



**KTH Architecture and  
the Built Environment**

Department of Real Estate and Construction Management  
Masters Program in Real Estate Development and Financial Services

Thesis Number 83  
Master of Science 30 credits

---

## **Valuation of development rights Current practice and limitations**

---

Author:  
Carolina Nilsson

Stockholm 2011

Supervisor:  
Hans Lind

## Master of Science thesis

---

|                              |   |
|------------------------------|---|
| <b>Title:</b>                | Valuation of development rights – current practice and limitations        |
| <b>Authors:</b>              | Carolina Nilsson  |
| <b>Department:</b>           | Department of Real Estate Construction and management                     |
| <b>Master Thesis number:</b> | 83  |
| <b>Supervisor:</b>           | Hans Lind   |
| <b>Keywords:</b>             | Market value, development rights, planning process, valuation uncertainty |

---

### Abstract

Valuations play an important role for transactions decisions regarding properties and should indicate the most probably price for the object if sold on the open market. There are different valuation approaches and methods generally summarized as the comparable sales method and the investment method.

The object of this thesis is to find out the general practical approach among appraisers when appraising development rights.

The methodology used for answering the thesis question is based on a theoretical background of market value definitions, valuation methods, investment theory, and fundamentals of land development, together with an empirical section analyzing valuation reports and interviews held with leading valuation companies in Sweden. Development rights valuations have in this work been characterized by having few comparables. This work has also found that there are many difficulties estimating an appropriate risk regarding how long the development process will take and how the market will look like when property is completed. Due to the lack of available market data, there is also a high uncertainty regarding the variables used as inputs in the valuation. This thesis has found that the preferred approach among appraisers is to use the comparable sales method, trying to find comparable objects that are in the same phase in the development and planning process as the subject property. The residual method, using an investment calculation and then subtract all costs identified as necessary for completing the property, is identified the second best preferred choice. But a conclusion of this thesis is also that many variables assumed are not necessarily derived from the market, but rather from appraisers own experience and general knowledge as well as second hand information given from other actors like property owner expectations, information of municipalities and developer's own beliefs and perceptions.

The risk within the valuations is also concluded to be handled by very diverse approaches by the appraisers and there is a wish to make deeper research about how this could be more ultimately handled by the valuation core in the future.

## **Acknowledgement**

This thesis is my final work at the master program of Real Estate Management at the Royal Institution of Technology.

I would like to thank my supervisor Hans Lind, who has shown a big encouragement for my thesis object and has been given me many good advices along the progress.

I would also like to thank all the respondents for my interviews who made this work possible; Åsa Linder (JLL), Arne Strand (DTZ), Rolf Simón (Forum Fastighetsekonomi), and Susanne Hörnfelt and Anders Elvinsson ( Newsec). Thank you for sharing your valuable experience and great knowledge!

*Carolina Nilsson*

**Table of contents**

- 1. Introduction ..... 5
  - 1.1 Background..... 5
  - 1.2 Problem area and research question ..... 5
  - 1.3 Research limitations ..... 6
  - 1.4 Relevance ..... 6
- 2. Methodology ..... 7
  - 2.1 Approach ..... 7
  - 2.2 Conceptual framework..... 7
  - 2.3 Method motivation ..... 8
    - 2.3.1 Selection of companies ..... 8
- 3. Basic Real Estate Valuation Theory ..... 9
  - 3.1 Valuation definitions ..... 9
  - 3.2 Valuation methods..... 10
    - 3.2.1The comparable sales method ..... 10
    - 3.2.2 Investment method..... 11
    - 3.2.3 Development/residual method ..... 12
  - 3.3 Implications ..... 13
  - 3.4 Valuation dependability ..... 14
    - 3.4.1 Valuation errors..... 14
    - 3.4.2 Market value versus transaction prices ..... 14
    - 3.4.3 Risk and uncertainty within valuation ..... 15
    - 3.4.4 Reporting risk and uncertainty ..... 16
- 4. Basic Investment theory ..... 18
  - 4.1 Investment calculation ..... 18
  - 4.2 Investment influence..... 19
    - 4.2.1 Market efficiency..... 19
    - 4.2.2 Behavioral aspects..... 20

|   |    |
|---|----|
| 5. Fundamentals of Land development .....                                   | 21 |
| 5.1 What determines the value of land?.....                                 | 21 |
| 5.1.2 Supply and demand in the property market .....                        | 21 |
| 5.2 The planning process.....   | 23 |
| 5.3 Value changes during property development process .....                 | 24 |
| 6. Current valuation practice: Results from study of valuation reports..... | 27 |
| 6.1 Valuation method.....   | 28 |
| 6.1.1 Number of comparables.....  | 29 |
| <b>6.1.2 Yields, required rate of return and required profit</b> .....      | 30 |
| 6.2 Risk assessment.....  | 31 |
| 6.2.1 Reporting property value .....  | 31 |
| 7. Current valuation practice: Result from interviews.....                  | 33 |
| 7.1 General questions .....   | 33 |
| 7.2 Valuation method.....   | 34 |
| 7.2.1 The comparable sales method .....                                     | 37 |
| 7.2.2 Investment method.....  | 41 |
| 7.3 Risk assessment.....  | 43 |
| 7.4 Value changes from the development and planning process .....           | 45 |
| 8. Analysis.....  | 47 |
| 8.1 Choice of valuation method .....  | 47 |
| 8.2 Limitations when appraising development rights .....                    | 48 |
| 8.3 Appraiser risk assessment .....   | 49 |
| 8.4 Reporting uncertainty .....   | 50 |
| 8.5 Value changes from development process .....                            | 50 |
| 9. Conclusions .....  | 52 |

# 1. Introduction

## 1.1 Background

The purpose of property valuation is to estimate a market value for a subject property. Appraisers, as well as end-users, often want a clear and precise opinion of the value as possible. As valuations do play a major role and has a high impact of different financial decisions around the world, they have to contain all required information (Pagourtzi, et al, 2003). Banks, shareholders, house-buyers, pensions-funds, investors, property owners and whole banking system, and therefore economies, are all very depended on reliable valuations to work (Gilbertson & Preston, 2005). Therefore, to be considered accurate, it is required that the valuation can reflect all the important fundamentals in the real market. (Pagourtzi, et al, 2003) And since the valuation is supposed to serve as a reliable indicator of the property's transaction price (Bowles et al, 2001) market participants must be able to rely on it. Important to keep in mind though, is that the appraiser has no possibility to find an exactly point-estimate of the value. Therefore all valuations are considered to include some degree of uncertainty.

When it comes to vacant land that is in the process of being developed, this uncertainty could possibly be considered even larger and the process of appraising these kinds of sites are considered very challenging for the profession (Adair et al, 2005). When development properties are subject for transaction in an early phase they are sold as development rights, i.e. the right for someone to develop the property. The exact context of the development rights are decided when the local plan is legally adopted. So, the participants have, in the beginning of a property development process, no clear knowledge about how much/how large/and what kind of buildings, i.e. the density of the project and development rights will be. Therefore the variables needed to decide the market value should be considered very difficult to estimate. Concerning development projects, also the time up to the property is fully developed can be hard to estimate, mostly due to the time challenging planning process and the lack of knowledge about the amount of time it will take before official decisions and permits will be given by the municipalities (Kalbro, 2007). This brings a large risk that the project gets finished when the economy is in a different condition than when the project was initiated or valued. As the planning and development process moves on, the risk should therefore decrease proportionally and the value of the land increase, since the knowledge regarding the land's future use is better known.

## 1.2 Problem area and research question

Besides the difficulties deciding the amount of time and density for the development projects, the uncertainty also includes estimates of appropriate yields, rental growths, development costs and the level of risk associated with the project. (Adair et al, 2005). A survey done, on different companies in development projects, came up with the conclusion that not a single company used exactly the same variables when given the assignment to operate the same valuation. (Robinson, 1996)

The object of my interest is therefore; how do appraisers estimate the market value of a development right? This question is also thought as the main research question of this thesis.

In order to reach a conclusion of this question several sub-questions need to be asked theoretically and empirically and these are identified as;

- What is the main valuation methodology approached used by companies appraising development rights?
- What limitations do the methodologies have?
- In what way do development rights differ when it comes to appraising them compared to general properties?
- How is the risk in the projects handled?
- How is the uncertainty of market value handled and reported?
- How does value differ under the several phases within the real estate development?

### **1.3 Research limitations**

This thesis is geographical limited to Sweden, even if the theories and analyses can be applied to most countries sharing a similar regulation system for the development process. The work will also mainly focus on the very beginning on the development process, before the possible buildings are constructed, since this is the phase where the transactions will include development rights. The work includes discussion regarding residential as well as commercial development projects.

### **1.4 Relevance**

Not much research has been done in Sweden concerning development rights or how property value changes during the planning and development process. Also there is a lack of research concerning how the participants are handling the risk and uncertainty factors related to the development project. The thesis will add knowledge to participants, i.e. property owners, property investors and appraisers, concerning the general approach and method used when appraising development rights and what constitutes the value of the development property in different phases of the planning process.

## 2. Methodology

### 2.1 Approach

The most suitable research approach, for answering the research question, is concluded as a qualitative method since the research aims to capture a deeper knowledge about the appraisers' process of agreeing upon a value of the property/development rights. Interviews with appraisers are held, in order to capture their experiences and beliefs of what determines, and how they agree upon, the value of a property within the planning process. The research design will be a comparative case study, i.e. the same questions and information will be collected from the different valuation firms. The collected data will then be compared and analyzed in order to draw the conclusions. As a complement to the interviews valuation reports are collected and analyzed from the companies interviewed as well as from other valuation companies. This will give the opportunity to get a broader picture of the valuation practice concerning properties of interest. There will also be an opportunity to compare actual valuation reports with the actors' perceptions and opinions of how the valuation should be done.

### 2.2 Conceptual framework

The theoretical framework will be based on secondary data of existing theories regarding the complexity of market value, valuation methods and investment theory. The distinctiveness of the Swedish planning process and what determines the value of land will also be described and discussed in relation to this. There will also be a general theoretical section regarding the fundamentals of land development.

The theoretical part will be used as a basic framework for the following empirical and analytical section. The theoretical section together with the results obtained from the interview and analyze of valuation reports will together serve as knowledge that will finally contribute to an analyze and thesis conclusion that will answer the main research question as well as sub questions stated.

#### Method section

##### Chapter 1

- Introduction to subject and research interest

##### Chapter 2

- Methodological approach

#### Theoretical section

##### Chapter 3

- Basic real Estate Valuation Theory

##### Chapter 4

- Basic investment theory

##### Chapter 5

- Fundamentals of Land development

#### Empirical section

## Chapter 9 Conclusions



## **Chapter 6**

- Current valuation practice: Results from study of valuation reports

## **Chapter 7**

- Current valuation practice: Result from interviews

## **Chapter 8**

- Analysis

## **2.3 Method motivation**

### **2.3.1 Selection of companies**

The population is considered to consist of all valuation companies. Therefore samples of the population need to be selected and the selection is based on a judgment sample, i.e. units that are thought as selective for the population. For the purpose of this thesis, four of the largest actors of property valuation in Sweden have been selected for interviews, Forum Svensk Fastighetsekonomi, Jones Lang LaSalle, DTZ and Newsec.

Valuation reports studied have been collected from Jones Lang Lasalle, Forum Fastighetsekonomi, Newsec and Nai Svefa.

### 3. Basic Real Estate Valuation Theory

The purpose of most valuations is to estimate the most probable price of a given asset. There are sure a lot of different definitions when it comes to value, price and worth, why it seems necessary to clarify these for the reader. Both valuation methods and definitions of value may differ in different countries, but below are the most commonly used defined.

#### 3.1 Valuation definitions

Hutchison & Nanthakumaran (2000) based on Baum *et al* (1996) uses the following definition for market price and the purpose of valuation:

- *The actual transaction price of the asset, i.e. property, should be distinct as the market price.*
- *Valuation can on the other hand be seen as the tool for estimating the market price.*

So, to make things clear, the market value reached by appraisers should not be interpreted as the property price, but only as estimation of the market worth and is generally defined as:

*“Market value is the estimated amount for which an asset should exchange on the date of valuation between a willing buyer and a willing seller in an arm’s length transaction after proper marketing wherein the parties have each acted knowledgeably prudently and without compulsion”.* (EVS, European Valuation Standard & IVS, International Valuation Standard)

The worth of an asset is more complicated to define. Firstly we have the concept of market worth. Market worth is the most probable price for the asset if sold on the market. (Pagourtzi et al, 2003 & Hutchison & Nanthakumaran, 2000). The market value is therefore generally defined as:

***“Market price is the price at which the market trades; market worth is the price at which it would trade if available information were used efficiently.”*** (Baum et al, 1996 p. 37)

Secondly, besides the market worth, there is also always an individual worth. Hutchison & Nanthakumaran (2000) and Pagourtzi (2003) define the individual worth as the price an individual investor would pay for an asset given the same information as everyone else on the market. But, nothing implies that individual and market worth needs to be homogenous since the individual might use and see other aspects than the rest of the market.

One author that has a lot of criticism against the market value definition is Lind (1998). Lind is especially critical about if there is something that can be called the market value at all. In order to reach a conclusion about a property’s market worth it is assumed all participants are sitting on the same information and use this in the same manner (Hutchison & Nanthakumaran (2000). Lind (1998) argues that if this is true, based on the theory of efficient markets, (see section 4.1.2) investors would want to pay exactly the same price.

## 3.2 Valuation methods

The traditional valuation methods are the comparable sales method and the investment methods. Below is a short summary of the general methodology behind these methods. The purpose is to give the reader a general picture of the different approaches the methods take. This will in the analysis part of the thesis be further discussed in relation to what methods are used by the actors interviewed in the empirical sector, and their main thoughts and arguments behind their choices.

