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**QUALITY ASSURANCE OF THE VALUATION PROCESS  
FOR PROPERTY INDEX**

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## I BACKGROUND AND AIM

Real property is regarded as an important part of institutional investors' mixed asset portfolios. The real property part of the portfolio is expected to give a hedge against inflation, a return somewhere between bonds, and stocks<sup>1</sup> and a return variability that increases overall portfolio performance. However, unexpectedly long and strong property cycles in most OECD-countries during the 1980s and 1990s indicate that real property as an asset class is, to some extent more complicated to analyse and understand compared to other securities. In addition to unexpected long run cycles<sup>2</sup> we have a short run volatility that is hidden behind markets with poor information, and which follow; valuations with lagged and smoothed<sup>3</sup> market value figures. This lack of information and the need, in a portfolio context, to identify long and short run volatility raises the question about the proper way to increase the quality and quantity of information for directly owned real property.

Information from property management and the property market is often limited and of low quality compared with information from the bond and stock markets where standardised assets are traded almost continuously in high volumes. The real property investor hunts for more and higher quality information and the need to compose portfolios with different risk profiles has resulted in a set of trends in the real property sector (this paper deals with the first three items):

- Traditional market value and return measures are combined with expressions for risk.
- A growing interest for external longitudinal as well as cross-sectional benchmarking of property performance.
- A country by country creation of property indices describing ex post return, rent and markets value performance.
- An increasing interest from institutional investors to turn private, directly owned, real property to public.
- Securitization of both real property and debt instruments.
- Real property is to an increasing extent regarded as a set of contracts: Lease contracts, debt contracts and contracts for property management.

Return indices for directly owned real property have during the 1990s been introduced in several countries around the world.<sup>4</sup> The NCREIF (USA) and IPD (UK) indices have served as prototypes. The driving force behind the development of return indices is the rapid integration of national real estate markets into the global capital market. At the

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<sup>1</sup> From an investors point of view real property, with its existing and future leases, can be regarded as a mix of bonds and stocks, see Young - Grieg (1995).

<sup>2</sup> There is a broad set of literature on property cycles, exemplified with early articles as Wheaton (1987) and a later contribution by Gordon - Mosbaug - Canter (1996).

<sup>3</sup> Lagged information and appraisal smoothing is a problem that has to be solved when real property is included in a mixed asset portfolio, e.g. Geltner (1991) or Newell - MacFarlane (1996). Graff - Webb (1997) indicate that there are agency costs and inefficiency in especially the office market where objects on the market are sold over value.

<sup>4</sup> Long time established real property return index in UK (Investment Property Data bank, IPD) and USA (National Council of Real Estate Fiduciaries, NCREIF) are followed by property index in Australia, Ireland, New Zealand, The Netherlands and recently in Finland, France, Germany, South Africa and Sweden.

national level is normally only a couple of per cent of commercial real estate traded publicly. It follows that listed real estate companies have a limited value compared to the rest of the stock market.<sup>5</sup> This limited amount of publicly traded real property should be related to the fact that roughly two-thirds of all assets in a developed country are part of real property; land, buildings and different kind of infrastructure. The need for standardised capital value and return figures for real property is therefore obvious.

Property indices around the world have some common properties. They are all, due to illiquid markets, based on valuations instead of transaction prices. The return figures are also calculated to be comparable with those for stocks and bonds.<sup>6</sup> However, stock prices and stock return figures are updated daily, while directly owned real property return figures are at best observed on a monthly basis. It follows that directly owned real property, in comparison with securitized investments, carries an information disadvantage.

The huge amount of literature on property indices can roughly be divided in two parts. First, the use of return figures for portfolio allocation purposes<sup>7</sup>. Second, a discussion about measures to increase the information content of existing return figures.<sup>8</sup> Statistical tools are used to overcome appraisal-induced properties of the return figures like smoothing, lagging and serial correlation.

Almost all papers about real property indices take the valuation process itself as more or less given. This paper will take another perspective of the information problem. The main question is how the traditional property valuation process can be developed to increase information quality and meet new demands from the investor community. The Swedish valuation process for property index is here used as an illustration of a process that is designed to give a quality assured output.

