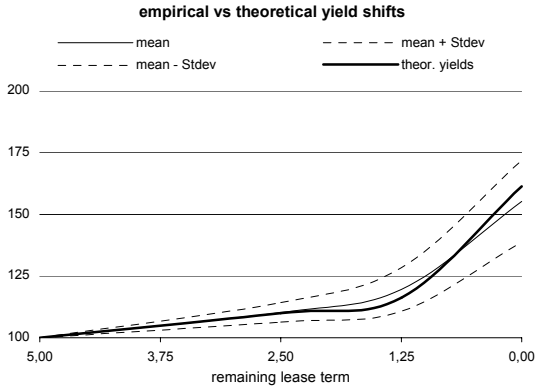
$$Y_i = \frac{1}{\frac{V_{CLi}}{MRV} + \frac{\alpha}{Y_t(1+DCY)^i} + \frac{1-\alpha}{Z(1+DCY)^i}}$$

For i = 1,25 years for instance, V_{CLi} is € 606.162 as has been determined earlier. With all other variables unchanged the resulting yield Y_i is 8,72%. This compares to a mean of 9,0% in the empirical data of chapter 3.

We can now compare the theoretical yield curve to the curve resulting from the mean of the outcomes of the case study of chapter 3. This is illustrated by the following figures

where the empirical mean from chapter 3 is represented by a thin continuous line, the empirical mean +/- one standard deviation is represented by thin dotted lines, and the theoretical results from our model are represented by a thick continuous line:





The theoretical values do not deviate substantially from the empirical outcomes and remain well within one standard deviation of the empirical mean.

With the model, it is possible to determine the vacant possession yield for any given yield shift. In the case study of chapter 3, the yield shifts between the 5-years and 2,5-years let property showed outcomes between 1,06 and 1,16. The following table shows the resulting theoretical yield shifts between the 5-years let and the vacant status:

Yield shift 5y-2,5y	**106**	**108**	**110**	**112**	**114**	**116**
Resulting yield shift 5y-1,25y	109	113	116	120	123	127
Resulting yield shift 5y-vpv	130	144	161	182	206	236

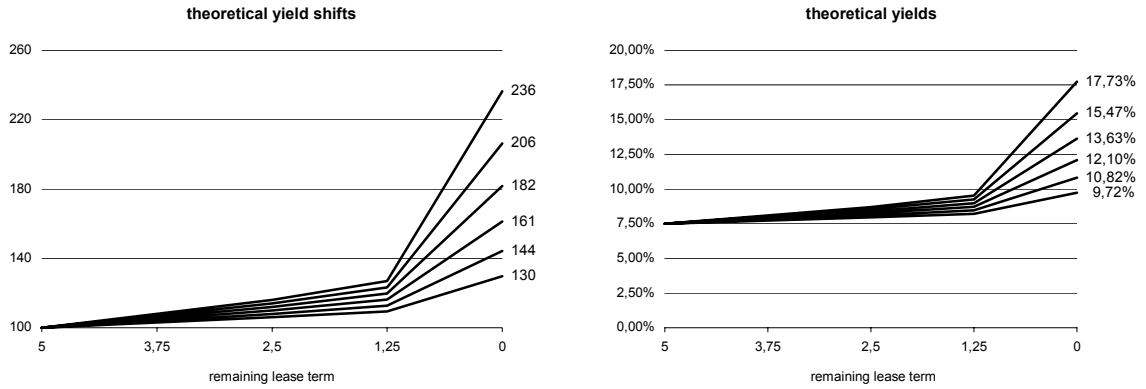
If the gross yield of the 5-years let property is set at 7,5%, the resulting yields are shown on the following table:

Yield shift 5y-2,5y **Gross yield 5y**	**106** **7,50%**	**108** **7,50%**	**110** **7,50%**	**112** **7,50%**	**114** **7,50%**	**116** **7,50%**
Resulting gross yield 2,5y	7,95	8,10	8,25	8,40	8,55	8,70
Resulting gross yield 1,25y	8,20	8,46	8,72	8,98	9,25	9,52
Resulting vacant possession yield	9,72	10,82	12,10	13,63	15,47	17,73

It appears from these figures that yield shifts between the 5-years and 2,5-years let property above 112 imply abnormally high vacant possession yields. The maximum vacant possession yield outcome in the chapter 3 case study was 13,7%, based on a yield of the 5-years let property of 7,3%. The maximum yield shift between the 5-years let situation and vacant possession was 187.

Taking a closer look at the chapter 3 case study outcomes however, it can be noted that the only cases were the yield shift between the 5-years and 2,5-years let property was above 109 concern those two valuers were the yield followed a linear pattern in function of the remaining lease term. As we have commented before, this is equivalent to assuming that the market is not making any difference between a property let on a short lease but with a renewal option, and a property let on a short lease but where the tenant has already served notice. This effectively comes down to assuming a renewal probability at or close to zero. As our calculated figures are based on a 50% lease renewal rate, it is not surprising that the results for yield shifts above 112 no longer match with corresponding empirical outcomes.