### 3.2.1 The comparable sales method

The comparable sales method is a widely and commonly used method for valuation (Pagourtzi 2003). The method is suitable for most types of properties as long as there are good possibilities to find comparables, i.e. properties in the same area, with similar attributes and recently sold. If attributes differ from the property being appraised the prices of the comparables might need some adjustment regarding the observed price. (French & Gabrielli, 2007). The steps of the method are in summary the following (Persson, 2005, p. 367)

- 1) Define the market
- 2) Find comparables in that market area
- 3) Find enough information about the chosen comparables
- 4) Analyze the comparables based on the found information
- 5) Make necessary adjustments due to time and amenity differences
- 6) Make the final valuation of the subject property

The method is based on the theory that similar properties in the same market area should relate in price (Pagourtzi 2003). In order to be considered as accurate the method's validity strongly depends upon the availability of comparables. There should be several comparables sold in recent time within the same market area to be able to work as good price indicators. (Pagourtzi 2003) The problem though, is that there aren't always possible to find as many or as good comparables as the appraiser wishes when using the method. They might have been sold many years ago or differ too much in size, market area etc. The problem finding good comparables will be more difficult the more unique the property is.

The illustration below gives a good picture of how the comparables look like in theory (left picture), and what they often look like in reality (right picture):

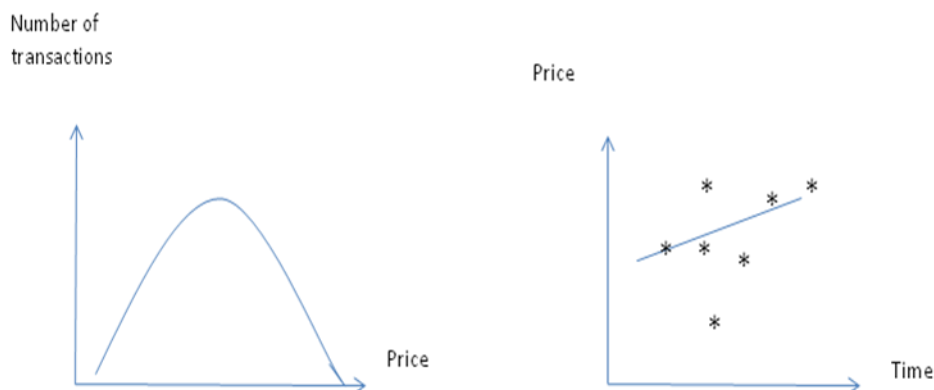


Fig.1 Fastighetsnomenklatur (2005) p. 366

The different methods used for comparable sales method can be summarized as (Persson, 2005, p.372)

**1) Area method**

- *The price related to area*

**2) Yield method**

- *Price related to net operating income*

**3) Gross income multiplier**

*Price related to rent*

**4) Assessed value method**

- *Price related to assessed value*

### 3.2.2 Investment method

The investment approach is the most common valuation method concerning commercial properties. The requirement is that the property is assumed to produce cash flow over its holding period. The cash flow comes from the property's expected collection of rentals (French & Gabrielli, 2007). The method can be used both for estimating the property's market worth as well as an individual worth. (Persson, 2005) In the investment market the method needs to have a strong relation between the rental market and the investment market. The rent will be based on the fundamentals of the real estate market concerning the level of supply and demand for real estate. (Pagourtzi 2003)

The method has two approaches. Either the market value is estimated through a direct capitalization. This approach simply estimates the market worth by dividing the property's expected net operating income for year one by the yield, either found on the market or an individual return depending on the purpose of the calculation (Persson, 2005).

$$V = \frac{NOI}{R}$$

*V = value*

*NOI = Net operating income*

*R = Required rate of return*

The second approach is estimating the market value through a cash flow calculation regarding the property's expected future income. It's approach is defined by calculating the expected income stream over the holding period to a present value by its required rate of return. What's also needs to be done is determining the property's salvage value by the end of the holding period. The present value of the salvage value is then added up together with the present value of the net operating income and the market value is estimated. (Persson, 2005)

The investment method requires very good estimates of input variables in order to reflect the market well. The most crucial inputs are below summarized by Hutchison & Nanthakumaran, (2000, p.43-46).

- **The holding period**

There are no rules of what should be the appropriate holding period when using a cash-flow but suggestions are that the time period should at least reflect the length of possible already existing rental contract. But to avoid the level of errors due to uncertainty of the market, a five year holding period is assumed to be most appropriate, and argued for when testing variables in the article “The calculation of investment worth” by Hutchison & Nanthakumaran (2000).

- **Cash flows**

When estimating the property’s net operating income there is a need to decide the growth level over the holding period. This is generally done by estimating the long term nominal growth by adding the expected inflation rate to the estimated real rental growth rate. GDP often serves as an indicator for real rental growth but of course more subjective estimates can be made if there are special reasons for that. (Hutchison & Nanthakumaran, 2000).

- **Yields**

One of the most crucial variables for determining the market value through the investment/cash flow method is the yields used in the model. A small change in yield will have a much stronger final effect of the market value than if the same change would occur in rents, holding period, costs etc. The initial yield of a property is in general defined as by dividing the property’s first year net operating income with its market value (Lind 2004). The exit yield is instead estimated based on the condition of the property at the end of the holding period, when possible resold, why longer holding periods complicate these estimates. (Hutchison & Nanthakumaran, 2000).

- **Discount rate/required rate of return**

For nominal cash flows the discount rate is generally composed as the risk free rate plus a risk premium for the property. This needs to be estimated for each property and its special conditions and can be very difficult to correctly estimate. (Hutchison & Nanthakumaran, 2000), especially if the property holding period is long, a small change/difference in discount rates gets very large effect on the final valuation estimate. (Adair & Hutchison, 2005)

### 3.2.3 Development/residual method

The residual/development method is a valuation method belonging to both the investment method and comparables sales method and is an appropriate valuation method used when appraising vacant land or properties under redevelopment. Most authors agree with the fact that when valuing vacant land it is usually done by the residual method. This is concluded by Pagourtzi (2003), Robinson (1996), Adair et al (2005) and Atherton et al (2008). The method is described as either using the discounted cash flow model, looking at the future expected income from the subject property or by the comparable sales method, and can therefore be seen as a variety of the general comparable sales method and investment method. The method estimates the final future value of the property, when it’s fully developed. Then, from the

estimated value, all costs involved in the development process should be deducted. (Pagourtzi, 2003, Atherton et al, 2008, French & Gabrielli, 2007).

Total costs consist of construction costs, interest on these, professional fees and the required profit to the potential developer. (Atherton et al, 2008).

Adair et al (2005) find the construction costs as well as site improving costs are the hardest variables to estimate concerning the method used.

However, Pagourtzi et al (2003) argues that if possible, the value should always be based on comparables and be appraised by the comparable sales method. The comparables should then consist of other vacant land possible to develop that's recently been sold in the same market area. There is a strong need to deeply describe the characteristics of these comparables in terms of size, zoning, characteristics and possible future development.

Adair et al (2005) found in a study that 90% of appraisers put the residual model as a first hand choice when appraising urban regeneration land. They didn't use the comparable sales method as a first choice because of the lack of good data, but only used the method as a way to verify the feasibility of the residual model.

### 3.3 Implications

Lind & Nordlund (2010) have interesting implications of the classification of the above described valuation methods. They argue that the division of methods instead should consist of only the comparable sales method, actor based approaches and a stock market approach. Their main arguments for this is that when general income and investment methods are used, they are generally just using the comparable sales approach in a new way, since all variables, inputs, and assumptions are based on recently transacted comparables derived from comparables on the market. Therefore, they argue, all valuation approaches deriving variables directly from observed transactions on the property market should be distinct as one single approach, i.e. the comparable sales method.

If there aren't enough of comparables to derive the variables from the market, Lind and Nordlund argues an actor based approach is necessary. With this approach Lind & Nordlund state the appraisers instead use their own and other's experience, explained as *“the valuer uses information about the actors on the market to form an opinion about the probable price of the property and this opinion is based on direct interaction with the actors – or at least through interactions with someone who has direct interaction with the actor”*. (Lind & Nordlund, 2010, p.7)

The third approach distinct by Lind & Nordlund is the stock market approach. They base the theory of this method on the argument that correlations of property price and stock prices occurs, and it therefore should be seen as possible to derive conclusions about property value from the property-stock market development.

### 3.4 Valuation dependability

Mallinson and French (2000) as well as, Atherton et al (2008) conclude that there are very large risks in the process of valuation. Examples of these uncertainties come from the difficulties estimating future market, finding appropriate comparables and estimating the conditions of the subject property (French & Gabrielli, 2007 and Mallinson & French, 2000). A level of uncertainty should therefore be considered to come with all valuations. The more special features the higher uncertainty, especially during a recession.

#### 3.4.1 Valuation errors

A strong reason for why valuations can differ from others is mostly explained by how the information is handled. If the same valuation methods are used, either there is simply not enough information on the market, or different appraisers simply interpret the available information differently. (Bowles et al, 2001)

Bowles et al (2001) explains and give definitions of the different valuation errors that might be. The valuation errors are divided into two types, inaccuracy and biased valuations, explained as:

*“Inaccuracy is...the fixed difference between the ex ante valuation(s) and the underlying true market value of which actual price is taken as the best indicator.”* (Bowles et al, 2001, p.143)

*“Bias is... the systematic (as opposed to random) deviation between valuations and true values/prices.”* (Bowles et al, 2001, p.143)

Bowles et al (2001) think that the bias of valuation possible comes from over- or undervaluation. This could be explained by the hog-cycle (see section 4.2.2) that predictions of the future will many times be based on the current market conditions. Bowles et al (2001) also mean that a large degree of the valuation errors come not only from the uniqueness of the property, but as well from the lack of valuation guidelines, and that stakeholders should be very skeptical overall when reading valuation reports.

#### 3.4.2 Market value versus transaction prices

Bowles et al (2001) argue it would be unfair to think appraisers would be able to estimate a precise transaction price of a property, since the market itself has such complex structure. This is also, according to the authors, the reason why different appraisers estimate different values for the same property, and there isn't necessarily any of the values that need to be less accurate than the other. Due to this complexity of the market itself it should be considered impossible to come up with an exact estimate of today's market value, since estimates about the future (ex ante) is based on realizations occurred in the past (ex post). (Bowles et al, 2001)

Previous studies have tried to identify how accurate valuations are in relation to real transaction prices. It isn't easy however to try to find some evidence or result. Bowles et al, (2001) identify many reasons for the problem of finding evidence of how accurate valuations

in general seem to be. Firstly, they argue time lag as a major factor for the difficulties. Since the date of valuation and date of transaction always will differ it's very hard to measure the impact of this on the final transaction price. Secondly there is also a time lag between the date when the transaction price is set and the date when the transaction finally is completed. And if the price is actually set before transaction this can have a great influence on the valuation result, and the other way around, that the valuation influences the transaction price when time lag is short.

Christensen (2011) also brings up another important reason of why property value shouldn't be mixed up with real transaction prices. Transaction prices also include unknown financial arrangements of the investors. The investor will also take into account the future value of the property, i.e. what the property can be expected to generate economically in a future sale after the holding period. If the holding period and other circumstances perfectly fit with the conditions set in the property valuation there's a chance that the value and property price will meet but this doesn't have to be the case.

### 3.4.3 Risk and uncertainty within valuation

The terms of risk and uncertainty within valuations need to be distinct. Adair & Hutishon, (2005) makes a good description of their important differences and separate them as:

*“Risk is defined as a situation where alternative outcomes and their probabilities are known whereas in the case of partial uncertainty some of the alternative outcomes are known but not their probabilities”.* (Adair & Hutishon, 2005, p.255)

Christensen (2011), based on Henneberry & Guy (2002, p.77-78) and Ratcliff et al, (2004, p 335), summarizes the main parameters of risk that comes from property development. These are identified as;

- Production costs
  - may turn out differently than expected at first
- Rent levels
  - hard to estimate correctly
- Investments yields
  - can possible differ during the process
- Time to sell/rent
  - the economic outlook may be different when project is completed

These risk factors make the developer of property requiring a level of profit as compensation and from Christensen's study it is usually to be in the range of 5-20%.

The developer will experience different kinds and levels of risk during the property development process. Firstly, in the beginning of the planning process all important plans and decisions are in the hands of the municipality. Later the costs concerning the preparation of land and construction of buildings are hard to estimate, and will have a large influence on property value, and therefore compose a level of risk. When property is completed there is



also a risk concerning the demand of the possible end-users which will affect price level and vacancy and therefore property value

#### 3.4.4 Reporting risk and uncertainty

Now, when we have concluded that all valuations include some degree of uncertainty, and there are many risk aspects in property development, how is this reflected within the valuations? Research indicates that there is a lack of standardized ways on how to report for uncertainty in valuation reports around the world. The impact of uncertainty within valuations have been in interest of research for long and concluded to indeed be a problem. The discussions increased after 1994 when a famous report, the Mallinson report, was first published. The publication had several suggestions of how RICS, the Royal institution of Chartered Surveyors, should make improvements and develop standardized methods for how to report and express uncertainty within valuation reports. (Lorenz, 2006)

But discussions about the problem have apparently not been enough. A questionnaire among appraisers in the UK shows that there are no standard ways of reporting uncertainty within valuation reports, i.e. it's totally up to the appraiser himself/herself to choose an appropriate way of how to report it (Joslin, 2005) and RICS has still not given any practical suggestions regarding the reporting issue. (Lorenz, 2006) It's also been discovered, in a research of Swedish appraisal reports, that during boom years a few valuation reports included any discussion about probable uncertainty at all. A common approach of handling the uncertainty among the appraisals has instead been to include all of the main valuation methods as a way to argue that the found value is the correct one. (Ekelid et al, 1998) There is no doubt that if appraisers could find a good way to report uncertainty it will be for great use for both appraisers and clients. And a standardized model for uncertainty should make clients as well as appraisers more comfortable. (Mallinson & French 2000)

After the property crash in the 90's, there has been a more common approach to include some kind of uncertainty aspect in terms of a sensitivity analysis in the appraisal reports. Also less point-estimates and more market data information are argued to be included in the standard reports. But still there is a large lack of informative arguments behind the sensitivity analysis, and no information about the probability of certain circumstances to occur. (Ekelid et al, 1998). Also Atherton et al (2008) agree with the latter. They argue in their report "Decision theory and real estate development: a note on uncertainty", that traditional valuation reports might include a sensitivity analysis to capture the risk of uncertainty, but states that this method is a very thin one, in terms that it only indicates what will happen if everything will be better or worse. They instead suggest that all variables should be reported in some way, and a method of identifying what might happen if one variable points in one direction, and another indicates something completely else.