## 2 VALUATION AND INDEX QUALITY

Valuation quality is basically a product of available information from property management and the real property market. However, quality is at the end always a product of received service in relation to customer perceptions.<sup>9</sup> Quality is in the eyes of the actors in the investor community - owners, investment managers, stockbrokers, consultant's etc. Quality in market value estimates is also a product of how reliable the valuation process is regarded, and good quality is underpinned by:<sup>10</sup>

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<sup>5</sup> In a country like Sweden, with 27 listed real estate and construction companies, is some 13 % (value weighted) of commercial real estate traded public. A survey, Eriksson - Nygårds (1997) on listed real property companies within EU countries 1997/1998 show that the market capitalization of these kind of companies varies between 1 and 3% of the total stock value.

<sup>6</sup> Newell - Webb (1998) give a description of different return formulas used on the portfolio level.

<sup>7</sup> A typical paper is Lee - Byrne - French (1996) that discuss the role of real property in a mixed asset portfolio from the UK perspective.

<sup>8</sup> Geltner has given a broad discussion about appraisal smoothing and related issues, see e.g. Geltner 1989 and 1991.

<sup>9</sup> Quality assurance of service processes has been a fast growing topic the latest years, see Gröönros - Gummesson (1985).

<sup>10</sup> Graff - Young (1999) argue, based on empirical tests of independent valuation conducted on the same properties, that valuation errors can be reduced by applying control systems on the valuation process.

- Common and proper definitions for all input and output variables like market rent, net operating income and market value.
- No systematic differences between the assumptions made by different valuers and valuation firms.
- Equal access to market information for all actors in the valuation process.
- A process that give a guarantee that there are no systematic, as well as random, input or output errors.
- A valuation process where all activities are quality assured from the perspective of the final users of information.

The demand for quality in index figures is related to the use of index information. Three, to some extent overlapping, uses can be distinguished for information related to the property index:

- Asset allocation. Return figures from real property are used in a mixed asset portfolio context as well as for simple asset class comparisons.
- Organisational development. Both asset and property management performance are benchmarked internally as well as externally to develop strategies and new organisational structures.
- Incentive programs. Management executives are to an increasing extent rewarded based on real property performance.<sup>11</sup>

The extended use of index information creates a need for more information with a higher degree of accuracy. There is an ongoing search for more timely and detailed information. Return figures in index format, originally presented annually, are now in many countries presented on a quarterly basis. Discussions are also about monthly indices as well as real time based index figures. For benchmarking and incentive program purposes it is necessary to have relevant information on the individual property level. Some investors are also keen to have information about individual lease contracts.

The increased need for timely and detailed object oriented information gives special emphasis to the valuation process. Valuations are costly, time consuming and they are characterised by uncertainty related to the amount of information available. It follows that in the further development of return indices, the valuation process is crucial.

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<sup>11</sup> Liang- Hess - Bradford - McIntosh (1999) illustrate a broad set of literature on attribution of return figures.

### 3 VALUATIONS AS A BASE FOR INDEX FIGURES

Valuation figures as estimated values, and not transaction prices, are always questioned. The way valuations are regarded can be related to a number of "valuation dilemmas", of which at least the first three below are widely discussed in the literature. These dilemmas are taken here as a starting-point for further discussion and analyses:

- Valuation estimates are regarded as smoothed in relation to transaction prices, which at a glance give low risk and a wrong perception of property betas. Valuation smoothing is the most crucial effect when using return figures for calculations of efficient frontiers within portfolio management. Smoothing is a product of both weak information and valuers fear to over-interpret given information. A smoothing effect also occurs when yearly valuations are used to simulate quarterly observations.
- Valuation estimates are regarded as lagged in relation to transaction prices, which diminish the market value figures early warning qualities and the information quality on how the real property portfolio contributes to the whole financial portfolio. The lagged information from valuations follow from the fact that real property market information is weak and, to some extent, contradictory. The valuer often needs clear evidence - quantitative data - to change basic valuation assumptions.<sup>12</sup>
- The use of information from older valuation reports in the estimation of current market value can give rise to serial correlation in the valuation figures.
- It is questioned if valuation estimates capture the full market value spread between under- and overperforming properties - "all cats are more or less grey". This valuation effect will cause wrong investment decisions and uncertainty about the total value of the property portfolio.

Yet another fact is that the market value for individual property can not be directly observed. The value figures follow from analyses of market information and they are based on a common market value definition. With more or less unique objects, traded infrequently, there will always be a discussion of how relevant valuation figures are for the purpose for which they are used.