The following figures represent the theoretical yield shift patterns and the theoretical yields if the yield of the 5-years let property is set at 7,5%:



It is evident that the choice of the yield shift between the 5-years and 2,5-years let property has a considerable impact on the resulting vacant possession yield.

It may be useful to examine the impact of the other input variable, namely the lease renewal rate. The following table gives the resulting yield shifts between the 5-years let situation and vacant possession for a given yield shift between the 5-years and 2,5-years let situation for a renewal rate of either 50% or 66,66%. We will limit the scope of the investigation to yield shifts between the 5-years and 2,5-years ranging from 106 to 109, as this is the range of the empirical outcomes of chapter 3 if we exclude the two valuers were the yield followed a linear pattern in function of the remaining lease term.

Yield shift 5y-2,5y		**106**	**107**	**108**	**109**
50% lease renewal rate	Resulting yield shift 5y-vpv	130	137	144	152
66,66% lease renewal rate	Resulting yield shift 5y-vpv	152	176	185	206

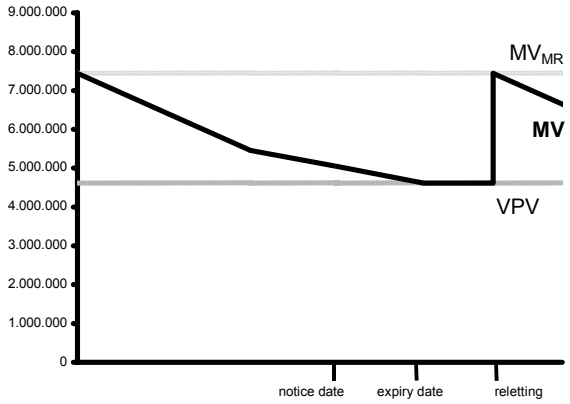
This compares with a range from 138 to 187 in the empirical outcomes of chapter 3 for the corresponding yield shifts between the 5-years let situation and vacant possession. For an assumed lease renewal between 50% and 66,66% the results of the theoretical

model therefore match well with the empirical outcomes of those 4 valuers that do not assume a linear relation between yield shifts and remaining lease term.

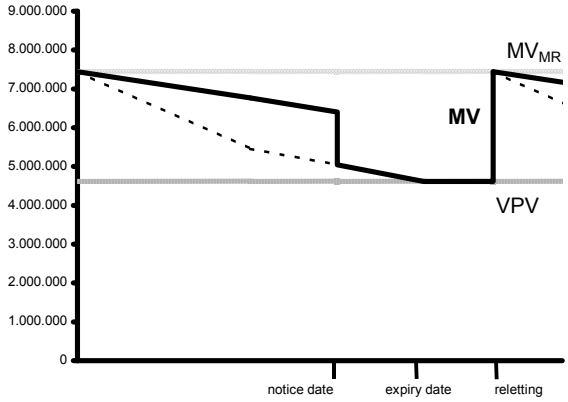
It can therefore be concluded that the results produced by the valuation model are largely in line with the empirical outcomes of the appraisal firms, and that the model therefore appears to adequately describe the perceptions of a representative sample of valuation practitioners.

It is not our intention to propose the developed model as a tool for valuation practice. The market knowledge, intuition and experience of professional appraisers are likely to constitute a sound enough basis for adequate estimations of vacant possession values, even if this remains a difficult task. We rather want to emphasize the use of the theoretical model as a knowledge instrument that may help to deepen our understanding of the relations and interdependencies that exist between yield shifts, lease renewal rates and vacant possession values. It is nevertheless possible that in certain instances the theoretical model may serve to check value estimates on plausibility or to support and underpin estimates of vacant possession values in practice.

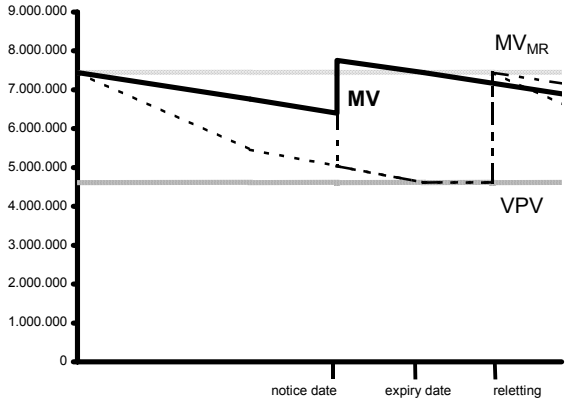
With the vacant possession yield and the value of the lease contracts known, it is also possible to determine the theoretical value evolution of a property in function of the remaining lease term and the lease renewal probability. If we assume a market rental value of € 558.000 p.a., a yield of the 5-years let property of 7,5%, a vacant possession yield of 12,10%, and a lease renewal rate of 0% (i.e. from the start it would be clear that the lease would not be renewed) the gross value of the property would follow the path illustrated by the black line in the following figure:



If it is not known from the start whether the lease is going to be renewed or not, and if the renewal probability is perceived by the market to be 50%, the value evolution would follow the path illustrated by the continuous black line in the following figure. The lease is eventually terminated on the notice date:



If the lease is renewed, the value would follow the path illustrated by the continuous black line in the following figure:



These figures are in line with our conceptual framework developed in chapter 2. They assume that market conditions remain constant.