Mallinson and French (2000) strongly recommend the appraiser not reporting the estimated market value with a single point estimate, since this will strongly mislead the client. Instead a range of value should be presented to reflect the uncertainty of value.

In a study of appraisers performing valuations of urban regeneration land the choice of how to report the value, with a point estimate or a range, differ. Their different opinions are related to how the risk of the valuation would be interpreted best by the client. If a single point estimate was used there was an agreement among respondents in the survey that the risk within the property needed to be fully explained in some other manner. (Adair et al, 2005)

## 4. Basic Investment theory

Lucius (2001) clarifies how real estate investments often are defined by their space, money generated and time period in the investment theories. Therefore the traditional investment valuation methods, like the discounted cash flow methods could be considered as very suitable for property investment. But Lucius also denotes there are negative aspects concerning the method. Especially he is concerned with the fact that myopic behavior many times does play a large role since appraisers don't use the method flexible enough. Investments often have many different opportunities and challenges but the valuation doesn't capture this according to him.

Below the main influences of property investment decision are described when it comes to mathematical methods, handling information, and behavioral explanations.

### 4.1 Investment calculation

According to theory, investments should always be made once the net present value, NPV is bigger than zero. The net present value is found when the asset's present value of future income is first discounted by the cash flow model earlier described, and then decreased by the price paid for the asset. As long as the result is positive the investor should make a profit since worth exceeds price paid.

$$NPV = CF_0 + \frac{CF^1}{(1+i)^1} + \frac{CF^2}{(1+i)^2} + \dots + \frac{CF^n}{(1+i)^n}$$

$NPV > 0$  the asset should be purchased by the potential buyer (Hutchison & Nanthakumaran, 2000)

Hutchison & Nanthakumaran, (2000) argue that the opportunity of making a profit is possible, as long as the variables are estimated similar to other investors, i.e. that estimates are the same as the market. If many participants see the same opportunities the market will correct itself by pushing up the price. This is a feature of the stock market.

There are no guarantees for the investor to make his calculated profit however. Hutchison & Nanthakumaran, (2000) identify two main reasons for that. Firstly, the estimates made by the investor, resulting in a positive NPV, might have been too uncertain and not fulfilled. The second reason for not realizing the expected profit might simply be because the investors' estimates of inputs were bad.

Once again the important impact of uncertainty of future worth of a property is declared. One can never know what happens in the future and no matter if current information is deeply analyzed and interpreted, new information might be added, driving the market in a different direction. Hutchison & Nanthakumaran therefore deeply recommends the use of shorter holding periods as a way to decrease the risk of having new information added.

## 4.2 Investment influence

### 4.2.1 Market efficiency

Market efficiency refers to the theory of basing your decision on all information available. This would mean all actors set the same worth of an asset since they are basing their decision on the same information. The degree of market efficiency can be divided into three levels. First is a weak level of efficiency, saying the transaction prices paid are based on past information and experience. Second level is the semi-strong level of efficiency, where prices are formed by the public information available for everyone. Last, the strong level of efficiency refers to the theory that prices should reflect full information, including private information. (Fama, 1970)

There are lots of criticisms against this theory though; in order for anyone to make a better earning on a certain asset than anyone else, this should come from the possibility of finding a mispriced asset which should be thought as the purpose of investment analysis. Individuals have different perceptions and that's what's the reasons for the existence of transactions (Hutchison & Nanthakumaran, 2000 & Baum et al 1996 & Lind, 2005). Therefore people should be considered as individuals that see different opportunities in the same situation. Lind (2005) argues people can't have the same beliefs about the future, and therefore neither the same expectations of future market value. This is also the case of the appraiser him/herself, leading to a very subjective estimate of a property's value. Also, different investors should have different risk aversions, leading them to make different judgments about both current and future market. (Bowles et al, 1996)

Moreover Baum et al (1996) and Fili & Lind (2009) argue that the property market can't be seen as very efficient. Baum thinks an efficient market requires more heterogeneous and frequently traded assets, which they argue properties are not. Therefore, prices we observe on the property market are actually set by the appraisers themselves and that the appraisers strongly influence actors less price-skilled on the markets.

Nevertheless Hutchison & Nanthakumaran (2000) also say that even if the property market isn't efficient, investors tend to agree about investment value of a property a lot and therefore it's usually close to market value, since the investors are a part of that market.

Below graph shows some arguments for why the property market is seen inefficient if compared to the stock market.

| Equity market                       | Property market   |
|-------------------------------------|---|
| Presence of central trading market  | No central market but several submarkets  |
| Homogeneous assets                  | Heterogeneous markets, but some submarkets include more substitutes than others |
| Assets can be traded in small lots  | High lot value  |
| Good quality information            | Poor quality information owing to infrequent trading                            |
| Large number of market participants | Smaller number of market participants   |

*Fig. 2 Differences between the equity market and property market, Hutchison & Nanthakumaran, 2000, p. 37*

#### 4.2.2 Behavioral aspects

All investment decisions made are based on future expectations. A study by Taltavull & McGreal (2009), looking at the Spanish housing market, indicates that around 8% of the price can be derived from expectations, and that these expectations mainly comes from present market cycle.

Expectations can come from different sources. Wheaton (1999) concludes these sources either come from irrational (myopic) or rational expectations. Irrational expectations can be identified as when expectations about the future are simply based on the present, i.e. if the growth rate is high today it's also expected to stay at that level forever. Rational-expectations behavior is on the other side described by Wheaton as participants fully understand the market fundamentals and thus make rational and correct assumptions of the future market. Also the present value of future cash flows will then be correctly predicted. If investors adopt a myopic behavior there is a risk of overbuilding, since investments fully completed in the future will be based on the demand today. (Fuerst & McAllister, 2010) Brunet (2006) found in his study, made on the behavioral aspects in the investment market for office-building, that myopic behavior was a strong explanation for investment decisions among actors.

Myopic behavior is often illustrated by the "hog-cycle" meaning production increases when supply is low and prices are high. The increased production then leads to lower prices due to the fact that supply is higher than demand, whereas production is cut leading to higher prices again when demand is higher than supply. This is a classical illustration of how current prices influence decisions about the future. (Lind, 2010)

Yet another behavioral influence of valuation is addressed by anchoring. Diaz et al (1999) and Fili & Lind (2010) conclude that anchoring behavior is a common economic issue. If there are other subjects that have a certain value, the appraiser will be using this as a reference-point also to the subject property, unconsciously. This is as well as strong argument for the fact that valuations of properties are very subjective and derived from expectations rather than the actual market. Atherton et al (2008) also states that the final result of the valuation will depend a lot upon the appraisal's expectations and the way he/she is handling those.

## 5. Fundamentals of Land development

### 5.1 What determines the value of land?

In order for any asset to be considered having a value someone has to feel a use and a need for it. Except this, it's also required that the supply of the asset is limited. (Lantmäteriverket & Mäklarsamfundet, 2004). A property should in most cases fulfill all these requirements, and therefore obtains a value. This comes from the theory of supply and demand, described in next section; i.e. the more limited supply the higher the value and the other way around.

#### 5.1.2 Supply and demand in the property market

The classic economic theory of supply and demand is a good way to illustrate what determines the value of a property. The numbers of potential buyers of the property create the demand for the property, and the total numbers of properties on the same submarket create the supply. The look of the demand curve can have many reasons, for example increased income/revenues, increased capital wealth, changed opinion of a certain kind of property etc (Lind & Persson, 2005). The slope of the supply curve is characterized by the price sensitivity of construction. If construction firms expect property prices to increase in the future they will build more. Another reason construction might increase and change the placement of the supply curve is if construction cost decrease for some reason, mostly because of increased efficiency. Since the supply of properties often is defined as inelastic in short term, due to the fact that it often takes some time to develop a property, and also that it's impossible to build more (for example in some urban areas) the supply and demand model in the short term is characterized by a vertical supply curve. Therefore, if property prices increase in a short term perspective, it's consider coming from increase in the demand for properties. (Lind & Persson, 2005) This gives the effect that when demand increases the price increases very fast. If we instead look at the model in a long term perspective, it is thought that the property market somehow acclimates which makes the supply curve look more elastic and prices adjusts more.

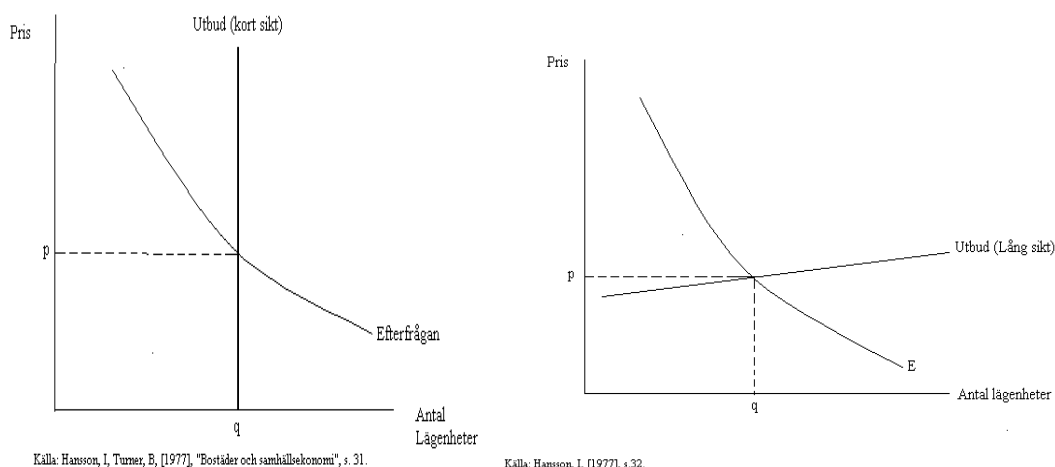


Fig. 3 Demand and supply on the property market

If we agree the supply and demand theory is the main explanation of property value, Christensen (2011, p. 211) summarizes other factors determining property value as

- 1) Property related factors, meaning attributes of the property such as standard age and size
- 2) Location and area related factors; like reputation, area, transportations etc
- 3) Social factors, people preferring to live with people in same social group.
- 4) Afflicted community factors, how expensive to borrow money, price development etc
- 5) Individual factors, can affect transaction price for example if the seller needs to sell his property fast due to economical issues.

Christensen distinguishes municipal zoning as a property related factor. The planning of land by municipalities directly influences the property value. He argues zoning is a string determinant for property value. For example there are big differences in value between rural and urban zones. The zoning in different areas influence the value of land by regulating the supply of a certain kind of property, since the zoning determines what kind of properties that are to be built within a certain area. And since it's said previously the supply and demand of properties is the main fundamental factor for its value. Zoning also has an influence of the value influencing factor of location and area. Since distance to the urban area influences the property value, a municipal decision of new zoning near this urban area will have a stronger influence on the property value than in a more rural location. (Christensen, 2011)

The planning of land also decides the quantities of buildings, i.e. density that is permitted to build in the area. The value of the land is not completely correlated to the density however, due to the buildings production costs (Christensen, 2011). Since construction costs consist of flexible (determined by the amount built) and fixed (irrespective of the amount built) costs (Kalbro, 2007) it means cost increase but also total value of the property, when density increases (Christensen, 2011). Nevertheless Kalbro means that at some point of density the costs will exceed the value. From the figure we can therefore see, that in order for the project to bear economically for the investor, the density of the development needs to be within the range of D1-D2.

The diagonal line shows the building costs and the curved line the change of property value.

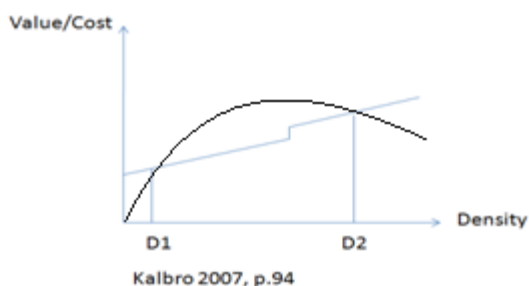


Fig. 4 Relationship of density and property value

## 5.2 The planning process

Sweden influences the use of land through many regulation systems. The main purpose for this is an interest that the land will be used at its best. The fact that the land use is officially regulated is not controversial since it's the best way for a country to control the land use and possible eternal effects in interest of the public and not only private interests. There is also a need for an official control due to the infrastructure issues that most often come with a new development project. (Kalbro, 2007)

The main influencing plans for property development are the master plan (översiktsplan) and local plan (detaljplan). The master plan, all municipalities are required to hold and its purpose is to illustrate the main focus of the use of land and water in the area. If the master plan describes the main use of the land, the local plan does the same but much more in detail. The local plan regulates public sites such as roads, a park etc, and describes, in detail the buildings allowed in the area, the kind of buildings, height, size etc. The local plan is also required to state a timeframe for the project that has to be in the range of 5-15 years. (Kalbro, 2005)

When it comes to the development of land, it's therefore obligated that it's made either within an existing local plan or a new one needs to be developed. The local plan is mandatory for the municipalities to develop when; (Kalbro, 2005, p.78)

- 1) New buildings requiring some kind of infrastructure (roads, water etc)
- 2) Single building affecting the rest of the surrounding and
- 3) Buildings/areas that are developed/changes in some way

The process of the local plan can be generally described as a 5 step model. First a program for the plan is created, describing today's situation of the site and future plans. Secondly, if there is risk future use of the area might affect the surrounding negatively, a description of environmental consequences (miljökonsekvensbeskrivning) is made. Thirdly, the municipalities are required to have a consultation (samråd), meaning they need to discuss the plan in detail with other authorities. Before the plan can be legal it's also required that the municipality presents the plan for the publics. In this way other people that might have an opinion of the plan can raise their voice. This can result in a more time-consuming process if the plan needs to be revised in some way. When the plan has reached legal force, the property owner is required to follow its "rules", which might be different from their own development plans.