6. Conclusions

Our study has shown that the valuation of vacant properties is an area of particular difficulty and uncertainty. The variance amongst appraisers, when estimating the value of a 100% vacant property, is considerably higher than when estimating the value of the same property but fully let on a long-term lease. The consequences for performance measurement based on appraisals, as in the case of the ROZ-IPD index, can be substantial.

It has been shown that by decomposing the value of a property into different components, each with its own risk characteristics, the risk of vacancy can be isolated and quantified. Although the valuation model developed here is probably not an adequate tool for valuation practice, it nevertheless helps in gaining a deeper understanding of how yield shifts are a manifestation of the market's perception of vacancy risk and lease renewal probabilities. The vacancy risk is thus already included in the pricing of traded properties, even if they are let on long-term leases.

Real Estate is an idiosyncratic investment category where different risk components are tied together so that their weight and impact on the total value remains opaque. We believe that the appraisal discipline should become increasingly engaged towards unbundling the different value components. A signed lease is a value component with different risk characteristics than expected future leases and therefore deserves a different consideration. Just as the discounted cash flow method relies on a detailed decomposition of all the different cash flow components, future appraisal techniques should be geared towards a decomposition of the different risk components.

This implies in the first instance that more research is needed in the area of lease contract valuation. Questions that would need to be addressed include which reference to choose for determining the discount rate for cash flows from a signed lease, how to assess the default risk of unrated tenants and how to quantify the recovery rate of leases. We would also point to the importance of statistical records of lease characteristics and lease events, such as the BPF/IPD Annual Lease Review and the Strutt & Parker / IPD Lease events review published in the UK. Similar records for leases of the properties included in the ROZ-IPD would be extremely helpful not only for our understanding of the investment characteristics of lease contracts, but for the transparency of the market as a whole.

Recent purchases of vacant properties that have been let and resold shortly afterwards against prices substantially above the initial purchase price should have raised our awareness of the value of signed lease contracts. Advances in the valuation techniques for leases would therefore eventually also be beneficial to the valuation of vacant properties. For a vacant property is but a let property without the benefit of a lease.

Bibliography

- Anglyn T. (1992). "Analyzing "Unearned" Entrepreneurial Profit". The Appraisal Journal, July 1992, pp. 366-379
- Anglyn T. (2005). "Distressed Property Valuation Issues". The Appraisal Journal, Spring 2005, pp. 210-215
- Axcell A., Rodney W. (2001). "The Valuation of Real Estate where no Market Evidence Exists or only Limited Market Data is Available". Paper presented at the World Valuation Congress IX
- Berkhout T. (2005). "Vastgoed waarderen onder IFRS". Property Research Quarterly. December 2005.
- BPF / IPD (2004). Annual Lease Review 2004
- Brown G.R., Matysiak G.A. (2000). Real Estate Investment – A Capital Market Approach.
- Crosby N., French D., Ward C. (1997). "Contemporary UK market valuation methods for over-rented investment properties: a framework for risk adjustment". Journal of Property Research, 1997, Volume 14, pp. 99-115
- Di Pasquale D., Wheaton W.C. (1996). Urban Economics and Real Estate Markets
- Dreyer B. J., Mathieson K. (1995). "Ensuring consistency in the estimation of vacancy rates". The Appraisal Journal, April 1995, pp. 209-212
- DTZ Zadelhoff (2006). "Cijfers in perspectief. De Nederlandse markt voor commercieel vastgoed"
- Fox M. (2005). "Vacant possession value and value forecasts". Internal guideline paper of Eurohypo AG
- French D., Ward C. (1995). "Valuation and Arbitrage". Journal of Property Research, 1995, Volume 12, pp. 1-11
- French D., Ward C. (1996). "Applications of the arbitrage method of valuation". Journal of Property Research, 1996, Volume 13, pp. 47-56
- Geltner D., Miller N. (2001). Commercial Real Estate Analysis & Investment
- Grolow R.M., Parr D.M. (1994). "Determining Investment Value in an Illiquid Market". Real Estate Review, Winter 1994, pp.24-29
- Hammond P.B. (2002). "Understanding and using inflation bonds". TIAA-CREF Institute, Research Dialogue Nr. 73, September 2002
- Hendershott P. H. (1996). "Valuing properties when comparable sales do not exist and the market is in disequilibrium". Journal of Property Research, 1996, Volume 13, pp. 57-66
- Van Hulst T. (2004). "De disconteringsvoet voor taxaties: DV-tax". ASRE Master Thesis
- Johnson T., Davies K., Shapiro E. (2000). Modern Methods of Valuation
- Moody's Investor Service (2005). "Default and Recovery Rates of European Corporate Bond Issuers: 1984-2004". Special Comment. February 2005
- Lusht K. M. (2001). Real Estate valuation, principles and applications
- Rabianski J. S. (2002). "Vacancy in Market Analysis and Valuation". The Appraisal Journal, April 2002, pp. 191-199
- Ross S.A., Westerfield R.W., Jaffe J.F. (2002). Corporate Finance

- Strutt & Parker, IPD (2004). The Strutt & Parker / IPD Lease events review summary 2004
- Ten Have G. G. M. (2002). Taxatieleer vastgoed 1
- Ten Have G. G. M. (2004). Taxatieleer Vastgoed 2
- Wincott R. D. (1997). “Vacancy Rates and Reasonableness”. The Appraisal Journal, October 1997, pp.361-370

Appendix 1

Case study ch.3: outline handed out to appraisal firms

INTRODUCTION

Dear Mr.

As part of my MSRE Master thesis on the **valuation of vacant properties**, I would like to gain insight into the methods and techniques currently employed by practitioners when valuing vacant (or partly vacant) properties. To this effect, the major commercial appraisal firms in the Netherlands will be asked to undertake desktop value calculations for a predetermined office property, assuming varying states of occupation, from fully let to 100% vacancy, as well as varying lease expiry terms.

As responsible of one of the major commercial property appraisal firms, I would kindly ask you to participate in this investigation.

On the following pages you will find all the necessary information on the property to be valued. The property exists in realty, but for the purpose of this study I have deviated from reality in some minor details in order to make the case more suitable for the analysis. Therefore, the information on the following pages does not correspond 100% with the factual situation. Generally however, the real property and the property as described below do not differ in essence.

The owner of the property has given approval for the use of the property and the data set out below for the purpose of this study.

After the property information, you will find the valuation instruction with the general and special assumptions to observe. Although you are asked you to perform value calculations for six different letting situations, differences between one letting situation and another are confined to only one parameter, which should limit the necessary time effort.

The general results of this investigation will be included and published in the master thesis. Your detailed calculations will not be published. Any reference to value figures in the thesis will be anonymous. It is only intended to mention the participating appraisal firms by name at the end of the report. Please let me know if you do not wish to be mentioned in this way.

Once again, I would like to thank you for your willingness to participate in this study.

Serge Schiltz

Amsterdam, November 2005

PROPERTY

"Airport Plaza" building, Jupiterstraat 51-69, 2132 HC Hoofddorp

An Office building with grounds and parking spaces , together with the land on which it was built and other immovable appurtenances.

Land registry details

Municipality: Haarlemmermeer.
Section: AL.
Number: 900.
Area: 22 ares, 40 centiares.

The freehold interest is not encumbered with any leasehold (erfpacht) or easements (erfdienstbarheden).

Zoning details

Land use plan: "Hoofddorp Beukenhorst".
Adopted by the municipal council: 24.05.1984.
Approved by the provincial executive: 09.07.1985.
Designated use: "Centre purposes 1" (offices, office-supporting service companies, schools, institutes, buildings for hotel/bar/restaurant- and recreational uses, residential use, service stations for cars, as well as the necessary construction works and public areas).
Plot ratio: 40%.
Maximum building height: 18m.

Environmental aspects

The Municipality of Haarlemmermeer has no information concerning the quality of the soil and has no information with regard to underground oil tanks.