Since, the land planning process has many legal aspects it's not uncommon that time consumption for a development project is as long as five years or even more (Kalbro, 2007). Lind & Kalbro (2001) found in a study that it can take between 5-10 years for achieving a legal plan for redevelopment of residential areas. This has the effect that developers bear a large investment risk regarding property development project.

The Swedish government has agreed that there are a number of negative aspects in the Swedish planning process considering the big risk developers are facing due to the time-



consuming process. But still no decisions have been made concerning possible legal timeframes for the process, (Kalbro 2007).

Christensen, 2011, emphasizes the important relationship between the developer and municipality during the development process. He underlines the high level of dependability among them, since none can make the process without the other. But in the beginning of the process, the developer is in the hands of the municipality since they alone respond for the development of the plans and permits, and the developer therefore, as stated above, may experience a high degree of risk and uncertainty.

**5.3 Value changes during property development process**

Below is a summary made by Christensen, (2011), of how different adoptions of plans during the development process influences the level of risk within the project

|                               | Municipal plan proposal   | Municipal plan                | Local plan proposal   | Local plan                    |
|-------------------------------|---|-------------------------------|---|-------------------------------|
| Plan vs. Risk and uncertainty | No risk and uncertainty reduction, but indication of future usage | Risk and uncertainty reducing | Not risk and uncertainty reducing, but indication of future options | Risk and uncertainty reducing |
| Plan vs. value increase       | Value increase is insignificant                                   | Value increasing factor       | Value increase is insignificant                                     | Value increasing factor       |

*Fig.5. Risk influences of different plans, Christensen, 2011, p. 190*

Christensen has in his PhD thesis “When property value changes during urban development” developed a conceptual model of how property value changes during the property development process. His work is based on the development process as it looks in Denmark, but this can easily be adopted in a Swedish context as well, since the process is almost identical.

As a basis for his conceptual model, Christensen has summarized the process of property development into five steps including; (Christensen 2004, p.207-216)

1. Concept development
2. The planning process and permits
3. The preparation of land
4. The construction of buildings
5. The sale, rent or use of the area

### **The concept development**

Is the first step that mainly involving development of project idea. Christensen finds in his work nothing that indicated this step has an effect on property value, even if it might have a value increased effect on the developers' perception of property

### **The planning process and the permits**

This step includes master plan, clarifying studies and permits as well as local plan. The master plan is responsible for 1/3 of the property value during this step according to Christensen, since the development of this plan is determining since it states future use of land

Clarifying investigations and permits is according to Christensen as well value increasing since the risk of the development will decrease. But no findings of how much it will influence property value.

The local plan is also found value increasing, for about 2/3 in this step since it's a direct effect on future use, and what can be built.

### **Preparation of land**

This step includes clear the land from old use and to prepare for future use, including infrastructure for future use. This preparation isn't significantly value increasing however since value both can exceed cost as well as cost might exceed value.

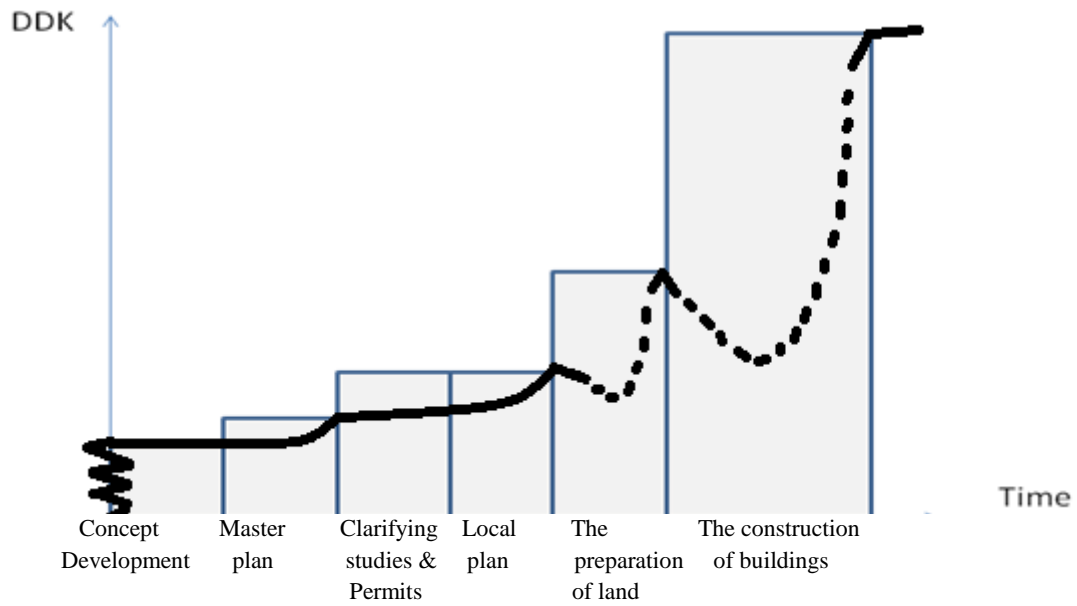
### **Constructions of buildings**

The construction of buildings stands for the biggest increase in value throughout the entire development process. The highest levels of cost are also found here, as well as longest amount of time.

### **Sale rent or use**

Not included in the research, but it mentions value can both increase as well as decrease due to the general economical cycle.

Below graph illustrates the conceptual model Christensen uses as his main conclusion of how property value changes during the development process.



*Fig.6. "The final conceptual model showing how property value changes during an urban development process in Denmark" Christensen, 2011, p. 216*

## 6. Current valuation practice: Results from study of valuation reports

Following is a summary of analyses made on real estate valuation reports, collected from the leading Swedish valuation companies; Forum Fastighetsekonomi, Nai Svefa, Jones Lang Lasalle and Newsec. All valuations are made on development rights and their main practical approaches are below summarized

The below table is an overview of the properties current use and planed future use after development of the development rights appraised.

| Report nr | Current use  | Future use                                   |
|-----------|--|--|
| 1         | None   | Commercial buildings                         |
| 2         | Parking zone   | Commercial, residential and retail buildings |
| 3         | Parking zone   | Residential buildings                        |
| 4         | Reparation hall for trains, some buildings without use | Residential buildings                        |
| 5         | Vacation houses  | Residential buildings                        |

Fig. 6 Current and future use of valuation reports analyzed

All properties appraised in the reports are in a very early phase of the development process and none have an adopted local plan. The first report describes the only one of the properties that is further in the development process since there is an already developed plan but not yet legally adopted.

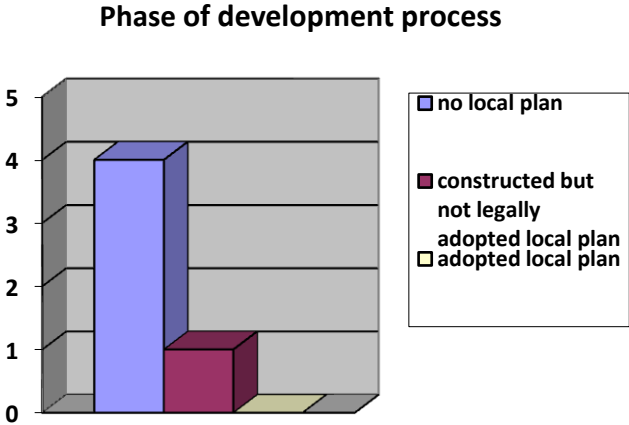


Fig. 7 Phase of development for properties appraised in valuation reports analyzed

Below is listed the information sources the valuations make their assumptions and estimations from. They all use the information coming from the current property owner, comparable sales and analysis of market area as their prime sources.

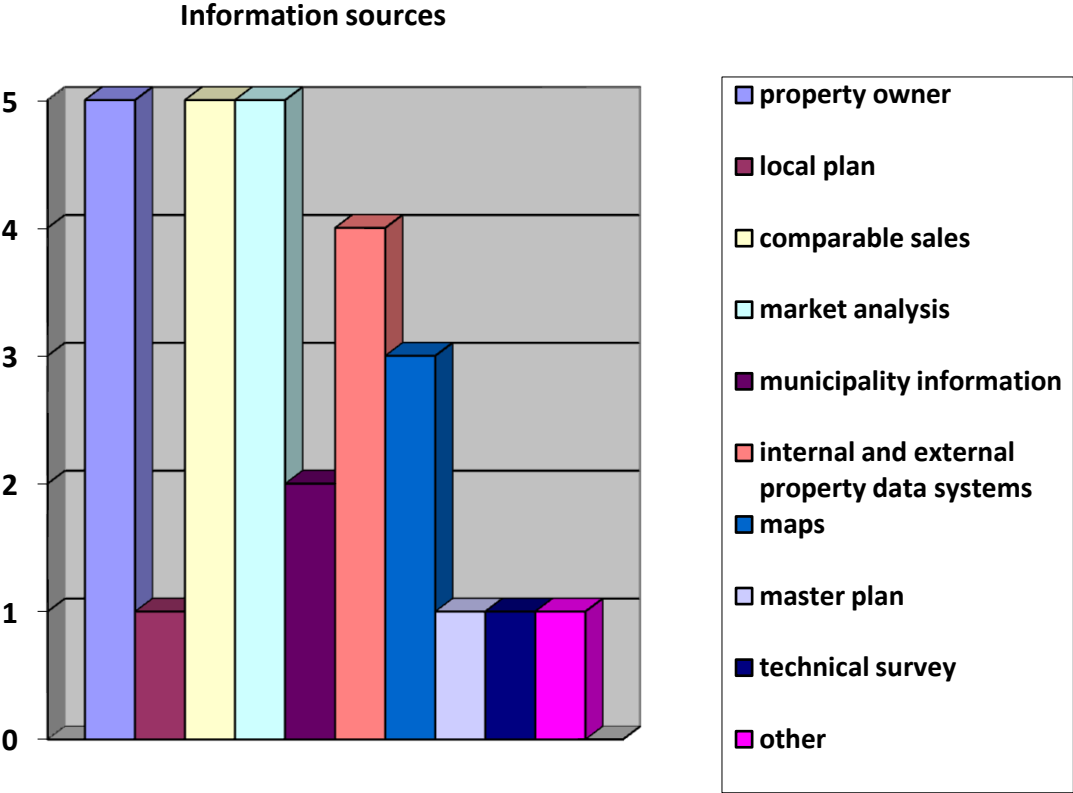


Fig. 8 Main information sources used by the appraisers in the valuation reports studied

### 6.1 Valuation method

In all valuations analyzed the comparable sales method is used as the main valuation method for estimating the market worth of the property and development rights. But the method is used with different approaches.

Reports number 1-4 are looking at comparable properties that have been sold when in the same phase of development. Report number 5 on the other hand looks at comparables as already built, subtracting the costs for developing these building rights from that, according to the methodology of the residual method.

The other reports analyzed are also using the residual method, but the mainly as a feasibility check for the comparable sales method. When performing this method all reports put as an assumption that the property and its buildings are already completed.

Report number 1-3 performs the residual method by doing a one year calculation of the completed property. The estimated price has been subtracted with different parameters;

| Report nr | subtracts from worth of completed property by   |
|-----------|---|
| 1         | <ul style="list-style-type: none"> <li>• required yield</li> <li>• building costs,</li> <li>• required profit of 10-15%</li> <li>• and risk of delayed plan of 20%</li> </ul> |
| 2         | <ul style="list-style-type: none"> <li>• building costs</li> </ul>  |
| 3         | <ul style="list-style-type: none"> <li>• building costs,</li> <li>• 10% in required profit</li> </ul>   |

Fig. 9 Subtracted parameters from calculated future worth in residual method

Report number 4 instead uses the assessed value of sites already developed with subtractions of building costs

Report number 4 and 5 are also the only ones performing a cash- flow analysis approach within the residual method.

#### Choice of valuation method

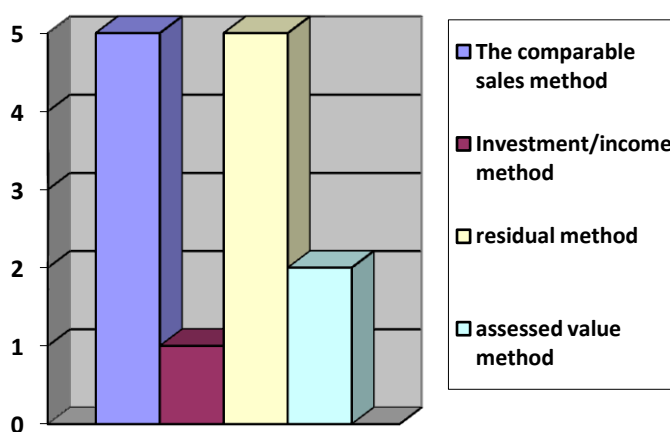


Fig.10 Choice of valuation methods in reports analyzed

Only report 4 and 5 explains their assumption is that prices will follow inflation when estimating future price of the property, and what rate of inflation that is used.

#### 6.1.1 Number of comparables

There are different approaches of how many comparables used and how they are described within the reports. The number of comparables varies between 1-26 but the reports using many comparables only list a general price level based on that number of transactions and have no information listed of the comparables or their seller listed separately. Report number 1, 3, and 4 who use smallest numbers of comparables, seem to have been done a much deeper investigation and discussion around the comparable properties similarities to the subject

property. The same reports also give information about the seller and in which cases the seller is a private property owner or a municipality.