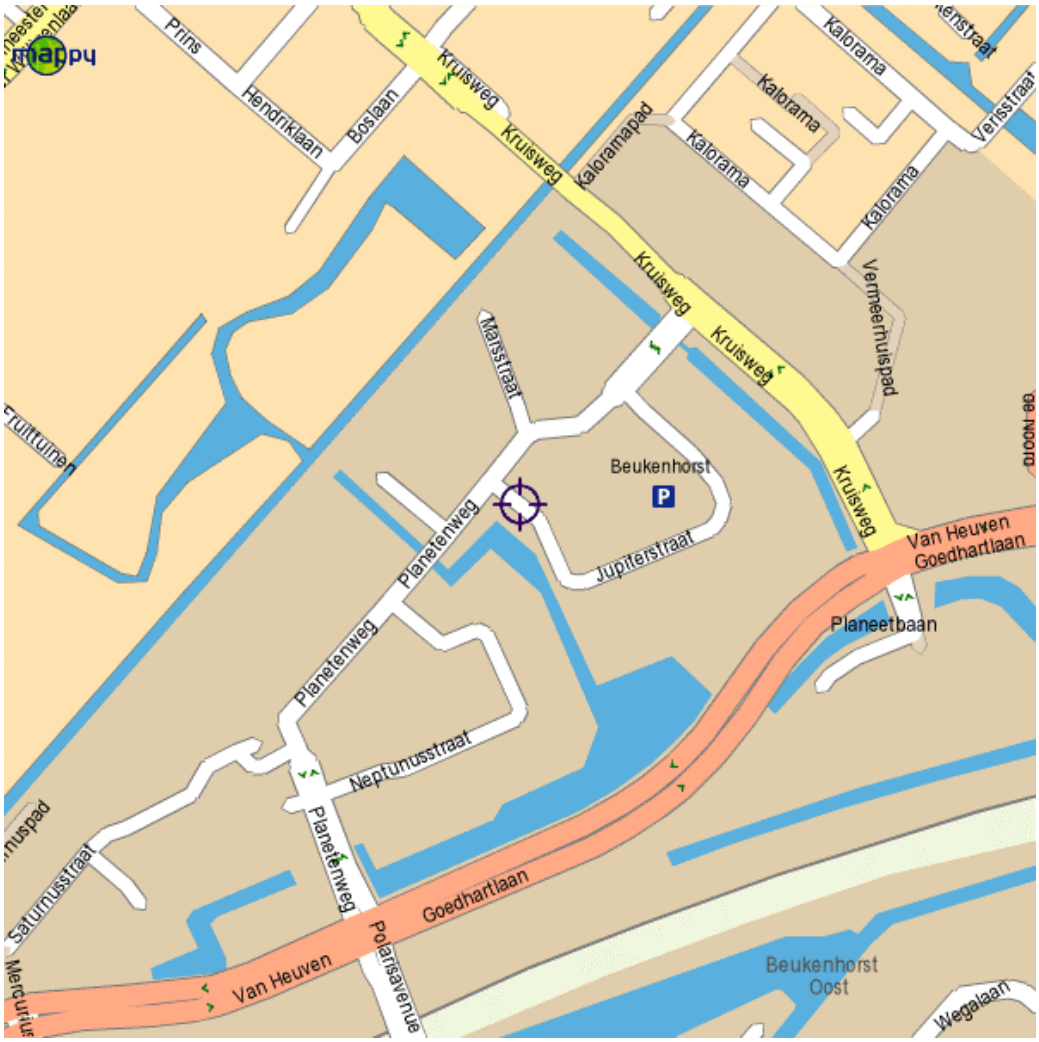
Location

The property is located on the edge of the Beukenhorst-West office park in Hoofddorp.

Accessibility

The property can be reached via the Hoofddorp-exit on the A4 motorway and then via the N201 provincial road (2km distance). The Hoofddorp railway station is at 10 minutes walking distance. A bus stop providing connections to the direct vicinity is located in front of the building. The property is at 10 minutes walking distance from a shopping center.

Street plans



Photos

General views

Ground floor

Entrance hall


Typical office spaces






Rear side with parking areas

Planetenweg, view towards northeast

Planetenweg, view towards southwest

Jupiterstraat

Corner Jupiterstraat / Planetenweg

Description

The property is a self-contained office building consisting of 6 storeys, parking spaces and greenery.

Layout

Gross floor area: 4.053m2 (b.v.o. according to NEN 2580).
Lettable floor area: 3.600m" (v.v.o. according to NEN 2580).
Open parking spaces: 100.

Construction details

1. Foundation: pile foundation.

2. Load bearing structure:
Exterior walls: concrete.
Interior walls: concrete.
Floors: concrete (cast in-situ).
Staircases and ramps: concrete, steel.
Roof: flat roof, concrete.
Columns and joists: concrete, steel.

3. Fitting out:
exterior wall openings: double glazed aluminium framed windows.
built-in assembly packet: movable partition walls.

4. Finishing:
Exterior wall finishing: metal panels.
Interior wall finishing (non partition walls): plaster/sprayingwork (offices, hall), tiling (sanitary rooms).
Floor finishing: carpet (offices), tiling (hall and sanitary rooms).
Ceiling finishing: standard suspended ceiling (offices, sanitary rooms), aluminium suspended ceiling (hall).
Roof finishing: bituminous, ballast layer.

5. Mechanical systems:
Heat generation: 2 gas-fired boilers.
Heat distribution: radiant panel heaters.
Ventilation: central mechanical ventilation.
Cooling: top cooling with air humidification.

6. Electrical systems:
Ducting: wall cable ducts.
Lighting: integrated into suspended ceiling.
Communication: doorbell panel, telephone connection.
Fire safety equipment: smoke detectors, automatic alarm system.

Burglary safety equipment: alarm contacts, vibration magnets, space detection.
Transport: 2 electric lifts (800kg, 10 persons).

7. Permanent fixtures:
Permanent kitchen facilities: pantry kitchen on each floor.
Permanent sanitary facilties: double toilet group on each floor.
Permanent maintenance facilties: cradle system for façade cleaning.
Site: clinkers finishing, automatic barrier, site lighting.

Maintenance

Built in 1988, in good state of repair, no overdue maintenance.

Non recoverable operating charges

Real estate tax (ozb): € 15.347
Waterboard rates (waterschapslasten): € 1.134
Sewerage rates (rioolrecht): € 109
Insurance premium: € 3.497

VALUATION

The **Market Value** of the freehold interest is to be estimated. The **Market Rental Value** should also be estimated.

The **date of valuation** is the **1st December 2005**.

Valuation assumptions

An estimate of the Market Value should be given for each of the following special assumptions:

- the property is fully let on a lease with a remaining term of 5,0 years; the rent passing is equal to the Market Rental Value;
- the property is fully let on a lease with a remaining term of 2,5 years; the rent passing is equal to the Market Rental Value;
- the property is fully let on a lease with a remaining term of 1,25 years; the rent passing is equal to the Market Rental Value;
- the property is 50% let on a lease with a remaining term of 5,0 years; the rent passing is equal to the Market Rental Value for these spaces; 50% of the spaces are vacant;
- the property is 25% let on a lease with a remaining term of 5,0 years; the rent passing is equal to the Market Rental Value for these spaces; 75% of the spaces are vacant;
- the property is 100% vacant.

Each value estimation should be accompanied by an estimate of the time that would be necessary to realize a sale of the property, and an estimate of the time that would be necessary to let the vacant spaces at Market Rental Value.

The valuations should be based on the following general assumptions:

- clear and marketable title of the property, no easements or other restrictions with a material impact on the value;
- no soil contamination, no asbestos or asbestos containing materials, no underground oil tank;
- occupied spaces are let on a standard ROZ-lease with no special clauses; the rent passing is assumed to be equal to the Market Rental Value; the lease provides for successive 5 year renewal options after the remaining term; tenant and landlord may terminate the lease at the end of the remaining term and of every renewal period with 12 months notice; the rent is adjusted to market level upon each renewal;
- vacant spaces are in a readily marketable state and need no additional investments; the spaces are free of internal partition walls and of carpets; the inlay elements of the suspended ceiling have been replaced were necessary; the spaces have been freshly repainted internally; marketing has started on the date of valuation;
- vacant and occupied spaces are of identical quality and are therefore assumed to have identical Market Rental Values per sqm.
- parking places are affected pro rata to occupied and vacant spaces.

Appendix 2

Case study ch.3: numerical results

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
rental value	556.000	579.000	602.000	525.000	566.000	520.000	558.000	28.804	5%	586.804	529.196	82.000	15%	602.000	520.000
initial void		32	24	24	36	24	28	5	18%	33	23	12	43%	36	24

Market values

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
100% / 5y	6.890.000	7.525.000	7.510.000	6.310.000	6.930.000	6.630.000	6.965.833	439.454	6%	7.844.742	6.086.925	1.215.000	17%	7.525.000	6.310.000
100% / 2,5y	6.390.000	6.520.000	7.100.000	5.770.000	5.975.000	6.170.000	6.320.833	427.653	7%	7.176.139	5.465.528	1.330.000	21%	7.100.000	5.770.000
100% / 1,25	5.990.000	5.700.000	6.990.000	5.530.000	5.310.000	5.590.000	5.851.667	548.222	9%	6.948.110	4.755.223	1.680.000	29%	6.990.000	5.310.000
vacant	4.280.000	4.760.000	5.450.000	4.470.000	4.710.000	3.540.000	4.535.000	574.130	13%	5.683.260	3.386.740	1.910.000	42%	5.450.000	3.540.000
100% / 5y	6.890.000	7.525.000	7.510.000	6.310.000	6.930.000	6.630.000	6.965.833	439.454	6%	7.405.288	6.526.379	1.215.000	17%	7.525.000	6.310.000
50% / 5y	5.475.000	6.235.000	6.480.000	5.260.000	5.955.000	5.070.000	5.745.833	514.485	9%	6.260.319	5.231.348	1.410.000	25%	6.480.000	5.070.000
25% / 5y	4.805.000	5.385.000	5.970.000	4.840.000	5.265.000	4.330.000	5.099.167	518.471	10%	5.617.637	4.580.696	1.640.000	32%	5.970.000	4.330.000
vacant	4.280.000	4.760.000	5.450.000	4.470.000	4.710.000	3.540.000	4.535.000	574.130	13%	5.109.130	3.960.870	1.910.000	42%	5.450.000	3.540.000

Value shifts

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
100% / 5y	100	100	100	100	100	100	100	0	0%	100	100	0	0%	100	100
100% / 2,5y	93	87	95	91	86	93	91	3	4%	94	88	8	9%	95	86
100% / 1,25	87	76	93	88	77	84	84	6	7%	90	78	17	21%	93	76
vacant	62	63	73	71	68	53	65	6	10%	71	59	19	29%	73	53
100% / 5y	100	100	100	100	100	100	100	0	0%	100	100	0	0%	100	100
50% / 5y	79	83	86	83	86	76	82	3	4%	86	79	10	12%	86	76
25% / 5y	70	72	79	77	76	65	73	5	7%	78	68	14	19%	79	65
vacant	62	63	73	71	68	53	65	6	10%	71	59	19	29%	73	53