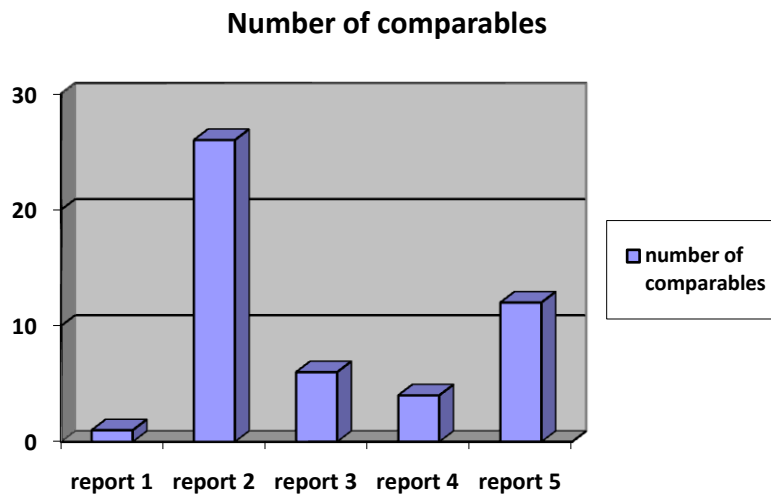


Fig.11 Number of comparables used in the reports

### 6.1.2 Yields, required rate of return and required profit

Only report number 1 mentions the estimated yield, but doesn't explain the derivation of its level. The other four reports don't use or mention any level of yield at all.

Report number 3 doesn't use a required rate of return in their valuation. The other reports derive it in different ways;

| Report nr. |  |
|------------|--|
| 1          | Required rate of return is just assumed without any explanation, discussion or derivation from comparables                                   |
| 2          | Derived from the formula submarket yield+ long term inflation+ planning risk   |
| 4          | Derived from the government bonds with same holding period as the cash flow and to this a risk premium for the subject property is estimated |
| 5          | Derived from the risk free rate, expected inflation and a risk premium. The parameters are separately calculated.                            |

Fig.12 Derivation of required rate of return

Report number 2 and 4 don't discuss or use any level of required profit in their calculation of worth at all. The others estimate the level to be within the range of 10%-15%, but with no further explanation.

## 6.2 Risk assessment

The valuation reports have different strategies of handling the risk that might come from both the development process as well as uncertainties and risk about economic outlook, prices, vacancies, cost etc. Below is a summary of how each report is handling the risk within the development project in general;

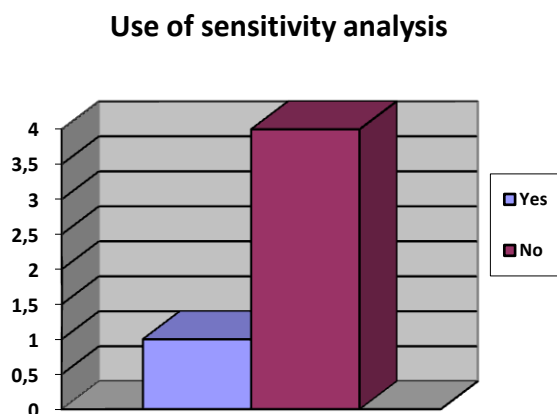
| Report nr |   |
|-----------|---|
| 1         | A risk deduction is made based on both the risk with the planning process, as well as the risk concerning if project is delayed. This is subtracted from worth of completed property in the residual model  |
| 2         | A matrix is done based on the probability that the plan will be adopted as well as the assumed years before the development will start. This gives a risk premium of the project added on the required rate of return used in the residual method |
| 3         | No risk level is assumed or calculated  |
| 4         | Risk premium added to the required rate of return   |
| 5         | Included in the required rate of return and a very deep description concerning the risks in plans and costs   |

*Fig. 13 Managing risk within the valuation*

So, in summary, three of the reports add the risk of the project into the estimated required rate of return. One report doesn't include any risk parameter at all, and another puts the risk separately and subtracts it after worth has been calculated.

### 6.2.1 Reporting property value

Only one out of five valuation reports concerning development rights are using or presenting a sensitivity analysis for different input parameters used in their calculations. The first report states with how much the value of the property is expected to decrease if the time frame regarding the development process will be longer than expected.



*Fig. 14 Number of reports using a sensitivity analysis*



An approach of showing the big uncertainty of the estimated market value is to put the estimated worth of property into an interval. As shown by the graph below 3 out of 5 reports do put the worth within an interval. But there are only 2 of these three that makes their final presentation of worth within this interval. The first report has a very small interval, and the others agree of an interval of around +/- 25%

The reports don't have any further discussion about why the interval is determined to be within this interval, or the probability that it will be at a certain level.

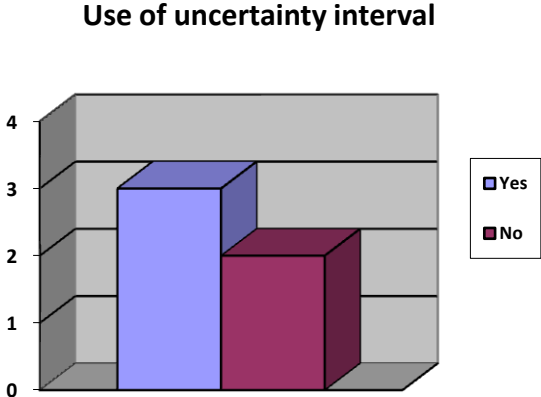


Fig. 15 Number of reports presenting market worth within an interval

| Report nr. | Estimated market worth interval                                     |
|------------|---|
| 1          | Interval of ca +/- 4%   |
| 2          | Interval of +/- 23%, but worth estimated to be within this interval |
| 3          | no  |
| 4          | no  |
| 5          | Yes, an interval of +/- 25%   |

Fig. 16 market worth intervals used in the reports

## 7. Current valuation practice: Result from interviews

### 7.1 General questions

These questions were asked in order to get a picture of the respondents experience within the valuation area as well as valuation of development rights that are of interest in this thesis. All interview questions are also found in Appendix 1. The respondents are Arne Strand, appraiser at DTZ, Åsa Linder, head of valuation at Jones Lang Lasalle, Rolf Simón, appraiser at Forum Fastighetsekonomi and Susanne Hörnfelt and Anders Elvinsson, appraisers at Newsec. The respondents' answers are reported without any given order. Susanne Hörnfelt and Anders Elvinsson are regarded as a single respondent.

#### *How many years of experience do you have from working with property valuations?*

The years of experience from valuation are high among almost all respondent, and the answers should therefore be of high relevance.

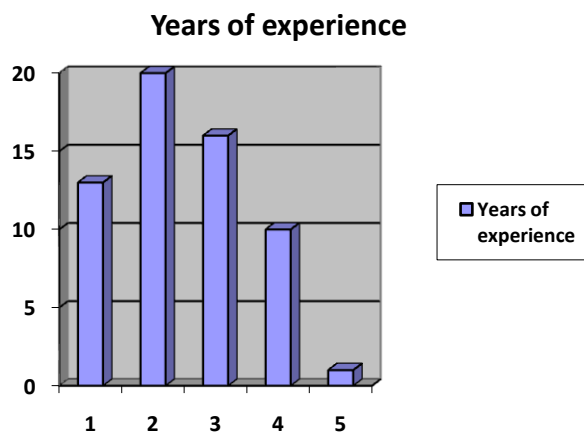


Fig. 17 Years of valuation experience among respondents

#### *Can you appreciate how many valuations of development rights that are performed by your company each year?*

Results indicate that valuations regarding development rights only make up a very small part of the total number of valuations performed within their companies. In general they stand for around 10% of all valuations performed each year. If the number sometimes is larger this depends on the fact that a large property owner wishes to appraise an entire portfolio, and when this is done these portfolios also often include many development rights, independently or within properties. One of the respondents think that these kinds of valuations will increase in the future, since this is the tendency today.

The companies experience from valuating the kinds of properties in interest differ a bit, but due to the many years of experience from the respondents themselves it should be thought as the experience is in fact larger.

***In the valuations of development rights, how common to you consider it to be that the property's local plan has not yet been legally adopted?***

Half of the companies think it's common or at least quite common that the objects of valuation don't have an adopted local plan. Only one doesn't think it's common at all, in view of the fact that actors don't want to set an agreement before that, or at least a promise about the plan. Also another respondent argues that even if it is common that there is no adopted plan, it is commonplace that there is at least a development agreement with the municipality of buying land with the promise that a local plan is to be developed.

Yet another respondent agree that there are often different interests in when entering a project, depending on if you are the seller or the buyer of the property. Answers indicate that if you are the seller you often want to sell your piece of land either before a plan is agreed, or else you decide to wait for the plan before you sell. Many developers want to be involved in an early stage of the process, to be able to affect the future content of the property and speculate on profit as much as possible, or the property owner isn't interested or have enough knowledge to handle the process themselves.

***In the valuations of development rights, how common to you consider it to be that the property's local plan has not yet been adopted?***

- 1) It occurs
- 2) It is common
- 3) Not common
- 4) Quite common

## **7.2 Valuation method**

***Do you always appraise the property with the assumption that it is already built, no matter in what phase the planning process is in today?***

In the valuations analyzed in section 6, the appraiser assumes that there is already an adopted local plan and an investment calculation is made from the assumption that the property is fully built by today according to the residual method. My question wants to see if the respondents confirm this and also find out their main arguments for doing this no matter what development phase the property is in.

From the respondents' view; either the appraiser has the choice of using a theoretical investment model, where value of the property as already built is estimated, and then subtracted the costs from this (according to the residual approach). Or he has the option of finding good comparables of comparable sales of similar development rights.

Respondents agree finding comparables of land that is in the same phase of development process is very difficult, but if you can find good comparables this method is superb. If there is a lack of comparables the investment method (with the residual method approach) is instead used.

Results of interviews indicate that the general practice is to assume an already adopted local plan when estimating the market value through the investment method/residual method but the model is only used as a way to control the fairness of the comparable sales model.

Half of the respondents really stress the high uncertainty coming from using the investment method as well as the comparable sales model.

General opinion of the respondents is that when using the residual model the future value of the property with building is very insecure, as well as the costs that are subtracted from this value. So when dealing with these two large numbers of uncertainty you will end up with an even bigger uncertainty at the end. There will be high uncertainty both considering the value of the built property and the cost of building it. Only a small misjudgment on either of these variables will have a huge affect on the final value.

Based on this, one of the respondents gives the advice of skipping an investment calculation if there are good comparables.

All agree that in order to secure for the uncertainty of future prices, there is often a clause added to the transaction or development agreement. If the transaction occurs before the local plan is adopted their might be an agreement that today's property value should follow the inflation rate up to the date of actual transaction, or set a clause of an additional price premium if worth increases between the date of valuation and transaction date.

*Do you always appraise the property with the assumption that it is already built, no matter in what stage the planning process is in today?*

Yes, when we're using a theoretical investment calculation we firstly estimate the value of the property as already built and then subtracts the costs from that.

Yes, when we use the method of a hypothetical investment calculation as a control of fairness regarding the comparable sales method.

No, if this is done it's more like a regular valuation, not a valuation of development rights, but with the conditions that there is no building on it. But in the residual model yes.

Yes, in our valuation we make the assumption that there is an agreed local plan.

*In your valuation do you take into consideration the feasibility and likelihood of the suggested plan and development process concerning future density of the object, time consumption etc?*

Half of the respondents agree that a risk deduction concerning the feasibility and likelihood of the plan needs to be made. This includes the appropriate timeframe, in terms of how long the process is expected to be and if it will be feasible.

One respondent think the time frame is enough handled by a cash-flow model and the feasibility is controlled by doing some kind of sensitivity analysis, and by calculating different possible outcomes concerning the projects.

Some other respondents affirm they handle the uncertainty of future density by appraising the development rights by it’s worth related to BTA (building area). By doing this they can avoid deciding the exact density.

A general opinions of the respondents is they trust the developers own belief about the expected density, and don’t argue against this but might do their own judgment and risk analysis only if the assignment is a very big one.

One respondent argue that when in an early phase of the process they find it more common that the density of the project decrease rather than increase over time. Therefore, the respondent suggests that if the project is in an early phase of development, larger deductions of risk need to be made since the value then will increase concerning the property along the process from vacant land up till an agreed local plan

***Which valuation method is, according to you, the most reliable to use when appraising development rights?***

Half of the respondents agree that the comparable sales method is the preferred one. The other half think there needs to be a combination of the comparable sales method as well as an investment method/residual method, due to the fact that there is very often bad quality of data concerning comparables. All respondents agree with the latter, that it is very difficult finding comparables when it comes to development rights, as well as quality data about these comparables.

All respondents are generally using both comparable sales method and the investment method/residual method. They find investment method/residual method is mostly a very good way of controlling the fairness of the comparables. If the investment calculation gives a different result it should indicate that the comparables need to be looked over. By the end both methods need to correspond to each otherwise the valuation won’t be correct.

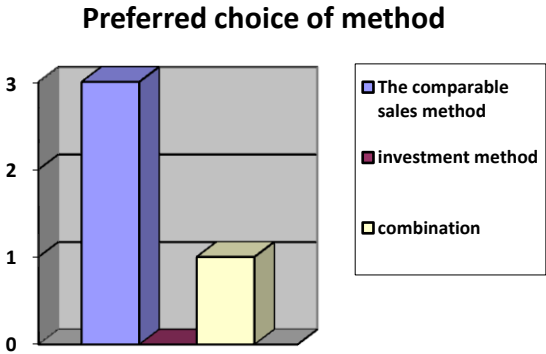


Fig. 17 Respondents preferred choice of valuation method

The investment method presented in above graph corresponds to the residual method since all respondents also subtracts costs from the value.

*Which valuation method is, according to you, the most reliable to use when appraising development projects?*

If we do have good data we think the comparable sales method is to prefer

We think the comparable sales method is preferably. There is a problem finding good comparables though.

Think the comparable sales method is the best one to use as well as an investment calculation in order to control its fairness.

There is often very bad quality of the data concerning comparables, so we always combine the comparable sales method with an investment calculation and cash flow calculation.

#### 7.2.1 The comparable sales method

***When you are using the comparable sales method, which are, according to you, the most critical and important variables the comparable needs to have in order to be useful?***

The most important variable to look at according to almost all respondents is that the comparable objects have similar plans concerning development rights, and that these plans are in the same phase of the planning or development process as the subject property. This seems reasonable since the value is highly dependably of the phase of the process as stated earlier. Also the time frame is mentioned by one respondent, which might be included in the alternative similar plans, i.e. also the time frame up till development is ready is surely dependably by the conditions of the plan today. Two respondents mentioned the conditions of the property as an important variable. This might come from the fact that current condition will have a high influence of the cost of development when preparing the land. Also the market position of the property is mentioned, which is not surprisingly, since this is known as influencing value a lot in theory. Respondents also mention that the position of the property has different degree of importance based on what's planned to be built. For example, rental apartments are not that income sensitive to its position, due to Sweden's rent regulation system, but can of course have influences of expected vacancies etc.