Gross values

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
100% / 5y	7.315.789	8.103.768	8.038.163	6.755.136	7.357.558	7.096.000	7.444.402	484.402	7%	7.928.804	6.960.001	1.348.632	18%	8.103.768	6.755.136
100% / 2,5y	6.788.311	7.020.248	7.598.294	6.176.124	6.345.894	6.604.000	6.755.479	466.883	7%	7.222.361	6.288.596	1.422.170	21%	7.598.294	6.176.124
100% / 1,25	6.361.212	6.146.535	7.477.434	5.922.311	5.640.794	5.983.000	6.255.214	588.686	9%	6.843.900	5.666.529	1.836.640	29%	7.477.434	5.640.794
vacant	4.553.300	5.134.287	5.835.547	4.787.210	5.002.998	3.789.000	4.850.390	618.226	13%	5.468.617	4.232.164	2.046.547	42%	5.835.547	3.789.000
100% / 5y	7.315.789	8.103.768	8.038.163	6.755.136	7.357.558	7.096.000	7.444.402	484.402	7%	7.928.804	6.960.001	1.348.632	18%	8.103.768	6.755.136
50% / 5y	5.814.402	6.716.964	6.938.781	5.629.075	6.321.778	5.426.000	6.141.167	559.885	9%	6.701.052	5.581.282	1.512.781	25%	6.938.781	5.426.000
25% / 5y	5.117.036	5.805.669	6.387.928	5.183.679	5.591.638	4.631.000	5.452.825	559.580	10%	6.012.405	4.893.245	1.756.928	32%	6.387.928	4.631.000
vacant	4.553.300	5.134.287	5.835.547	4.787.210	5.002.998	3.789.000	4.850.390	618.226	13%	5.468.617	4.232.164	2.046.547	42%	5.835.547	3.789.000

Gross yields (BAR v.o.n.)

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
100% / 5y	7,6%	7,1%	7,5%	7,8%	7,7%	7,3%	7,5%	0,2%	2,9%	7,7%	7,3%	0,6%	8,4%	7,8%	7,1%
100% / 2,5y	8,2%	8,2%	7,9%	8,5%	8,9%	7,9%	8,3%	0,4%	4,3%	8,6%	7,9%	1,0%	12,6%	8,9%	7,9%
100% / 1,25	8,7%	9,4%	8,1%	8,9%	10,0%	8,7%	9,0%	0,6%	6,9%	9,6%	8,3%	2,0%	22,1%	10,0%	8,1%
vacant	12,2%	11,3%	10,3%	11,0%	11,3%	13,7%	11,6%	1,1%	9,4%	12,7%	10,5%	3,4%	29,3%	13,7%	10,3%
100% / 5y	7,6%	7,1%	7,5%	7,8%	7,7%	7,3%	7,5%	0,2%	2,9%	7,7%	7,3%	0,6%	8,4%	7,8%	7,1%
50% / 5y	9,6%	8,6%	8,7%	9,3%	9,0%	9,6%	9,1%	0,4%	4,3%	9,5%	8,7%	1,0%	10,6%	9,6%	8,6%
25% / 5y	10,9%	10,0%	9,4%	10,1%	10,1%	11,2%	10,3%	0,6%	5,8%	10,9%	9,7%	1,8%	17,5%	11,2%	9,4%
vacant	12,2%	11,3%	10,3%	11,0%	11,3%	13,7%	11,6%	1,1%	9,4%	12,7%	10,5%	3,4%	29,3%	13,7%	10,3%

Yield shifts (absolute)

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
100% / 5y	100	100	100	100	100	100	100	0	0%	100	100	0	0%	100	100
100% / 2,5y	108	115	106	109	116	107	110	4	4%	114	106	10	9%	116	106
100% / 1,25	115	132	107	114	130	119	120	9	7%	128	111	24	20%	132	107
vacant	161	158	138	141	147	187	155	17	11%	172	139	50	32%	187	138
100% / 5y	100	100	100	100	100	100	100	0	0%	100	100	0	0%	100	100
50% / 5y	126	121	116	120	116	131	122	5	4%	127	116	15	12%	131	116
25% / 5y	143	140	126	130	132	153	137	9	7%	146	128	27	20%	153	126
vacant	161	158	138	141	147	187	155	17	11%	172	139	50	32%	187	138