### Crucial variables of comparables

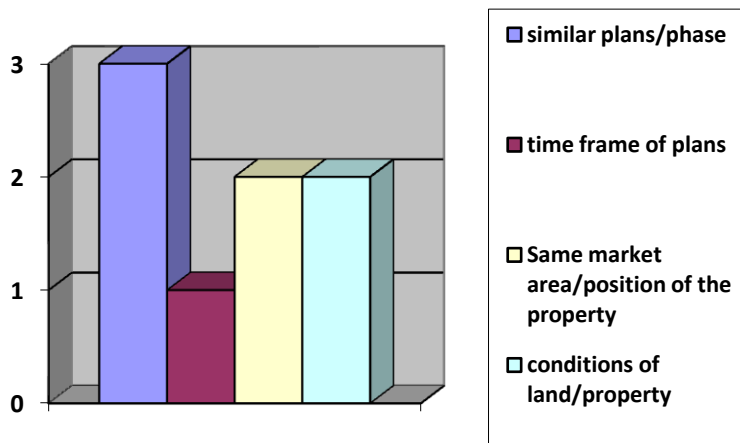


Fig. 18 Respondents choice of variables of comparables

### ***In order for the comparable sales method to be feasible, how many comparables, according to you, needs to be collected?***

All respondents agree that the number of comparables needed in order to estimate the market value by the comparable sales method is highly dependably by the quality of the information you are able to achieve from the comparables. Two respondents agree that it might be enough with only one or two comparables if these are of good quality. One of them argues that even if only one comparable is mainly used in the valuation the companies always have experience from lots of more which will as well form the judgment of value, without necessarily being presented within the valuation report. Another respondent argue that even if the comparable is sold many years ago it can be used as long as there us a reasonable difference in the price.

### Number of comparables needed

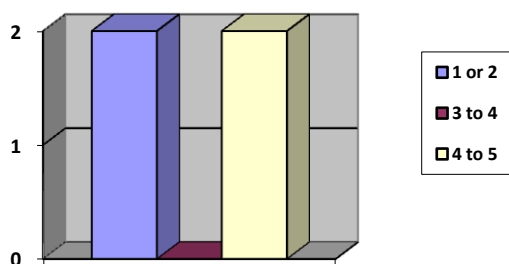


Fig. 19 Number of comparables needed to perform the valuation according to respondents

### ***Do you find your work finding appropriate comparables is difficult when it comes to these kinds of properties?***

The general opinion of all respondents is they find it very difficult finding appropriate comparables for development rights, much more difficult than for usual properties, and also agree it to be the biggest problem when it comes to these kinds of valuations. They all experience there are seldom enough transactions development rights to analyze, and hard to know what the transaction actually includes, which makes it difficult having a reasonable

discussion and comparing them among each other. Public companies are obligated to inform the press about their transactions acquisitions etc, but otherwise the companies often need to trust the information they get from their own contacts within the industry.

Even if most respondents think it's much more easy finding good information regarding regular properties, one doesn't agree. This respondent think the trend selling properties in companies complicates even regular property transaction information very much, since a lot of transactions are made through selling shares in a company to avoid certain taxes.

Another respondent doesn't agree with the latter, but think actors are usually willing sharing their information concerning regular property transactions, even if sold in another arrangement. Instead the respondent thinks it is worse concerning development rights, where the actors' aren't as willing to share their information due to the fact that many actors buy these rights on a speculative basis. They don't want to share with others if they are doing a profit or a loss out of them. It will also take long after the transaction before this profit or loss is shown and therefore they might be nervous regarding if the affair turns out to be good or bad. Many times the appraiser therefore needs to do his/her own judgments based on very low level of information.

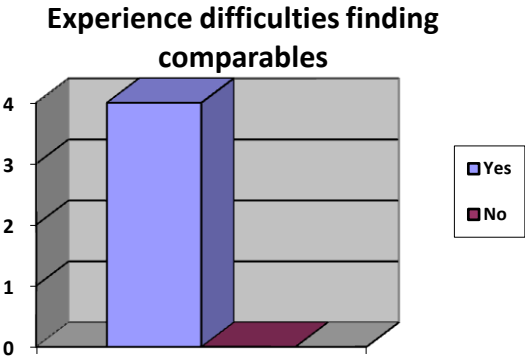


Fig. 20 Respondents opinion of wheatear or not they find it difficult finding comparables for development rights

***If the property owner, who's property you're about to value, is a private company. Do you still think comparables sold by the municipality is directive to use?***

This question was asked because in Sweden the biggest property owner is the municipalities around the country. Municipalities have a political agenda to follow, and even if they want to make a profit out of land they are selling, they might have to take into regard different interest than just the economic aspect, which is a more important factor for private companies.

Sometimes the municipalities do sell the property to the highest bidder, but many times they form their prices in advance, which might not always reflect the market price.

All respondents think that even if the municipalities have sometimes different interest and processes of coming up with a transaction price, they are often very willing to share the information behind these prices. One respondent recommends talking with the municipalities

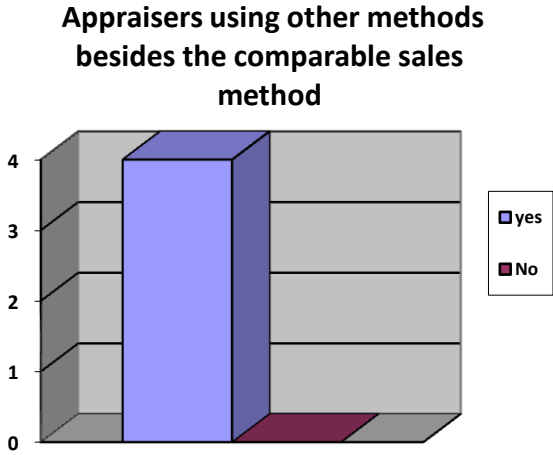


themselves because it may give you a good direction. They also agree that different municipalities have different ways of determining the price. Larger municipalities in urban areas are more often using a bidding process and tend to be more aware of the actual market worth of the properties. Smaller municipalities instead tend to decide the prices in advance according to the respondents.

Even if respondents generally agree that prices set by the municipalities might differ from actual market worth one of the respondents have an interesting reflection; that when the municipality offers a development right on a site, it's not sure their primary focus is to get it sold, but to create something good. As a comparison, a private property owner has another focus on liquidity and therefore has to sell quicker. So even if the municipality might sometimes sell at a lower price, this might as well happen to a private property owner for liquidity reasons, so you can't be sure there is a price difference.

***If you have enough of comparables, do you still think there is a reason using other valuation methods?***

One respondent thinks the more ways to confirm a market value the better. All respondents agree that even if there is enough of comparables to perform the valuation, other valuation methods are necessary for checking the comparables feasibility, and the main method doing this is by making some kind of investment calculation. Some respondents stress the investment calculation they do is very simplified, since they don't find any point doing it into detail due to the high level of uncertainty regarding the inputs. If the value differs a lot regarding the value found from using comparables, and the value found from calculation. This is mostly due to the conditions of the market when transactions were made, and due to expectations about the future market conditions.



*Fig. 21 respondents opinion wheatear they find it necessary using other valuation methods or not, even if finding enough comparables*

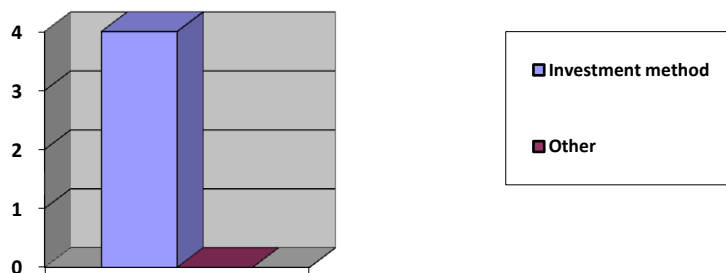
***If there is a lack of comparables/no comparables at all, which valuation methods are preferably used?***

All respondents agree that the investment method is the best second option valuation method if there is a lack of comparables or even no feasible comparables at all when performing a valuation regarding development rights. If there is a valuation to be performed regarding a site without any plan, there are usually no comparables and an investment calculation needs to be done in order for future expectations to be mirrored.

They also agree some kind of investment calculation is always made as a complement to the comparable sales method, no matter the quality or number of comparables found.

Half of the appraisers say they prefer making a one year income calculation instead of cash flows with longer holding periods. One of the respondents says their company tries to avoid making cash flow models for development rights, but instead make a one year calculation of either NOI or selling price (if residential). They also say there is much easier performing investment models when it comes to residential building in comparison to commercial buildings, due to less parameters to estimate.

**Second choice of valuation method**



*Fig. 22 respondents preferred valuation methods besides the comparable sales method*

### 7.2.2 Investment method

***When an investment calculation of development rights is performed, how do you estimate the yield?***

All respondents agree the level of yield is found on the market for comparable properties, for example by observing property data or studying other transactions. Just like when finding the yield for any property.

The reason this question was first asked was that the yield is suppose to reflect the risk of the property, why it seemed reasonable that this might be difficult finding comparables estimating to hold the same risk.

But no extra risk is included in the yield according to the respondents.

***How do you derive your choice of required rate of return?***

Three of four respondents agree the general way to estimate the required rate of return is by adding the inflation to the estimated yield for the property. One respondent states they don't

usually estimate the required rate of return at all when it comes to development rights, since they prefer not doing cash flow models on these kind of objects, but usually only estimate the yield.

Respondents differ in their opinion regarding if the risk should be included within the required rate of return or not. One respondent say that if the development is in an early phase, or if the project doesn't have an adopted local plan yet, they do add an extra risk premium to the required rate of return, added to the yield and inflation.

Another respondent doesn't think the risk should be included at all in the required rate of return, but instead this risk should be deducted from the estimated market value, since with a short holding period when performing a cash flow analysis, worth will be affected very little by putting a higher rate, and the opposite will result from a longer holding period.

Yet another respondent says the risk should be seen as already included in the yield since it is derived from similar properties

Finally all agree it's hard to motivate exactly why a certain level of these variables are chosen, it's all about estimating by experience and by what seems feasible according to all respondents.

#### ***How do you determine the level of required profit in the development project?***

Besides the required payment concerning risk in development projects, developers also requires a level of profit.

The general opinion of the respondents is a level of required profit that lies within the interval of 15%-20%. One respondent adds that the general numbers are easier to obtain when it comes to residential buildings, and often differs more when it comes to commercial buildings.

The question also brings the answer that different levels might come from larger risks in the construction costs or from the competition of land among developers. If there is a high competence, developers' can't require the same level of profit. Yet, only half of the respondents stress the importance of making a sensitivity analysis regarding these levels.

#### ***How do you estimate the future selling price of buildings?***

The general opinion among the respondents is that future selling price is simply decided by assuming today's prices will follow the rate of inflation. One of these respondents adds that even if the general way to perform it is by adding inflation, the method of estimating future prices might differ depending on the assignment and money paid for it. If the customer wishes a more deep investigation, they might look more closely on the market and possible market cycles in the future. So, the analysis will be deeper in relation to the service paid for.

Another respondent doesn't estimate this at all, since they are not performing cash flows unless the property is ready to be built by today.

#### ***How do you estimate the level of risk within the project?***

All respondent stress that all parameters within development right valuations are estimated based on beliefs and experience, and so is the risk.

The respondents generally agree that there are two kinds of risks that need to be taken into consideration. Firstly, the probability that there will be a local plan, the time frame for this, and its contents, mainly built on expectations. Secondly they need to take into consideration the general risk of future selling price/rents and costs based on the market conditions. The risk is reflected in several parameters, such as plans, costs, prices, rents, vacancy level etc. The risk deducted from estimated worth is a contexture of all these parameters.

One of the respondents says they are handling the risk by putting all the important variables, such as time frame, density, required profit and risk of the project within an interval.

Respondents have very different opinions of the risk regarding the development costs. Some think it's one of the parameters that involves less risk, since there are good perceptions about the costs levels among the actors. Other don't agree and states development costs are very risky to estimate, both regarding what's included and the level of the.

Another respondent points out that the deduction of worth based on risk is highly dependably of the market. In bad economic periods, like during the recent financial crisis, the actors put a much higher level of risk into their calculations than in better times as today.

### 7.3 Risk assessment

***Do you experience a valuation of development rights to be more complex to perform than a general valuation?***

Half of the respondents do think it is a more complex valuation to perform. The second half don't agree with the term of complexity. They instead agree it is a lot more difficult to perform in a good way, but not more complex.

***Depending on your answer concerning the previous question; what are your strongest reasons for that?***

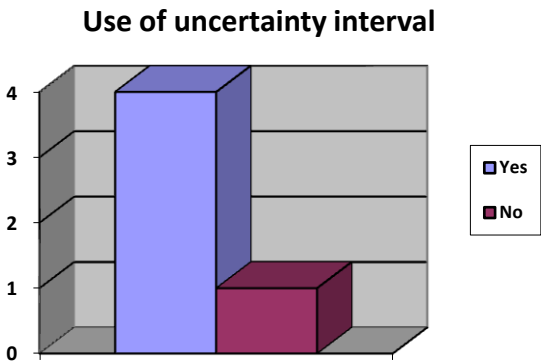
All respondents agree that the bad quality of data is the main reason for making the valuation of development rights is so difficult. They think bad data mainly concerns the comparable objects. Either there are too few comparables, bad comparables or the information about the found comparables is difficult to analyze and use. All respondents think the valuation of development rights requires a lot more assumptions made based on experience and what seems reasonable. They all experience that there are maybe fewer parameters to estimate, but these parameters are more difficult to obtain correctly.

***If you do experience the valuation of development rights to be more difficult and to include more uncertainty, how do you communicate this uncertainty in your valuation reports and to your clients?***

Three out of four respondents agree that they need to communicate this increased uncertainty to their clients. This they mainly do by putting the estimated market worth of the development right into a larger interval of uncertainty than normally, and by clearly mention the uncertainty in their written text in the reports.

One of the respondents' doesn't add an uncertainty interval for the estimated market value, in order to communicate the high uncertainty. The respondent thinks it is enough communicating the uncertainty by pinpoint the word of estimation in the valuation report and result. An interval of uncertainty is by the respondent only used if it is asked specifically for one by the client. The same respondent also thinks that there is no point setting an interval unless the probability for that interval is also given. The market value should be the most probably price on the open market and there should only be one of those.

***Is it your opinion that the market value in a valuation of a development right should always include an uncertainty interval?***



This diagram verifies the latter; three out of four are very confident about that an uncertainty interval should always be given. The fourth respondent doesn't agree with them.

*Fig. 23 respondents' use of uncertainty interval*

***The difficulties knowing the exact density of the property, when there is no adopted local plan, do you think this effect the feasibility of the valuation and estimated market value a lot?***

All respondents agree there is a large uncertainty about the density of the project in an early phase of the planning process, but they have different ways assessing this uncertainty. One respondent state, that the development companies often are quite sure about the density from negotiations with the municipality. In general these numbers are trusted or else the feasibility is discussed with the municipality. Half of the respondents state they always compute the density per BTA, (density/building area) to avoid estimating the exact density for the entire property.

A third respondent says they always tries to calculate the density within an interval, and mentions to the client there is a risk it will decrease, but also the chance it will increase.

***What kind of sensitivity analysis (which parameters are tested) do you perform in your valuation process for development rights?***

Rents are the most common parameter tested among the respondents. Also building costs and yields are common parameters to include into the sensitivity analysis. According to all respondents there are no standardized parameters to test however, so they might differ from case to case. One of the respondents doesn't, as mentioned earlier, perform

any sensitivity analysis because of the belief the clients only want one clear number for the market value

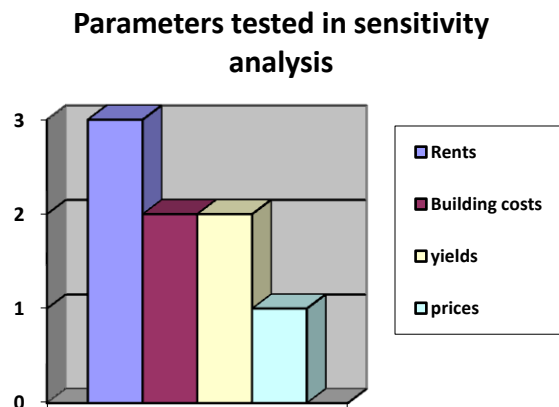


Fig 24. Main parameters tested in sensitivity analysis.

## 7.4 Value changes from the development and planning process

*According to Christensen (2011) a property development process can be divided into 5 phases;*

- 1) **Development of concept**
- 2) **The planning process and its permits**
- 3) **The preparation of land**
- 4) **The building process**
- 5) **Selling and renting out the completed property**

*Do you find these steps correctly defined?*

All respondents think the above illustration gives a quite good general description over the development process, but they all think that the selling process often starts much earlier in the process, before the building is completed.

*Do you think all these steps individually will increase the value of the property?*

All respondents agree that the value of the property will increase steadily over the whole process, especially when the plans are legally adopted, since the risk of the project will decrease. Half of the respondents are skeptical about a possible value increase during the development of the concept for the property and their main argument for this is that it is hard to know exactly what comes with the concept development and what's included in it other than just the visions of the development company. One of the respondents also says that they always include a graph illustrating the increased value that comes from different phases of the development process, and states that the largest value increase comes from the agreed local plan and forward.

***How much of the property worth do you think is influenced by the current master plan?***

Half of the respondents' don't think the plan influences the worth a lot. The others think it's influence depends. They both agree that it might give a hint about the possible timeframe for the development property. If there are many areas pin-pointed to be developed it is a risk the project will be postponed into future and not be developed in the near future.

***How big influence on property value do you think an adoption of local plan will have?***

All respondents agree this is the most value influencing factor for the property, and the fact that it will bring the largest value increase. The risk and uncertainty will decrease a lot since it will give a good picture of future density and time frame for the development.

But one of the respondents points out that there isn't the big of a difference to achieve a local plan if there is already a deeper master plan, since it often ensures that there will be a local plan for a certain property or area.

***Do you think expectations about a property's future value influences an increase in property value, and if so, during which phases in the development process do you think the expectations have the strongest influence of property value?***

All respondents agree that expectations influence property value a lot.

One of the respondents points out that the whole value concerning development rights are built from expectations. Two out of four respondents also point out that the time up to there is an adopted local plan the worth is coming from nothing else than expectations. After there is an adopted local plan expectations decrease in relation to the decrease of risk and uncertainty and you get more concrete information. Still the expectations need to be taken into account when appraising the property since the market will have the same ones.

## 8. Analysis

From the empirical study made, an analysis will below follow discussing the main thesis question as well as sub questions stated in the introduction. The analysis will also link the empirical work to the theoretical background.

The main focus of this work was to try to identify the practical valuation process when it comes to estimating a property value for a property that is in the phase of being developed and therefore includes development rights. In interest was therefore to find out the appraisers experiences and knowledge about different valuation methods, how these are used, and also what limitations they might include for the purpose of the valuation.

### 8.1 Choice of valuation method

In the theoretical section of this work, section 3 includes a brief description of the main valuation methods and when these are used. The section identifies the residual method as the main valuation method when it comes to properties that are in the process of being developed and transforming from current to new use. This is concluded by Pagourtzi (2003), Robinson (1996), Adair et al (2005) and Atherton et al (2008) among others.

But Pagourtzi et al (2003) also argues that if possible the value should be based on comparables of properties that are in the same phase of the development process. From the empirical work we can see that almost half of the respondents agree with this. Their main arguments for why the comparable sales method is the most appropriate approach is that the many variables required for performing the investment methods are really hard to estimate when the project is in such as early phase. Four of the five valuation reports analyzed confirm the latter; that comparable properties sold in the same phase of development are the main input for valuation, used in the comparable sales method.

Other respondents think there needs to be a combination of the comparable sales method as well as an investment method, due to the fact that there is very often bad quality of data of the comparables. Combining two or more methods is confirmed also by the analysis made of valuation reports. Generally, both comparable sales method and the investment method are used. The most common approach used for the investment method is the residual method. The method estimates the final future value of the property, when fully developed. Then, from the estimated value, all costs involved in the development process should be deducted as described by Pagourtzi, (2003) & Atherton et al, (2008).

The study of valuation reports indicates that a common way of performing the residual method is by making a hypothetical investment calculation, estimating the probably price or NOI of the building and then subtracts necessary costs from that

These findings are in the opposite direction of what Adair et al (2005) found in their study where 90% appraisers put the residual model as a first hand choice when appraising urban regeneration land. They didn't use the comparable sales method as a first choice because of the lack of good data, but only used the comparable sales method as a way to verify the feasibility of the residual model.



My main concern with using the comparable sales method is how the appraisers find the correct comparables. Since a lot of the value and agreed transaction price in a very early development project comes from expectations and made assumptions, how is it possible to find comparables that include the same variables about the future property? As we can see from the study of valuation reports there are no deep discussions going on concerning the similarities of the comparables and the subject property. In half of the reports a lot of comparables are used, which makes the comprehension that these can't all be very similar the subject property. It seems more reasonable only using a few comparables, as agreed by most respondents, and deeply investigate and reasoning around there similarities regarding the expectations of future building, permits, expected density, time frame and other strongly property value influencing variables. But those reports identifying few comparables don't have a very deep discussion of the comparable variables.

## 8.2 Limitations when appraising development rights

Findings regarding what limitations the methodologies for appraising a development right are many.

Regular properties with an existing use and rental agreements make the appraiser's work of estimating holding period and variables easy. The general property market in Sweden is also very transparent and includes several transactions making it less difficult to find good comparables.

In the empirical work we see that all respondents find it very difficult performing a valuation of development rights due to the high uncertainty and lack of comparables compared to valuations of general properties. It is also more difficult analyzing the information collected from transactions that have occurred, and actors are unwilling sharing their information, municipalities excepted. Below is a summary of the main limitations found when appraising development rights;

1. Hard to find any good comparables at all
2. Comparables found have low quality data due to
  - Difficulties finding comparables that been sold in the same phase of development
  - Difficulties finding comparables with same content of development rights
  - Actors unwilling to share information
  - Difficulties knowing if the developer or the municipality bears infrastructure costs
  - Few transactions of development rights occur, and therefore not enough transactions made in same economic cycle
  - There might be agreements between seller and buyer not shown in the agreement

Also the investment method with the residual approach is difficult proceeding due to;

1. Difficulties estimating the holding period
2. Difficulties estimating the density

3. Difficulties knowing the level of prices/rents due to the risk that the project will get finished in a different economical cycle
4. Difficulties estimating risk deduction

### 8.3 Appraiser risk assessment

The work of this thesis has been focused on development properties with development rights that are in a very early phase of the development process. All properties analyzed in the valuation reports don't have any legally adopted local plan yet, and the focus of the respondents has also been on early phases of the process when risk and uncertainty is at its highest level.

It's known that less risk will lead to a higher market value, i.e. risk is uncorrelated to the market value of the property, and the risk decreases along development process.

Theory suggests that there are two kinds of risk parameters that need to be taken into consideration when appraising development rights. Firstly it is argued that there is a risk in the planning process; when plans will be adopted as well as its contents. Secondly there is a risk the project will get finished in a different economic cycle than the current which involves uncertainty about future demand, rents prices and costs. Empirical work of this thesis verifies this, but if we look at the analysis of valuation reports, only one of them treat the risk according to this

From the theoretical section and empirical section of this work the following options for handling the risk have been discovered;

- If finding comparables in the same phase of development, risk is already reflected in the observed transaction price
- In the investment method/cash flow
  - Include risk in the required rate of return as a risk premium
- In the investment/residual method:
  - Subtract a risk parameter from worth of completed property
- Risk included in the assumed required profit of investor/developer
- Put all assumed variables within an interval
- No risk is discussed or calculated
- A risk deduction is made based on both the risk with the planning process, as well as the risk concerning if project is delayed. This is subtracted from worth of completed property in the residual model

Myopic behavior, as described in theory, is confirmed by some of the respondents since they state their risk deductions depend highly on the current economic outlook. During the recent financial crisis, the risk was put higher than in better economical time. Nothing says that the market economy will continue in the same direction in the future, so it seems very irrational preceding the valuations according with this behavior.

## 8.4 Reporting uncertainty

Yet another object of this thesis was trying to identify how uncertainty of market value is handled. One option, suggested by theory, is to perform a sensitivity analysis. But the valuation reports confirm only one out of five proceed a sensitivity analysis. Lind & Ekelid stated appraisers tend to perform more sensitivity analysis when economy is bad, compared to good times. This, together with myopic behavior might be an explanation for this lack of sensitivity analysis. However, among the respondents, almost all agree that sensitivity analysis need to be performed. Only one thinks it's not in the interest of the client, unless he/she has specifically asked for it, to include such an analysis. The argument for this was that client seeks a point estimate for market worth and nothing else.

From the study of valuation reports only two reports present the final market worth within an interval but three of the four respondents agree this need to be done.

What's interesting though is what's the real purpose of presenting the market value within an interval. None of the reports and none of the respondents mention any probability for why putting the market value within a given interval. And if no probability is mentioned, it might be asked if an interval really adds any additional information to the client. The value could instead be presented within an interval, but with probabilities for the range of that interval related to planning risk and risk of future market conditions. If these probabilities aren't mentioned the value could as well be presented as a point-estimate to not confuse the client.

As a way of handling the uncertainty of future density it has been found that some of the respondents present the market value related to property BTA (building area), instead of presenting it for the entire completed area. This might be a good way for handling the planning risk but has a problem. As theory suggests the costs for a development project consists of both fixed and variable costs, and therefore are depended on how much is allowed to build. If the local plan admits a lower density of buildings than first thought many of the fixed costs of preparing land, infrastructure etc will remain and will constitute a higher cost related to worth of buildings than otherwise.

One of the respondents mentions they always include a graph illustrating the increased value that comes from different phases of the development process something that should be valuable for the client to study and understand.

## 8.5 Value changes from development process

As suggested by theory all respondents agree value increases with the development process because of the naturally decrease of risk when uncertainty of future use and density decreases. The respondents are skeptical to a value increase coming from the concept development. This seems reasonable, and as Christensen (2011) suggests, nothing can prove that value will increase in this early phase. What's interesting though is that many times transactions do occur in this early phase due to developers wanting a big influence over the project and property owner not always find it interesting developing the site themselves if the process not

belong to their core business. And even if there isn't a proved value increase the current property owner will likely want to sell the site for a higher value than the current use, based on expectations. From the empirical work we can also see that expectations are the only thing creating the value before the local plan is adopted. These expectations are therefore what will influence the transaction price of the development rights, since the seller won't sell it for less than future value minus the development costs.

The only way to ensure the interest of the seller and buyer is therefore to make flexible transaction agreements that take the possible outcomes into considerations.

It's been stated in theory that the local plan has a great affect on property value in the planning and permit phase (Christensen, 2011) This is confirmed by all respondents with the main argument that risk about future use and density decreases when the local plan gets legally adopted. All respondents agree the local plan has the greatest effect on value under development process, since no new added information will come after this.

Finally, from the empirical work of this thesis we can state that the appraisers do make many estimations and assumptions based on their own experience and belief, many times more than hard core facts. Appraisers agree about the difficulties finding comparables and market information of good quality concerning development rights. This makes Lind & Nordlund's discussion regarding how valuation methods should be categorized very interesting. If there aren't market information to derive, as for development rights many times, you could discuss if there general approach used instead more corresponds to their suggested actor's based approach.

## 9. Conclusions

Theoretical and empirical work of this thesis has tried to identify how the market value for a development right is estimated, and how the appraisers perform valuations of these properties. Robinson (1996) found that different companies in development projects didn't perform or used the same variables when given the assignment to appraise a development property. This has also been proved in this work; for example the appraisers have different approaches especially regarding how to handle the risk variable. Also some of the appraisers think construction costs are the easiest parameters to estimate because of good and accessible patterns, while others think they are more difficult estimating and patterns can't be trusted.