Yield shifts (relative)

valuer	1	2	3	4	5	6	mean	Stdev	Stdev / mean	mean + Stdev	mean - Stdev	min/max spread	spread / mean	max	min
5y - 2,5y	0,6%	1,1%	0,4%	0,7%	1,2%	0,5%	0,8%	0,3%	37,0%	1,1%	0,5%	0,8%	97,1%	1,2%	0,4%
2,5 - 1,25	0,5%	1,2%	0,1%	0,4%	1,1%	0,8%	0,7%	0,4%	62,0%	1,1%	0,3%	1,0%	156,8%	1,2%	0,1%
1,25y - vacant	3,5%	1,9%	2,3%	2,1%	1,3%	5,0%	2,2%	0,7%	32,8%	2,9%	1,5%	2,2%	99,8%	3,5%	1,3%
100% - 50%	2,0%	1,5%	1,2%	1,6%	1,3%	2,3%	1,5%	0,3%	18,3%	1,8%	1,2%	0,8%	52,1%	2,0%	1,2%
50% - 25%	1,3%	1,4%	0,7%	0,8%	1,2%	1,6%	1,1%	0,3%	23,5%	1,3%	0,8%	0,6%	56,3%	1,4%	0,7%
25% - vacant	1,3%	1,3%	0,9%	0,8%	1,2%	2,5%	1,1%	0,2%	18,8%	1,3%	0,9%	0,5%	45,5%	1,3%	0,8%

Appendix 3

Ch. 5: Comparison of expected yields between annuities and bonds

Baa rated debt

Comparison of expected yields between annuities and bonds

		year	1	2	3	4	5
cumulative default rate	%		0,2%	0,7%	1,3%	1,9%	2,4%
unconditional probability of default	%		0,2%	0,5%	0,6%	0,6%	0,5%
recovery rate	%		26,0%	26,0%	26,0%	26,0%	26,0%

annuity	**years**	**5**								
loan amount	€	100								
interest rate	%	4,00%								
annuity	€		22,46	22,46	22,46	22,46	22,46			probability
outstanding principal	€	100	81,54	62,34	42,37	21,60	0,00		yield	weighted yield
amount at risk	€		104,00	84,80	64,83	44,06	22,46	realized yield	degradation	degradation
cash-flow if default in year 1	€	-100	27,04	0,00	0,00	0,00	0,00	-73%	76,96%	0,15%
cash-flow if default in year 2	€	-100	22,46	22,05	0,00	0,00	0,00	-40%	44,49%	0,22%
cash-flow if default in year 3	€	-100	22,46	22,46	16,86	0,00	0,00	-22%	25,53%	0,15%
cash-flow if default in year 4	€	-100	22,46	22,46	22,46	11,46	0,00	-10%	13,64%	0,08%
cash-flow if default in year 5	€	-100	22,46	22,46	22,46	22,46	5,84	-2%	5,64%	0,03%
total yield degradation	%	0,64%								0,64%
expected yield	%	3,36%								

bond	**years**	**5**								
face value	€	100	0	0	0	0	100			
coupon	%	4,00%	4	4	4	4	4			
cash-flow	€	100	4	4	4	4	104			probability
outstanding principal	€	100	100	100	100	100	0		yield	weighted yield
amount at risk	€		104	104	104	104	104	realized yield	degradation	degradation
cash-flow if default in year 1	€	-100	27,04	0,00	0,00	0,00	0,00	-73%	76,96%	0,15%
cash-flow if default in year 2	€	-100	4,00	27,04	0,00	0,00	0,00	-46%	49,96%	0,25%
cash-flow if default in year 3	€	-100	4,00	4,00	27,04	0,00	0,00	-32%	35,87%	0,22%
cash-flow if default in year 4	€	-100	4,00	4,00	4,00	4,00	0,00	-47%	51,11%	0,31%
cash-flow if default in year 5	€	-100	4,00	4,00	4,00	4,00	27,04	-18%	22,03%	0,11%
total yield degradation	%	1,04%								1,04%
expected yield	%	2,96%								

difference in expected yield	**%**	**0,40%**

Appendix 4

Ch. 5: Calculation of the present values of the case study leases

lease values

lettable area	m^2	3.600
market rental value	€	558.000

year	#	0	1	2	3	4	5
inflation	%		1,3%	1,8%	1,7%	1,7%	1,8%
rent passing from current lease	€	558.000	558.000	565.254	575.429	585.211	595.159
taxes, insurance	€	20.087	-20.087	-20.348	-20.714	-21.067	-21.425
maintenance	€/m^2	6,50	-23.400	-23.704	-24.131	-24.541	-24.958
management	% of RP	1,50%	-8.370	-8.479	-8.631	-8.778	-8.927
net operating income	€		506.143	512.723	521.952	530.825	539.849

5 years lease	years	5,0	506.143	512.723	521.952	530.825	539.849
discount rate	%	4,54%					
Present Value 5 years lease	**€**	**2.287.001**	484.162	469.156	456.860	444.448	432.374

2,5 years lease	years	2,5	506.143	512.723	260.976
discount rate	%	4,07%			
Present Value 2,5 years lease	**€**	**1.191.291**	486.349	473.404	231.539

1,25 years lease	years	1,25	506.143	128.181
discount rate	%	3,86%		
Present Value 1,25 years lease	**€**	**606.162**	487.332	118.830