The main research question for this thesis object was; how do appraisers estimate the market value of a development right? To reach a conclusion of this, several sub questions were to be asked and analyzed in section 8 and the main findings from these were:

### Choice of method

- The preferred method for performing development right valuations is among the appraisers concluded to be the comparable sales method. The investment method with a residual method approach, using a hypothetical investment calculation is the second best choice by the appraisers, and almost always used as a feasibility check regarding the comparable sales method.

### Limitations of valuation

- The main limitations of the valuation methods are summarized as
  1. Hard to find any good comparables at all
  2. Comparables found have low quality data
- The main limitations of the comparable sales method (listed above) are also the appraisers main reasons for why they experience development rights the more difficult to appraise than for a already developed property

### Risk assessment

- Concerning risk in the development projects no united approach is used by the appraisers. The interviews held and theoretical work both suggest that there should be an estimation of risk both regarding the planning process as well as the conditions that might come when property is completed. From the valuation reports this is very difficult to deduce however. The main risk parameters used are summarized as
  - Reflected in yield
  - Reflected in required rate of return
  - Required rate of profit
  - Subtracted as a percentage from calculated worth of completed development

However, these are inconsequently used. Sometimes they are used individually and other times together and I can't find any conclusion of what should be thought as the correct thing to do.

### **Managing uncertainty**

- Empirical work of this thesis has confirmed, in accordance with what have been reflected in theory, that the valuation of development rights do include a high degree of uncertainty. Most respondents therefore agree that the estimated market value should be presented within an interval as a way of presenting this uncertainty to the client. But this hasn't been confirmed by the valuation reports analyzed, and is therefore concluded to be an individual choice of the appraiser.

### **Value changes from development**

- It's been verified by theoretical background as well as the empirical work of this thesis, that the value of the property generally increases throughout the whole development process, due to the decrease of risk and uncertainty.

These sub-conclusions all together bring us to answer the main thesis question of this work; how do appraisers estimate the market value of a development right?

The appraisers do this mainly by deriving information from the market, either from the comparable sales method of similar properties in the same phase of development, or with the investment/residual approach assuming there is already an adopted local plan and from the worth subtracting building costs and different risk parameters. However, the lack of comparables and high quality data from transactions are very difficult to obtain. From the findings of this work, my conclusion is that the main method and approach for the appraisers to use is instead totally based on experience and general knowledge of the market, without necessarily being able to derive the correct information from the market, since it sometimes not even exists. Instead, their approach could more be identified as an actor based approach defined by Lind & Nordlund, where; *“the valuer uses information about the actors on the market to form an opinion about the probable price of the property and this opinion is based on direct interaction with the actors – or at least through interactions with someone who has direct interaction with the actor”*. (Lind & Nordlund, 2010, p.7)

The difficulties appraising development rights makes it impossible for the appraisers to have a completely consequent approach. However, nothing stops the appraisers from better presenting their limitations within the reports, and makes it clear on what reasons the base their assumptions and estimations on. My opinion is that there should be a possibility to standardize the process in some way in order for clients as well as the appraisers themselves to really better reflect on their work and easier make comparisons and evaluations of the valuation.

There are sure difficulties finding out the main influences of how the appraisers make their estimations and decisions when performing their valuation. There is no complete transparency of the process, and this transparency seems to be even less when the process is characterized by a high degree of uncertainty, as within the valuation of development rights. Appraisers

seem to use an approach of just accepted practice, the more difficult and uncertain the process is.

The analysis and conclusions of this thesis has shown that there are very diverse approaches of handling the risk within valuation of development rights. Therefore it would be interesting to have a deeper research made within this area, to be able to draw conclusions of what should be thought as the most reasonable approach of handling the risk for a development property and finding examples of how to standardize it.

There is also an interest in finding how the development companies develops their clauses in their transactions agreement in order to capture their interest of both risk in the planning process as well as future market conditions when property is completed.

## References

- Adair, A., Hutchison, N., Burgess, J., Roulac, S. (2005.) The appraisal of urban regeneration land- A contemporary perspective allowing for uncertainty. *Journal of Property Investment & Finance*, 23 (3), p. 213-233.
- Adair, A & Hutchison, N (2005). The reporting of risk in real estate appraisal property risk scoring. *Journal of Property Investment & Finance*, 23 (3), p.254-268.
- Atherton, T., French, N., Gabrielli, L. (2008). Decision theory and Real estate development: a note on uncertainty. *Journal of European real estate research*, 1 (2), p.162-168.
- Baum, A., Crosby, N., McGregor, B (1996). Price formation, mispricing and investment analysis in the property market A response to “A note on ‘The initial yield revealed: explicit valuations and the future of property investment’”. *Journal of Property Valuation & Investment*, 14 (1), p.36-49.
- Bowles, G., McAllister, P., Tarbert, H. (2001). An assessment of the impact of valuation error on property investment performance measurement. *Journal of Property Investment & Finance*, 19 (2), p.139-155.
- Brunes, F. (2006).Overbuilding in office markets: Are behavioral aspects important? *Division of Building and Real Estate Economics, Royal Institute of Technology*.
- Christensen, F.K (2011). When Property Value Changes During Urban Development. *PhD thesis, Aalborg University*.
- Diaz, J., Zhao, R., Black, R. (1999). Do contingent rewards reduce negotiation anchoring? *Journal of Property Investment & Finance*, 17 (4), p.374-379.
- Ekelid, M., Lind, H., Lundström, S. (1998). Treatment of uncertainty in appraisals of commercial properties: some evidence from Sweden. *Journal of property valuation & Investment*, 16 (4), p.386-396.
- Fama, E.F. (1970). Efficient capital markets: a review of theory and empirical work. *Journal of Finance*, 25, p.383-417.
- Fili, A. & Lind.H (2009) Future market value. Working paper nr.62. *Department of Real Estate and Construction management, Royal Institute of Technology*
- Fuerst, F. & McAllister, P. (2010). Supply elasticity and developers' expectations: a study of European office markets. *Journal of European real Estate research*, 3 (1), p.5-23.



French, N., Gabrielli, I. (2007). Market value and depreciated replacement cost: contradictory or complementary? *Journal of Property Investment & Finance*, 25 (5), p.515-524.

Gilbertson, B., Preston, D. (2005.) A vision for valuation. *Journal of Property Investment & Finance*, 23(2), p.123-140.

Hansson, I., Turner, B. (1977). Bostäder och samhällsekonomi. *Bostäder och samhällsekonomi*, Lund, Liber Läromedel.

Henneberry, J., & Guy, S. (2002). *Developments & Developers: perspectives on property*. Oxford: Blackwell Science Ltd. ISBN: 978-0-632-05842-6.

Hutchison, N & Nanthakumaran, N. (2000). The calculation of investment worth. *Journal of Property Investment & Finance*, 18(1), p.33-51.

Joslin, A. (2005). An investigation into the expression of uncertainty in property valuations. *Journal of Property Investment & Finance*, 23 (3), p.269-285.

Kalbro, T (2005). Planering och tillstånd. Fastighetsnomenklatur, Fastighetsnomenklatur, 9th edition. Stockholm, fastighetsnytt förlags AB. ISBN 91-974697-1-8, p.75-92.

Kalbro, T.(2007). Markexploatering: Juridik, ekonomi, Teknik & Organisation. Stockholm: Nordstedts juridik. ISBN 978-91-39-20451-0.

Kalbro, T. (2007). Tidsfrister för myndighetsbeslut i plan- och byggprocessen: Frankrike, Nederländerna, Norge, Storbritannien och Tyskland. *Rapport 4:98 från avd. för fastighetsvetenskap, Skolan för arkitektur och samhällsbyggnad, Kungliga Tekniska Högskolan*.

Lantmäriverket & Mäklarsamfundet (2004). Fastighetsvärdering – grundläggande teori och praktisk värdering, *LMV rapport 2004:3*. ISBN 91-774-069-6.

Lind, H. (1998) The definition of market value Criteria for judging proposed definitions and an analysis of three controversial components, *Journal of Property Valuation and Investment*, 16 (2), p.159 – 174.

Lind, H. (2004). Direktavkastning och direktavkastningskrav för fastigheter - en analys av begrepp, mätproblem, påverkande faktorer och användbarhet. *Royal institute of technology*, thesis nr; 34.

Lind, H. (2005). Value concepts, value information and cycles on the real estate market. *Journal of property investment and finance*, 23(2), p.141-147.

Lind, H. (2010). Property cycles – an introduction. *Division of Building and Real Estate Economics, Royal institute of technology*

Lind, H., Kalbro, T (2001). Plan- och byggprocessen. Tidsåtgång och kostnader. *Rapport till Riksdagens Revisorer, rapport nr 2001/02:RR8*

Lind, H., Nordlund, B. (2010). How should property valuation methods be categorized? Working paper, Division of Building and Real Estate Economics *Royal Institute of Technology*.

Lind, H., Persson, E. (2005). Fastighetsmarknad och marknadsanalys. *Fastighetsnomenklatur, 9th edition. Stockholm, fastighetsnytt förlags AB. ISBN 91-974697-1-8, p. 193-227.*

Lorenz, D., Truck, S., Lutzkendorf, T. (2006). Addressing risk and uncertainty in property valuations: A viewpoint from Germany. *Journal of property investment & finance, 24(5)*, p. 400-433.

Lucius, D. (2001) Real options in real estate development. *Journal of Property Investment & Finance, 19 (1)*, p.73-78.

Mallinson, M. and French, N. (2000). Uncertainty in property valuation: The nature and relevance of uncertainty and how it might be measured. *Journal of Property Investment & Finance, 18 (1)*, p. 13-32.

McGreal, S., Taltavull, P. (2009). Measuring price expectations – evidence from the Spanish housing markets. *Journal of European real estate research, 2 (2)*, p. 189-209.

Pagourtzi, E., Assimakoupolus, V., French, N. (2003). Real estate appraisal: a review of different valuation methods. *Journal of Property Investment & Finance, 21 (4)*, p.383-401.

Persson, E., (2005). Fastighetsvärdering. *Fastighetsnomenklatur, 9th edition. Stockholm, fastighetsnytt förlags AB. ISBN 91-974697-1-8, p 343-405.*

Ratcliff, J., Stubbs, M., & Shepard, M. (2004). Urban planning and real estate development, *2<sup>nd</sup> edition. London, Spon press. ISBN 0-415-27262-9*

Robinson, John. (1996). Role of valuations in major development projects. *Journal of Property valuation & Investment, 14(3)*, p.6-9.

Wheaton, W.C (1999) Real Estate “Cycles”: Some Fundamentals, *Real Estate Economics, 27(2)*, p.209-230.

## Interviews

Susanne Hörnfelt & Anders Elvinsson, appraisers, Newsec, 2011-03-18

Rolf Simón, appraiser, Forum fastighetsekonomi, 2011-03-15

Åsa Linder, Head of valuation, Jones lang Lasalle, 2011-03-08

Arne Strand, appraiser, DTZ, 2011- 03-10

## Appendix

### Interview questions

- 1) *How many years of experience do you have from working with property valuations?*
  - 1-5 år
  - 2.6–10 år
  - > 6 år
- 2) *Can you appreciate how many valuations of development rights that are performed by your company each year?*
- 3) *In the valuations of development rights how common to you consider it to be that the property's local plan has not yet been adopted?*
  - Very common
  - Common
  - Not common
- 4) *Do you always appraise the property with the assumption that it is already built, no matter in what stage the planning process is in today?*
  - Yes(Why)
  - No (why not?)
- 5) *In your valuation do you take into consideration the feasibility and likelihood of the suggested plan and development process considering the density of future density of the object, time consumption etc?*
  - Yes, in what way?
  - No, why?
- 6) *Which valuation method is, according to you, the most reliable to use when appraising development rights?*
- 7) *When you are using the comparable sales method, which are, according to you, the most critical and important variables the comparable needs to have in order to be useful?*
- 8) *Do you find your work finding appropriate comparables is difficult when it comes to these kinds of properties?*
  - Yes, why?
  - No, why not?
- 9) *If the property owner, who's property you're about to value, is a private company. Do you still think comparables sold by the municipality is directive to use?*
- 10) *If you have enough of comparables, do you still think there is a reason using other valuation methods?*

- 11) *If there is a lack of comparables/no comparables at all, which valuation methods are preferably used?*
- 12) *When an investment calculation of development rights is performed, how do you estimate the yield?*
- 13) *How do you derive your choice of required rate of return?*
- 14) *How do you determine the level of required profit in the development project?*
- 15) *How do you estimate the future selling price of buildings?*
- 16) *How do you estimate the level of risk within the project?*
- 17) *Do you experience a valuation of development rights to be more complex to perform than a general valuation?*
- 18) *Depending on your answer concerning the previous question; what are your strongest reasons for that?*
- 19) *If you do experience the valuation of development rights to be more difficult and to include more uncertainty, how do you communicate this uncertainty in your valuation reports and to your clients?*
- 20) *Is it your opinion that the market value in a valuation of a development right should always include an uncertainty interval?*
- 21) *The difficulties knowing the exact density of the property, when there is no adopted local plan, do you think this effect the feasibility of the valuation and estimated market value a lot?*
- 22) *What kind of sensitivity analysis (which parameters are tested) do you perform in your valuation process for development rights?*

**According to Christensen (2011) a property development process can be divided into 5 phases;**

- 1) Development of concept
  - 2) The planning process and its permits
  - 3) The preparation of land
  - 4) The building process
  - 5) Selling and renting out the completed property
- 23) *Do you find these steps correctly defined?*
  - 24) *Do you think all these steps individually will increase the value of the property?*
  - 25) *How much of the property worth do you think is influenced by the current master plan?*

*26) How big influence on property value do you think an adoption of local plan will have?*

*27) Do you think expectations about a property's future value influences an increase in property value, and if so, during which phases in the development process do you think the expectations have the strongest influence of property value?*