The investment community currently handles the valuation problems related to property index in different ways:

- An increased emphasis is on fundamental factors behind real property return. Economic base characteristics behind the rental market and fundamentals around the capital market are analysed to give strategic decision support for asset allocation.
- Analyses of publicly traded real estate companies - technical analyses - give information about the return performance of underlying assets.<sup>13</sup>

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<sup>12</sup> Quan - Quigley argue that the appraiser has a role as signal extractor in a market with weak information and that appraisal smoothing is consistent with an optimal updating strategy.

<sup>13</sup> See Barkham - Geltner (1995) for a discussion about the price information content in public traded real estate.

- Flow oriented information - i.e. rental indices - is given higher priority in relation to capital based information.
- Valuation quality can be increased by further development, as described below, of the valuation process.

#### 4 THE CURRENT SWEDISH VALUATION PROCESS<sup>14</sup>

##### **A framework for quality in valuations**

The whole valuation process for the Swedish property index<sup>15</sup> was designed from the background of a long lasting discussion about the role of the valuer and the quality of valuations. Much of that discussion has its origins in the real property crisis between 1990 to 1993 when estimates of market value for commercial property in Stockholm CBD fell by about 70%. The lively discussion during 1993 about the value of underlying collateral in distressed Swedish banks was largely about valuation methods and assumptions in cash flow projections when there was no reliable market information. These in depth discussions have had a huge impact on the valuation guidelines<sup>16</sup> used within the Swedish property index.

Discussions of index construction and valuation formats over time have centred on seven different measures designed to assure valuation quality and a process with continuous improvement:

- The use of common and internationally accepted<sup>17</sup> definitions of critical parameters as market rent and net (operating) income. A clear definition and consistent treatment of overhead costs etc.
- A broad presentation and in depth discussion of macro variables like GDP, inflation and real interest rates and their impact on valuation assumptions.
- A financial approach to valuation where detailed discounted cash flow analysis<sup>18</sup> is regarded as the main method to be in line with methods used in the rest of the capital market. The focus is on lease contracts and the individual market position for each property.
- A yearly and in depth review of 50 randomly chosen valuation reports.
- Research (multiple regression analyses) focusing on valuation consistency and quality, differences in assumptions and results between internal and external valuers etc.
- An open valuation process with feedback, where the valuer deliver detailed information about assumptions and receive benchmark information about valuation

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<sup>14</sup> This part of the paper is mainly based on an earlier paper presented at the IPD Conference in Wiesbaden, Lundström (1999).

<sup>15</sup> The Swedish Property Index (SFI) was launched in 1997. The index is developed and administrated in collaboration with the UK-based Investment Property Data bank (IPD). At the end of 1999 the index includes some 2 500 properties with a total market value of 175 billion SEK (1 USD = 8,5 SEK). The coverage is about 50% of the institutional investor commercial property holdings.

<sup>16</sup> The Valuation Guidelines are available on [www.fastighetsindex.se](http://www.fastighetsindex.se).

<sup>17</sup> The definitions for central parameters complies with International and European standards laid down by IVSC (International Valuation Standards Committee) and TEGoVA in the Approved European Property Valuation Standards.

<sup>18</sup> The Swedish property index for 1998 is to 89% (value weighted) based on cash flow analysis, 10% yield methods and 1% sales comparison.

assumptions in the total population of valuations as well as certain sub-markets. An important part of the feedback is the comparison between assumptions and actual outcome from property management.

- Valuations should only be undertaken by authorised<sup>19</sup> external valuers or internal valuers with equivalent competence.

One example of the practical results from this valuation process is the information about operating and maintenance costs and net income from property management compared with valuation assumptions about the same parameters. The latest results from 1998, see table 1 below, indicate that valuers tend to be optimistic about operation and maintenance cost which can increase the assumptions about the net operating income as well as the initial yield. On the other hand it can be argued that investors involved in transactions perhaps believe that net income with a new property management regime can be much higher! It is then an interesting discussion of what constitutes reality; investors' expectations or the factual outcome in property management? Another question is if differences in assumptions will give different valuation results? These questions are currently subject of further research.

### **Consistent valuation assumptions**

Reliable market value estimates can be achieved in different ways. The British valuation process can here be compared with the Swedish. The IPD index for the UK is based on market valuations with no record of underlying assumptions. The quality check is up to the individual valuer. The credibility in the market value figures rest on a combination of the "UK Valuation Bible", the Red Book, and a general understanding in the investment community that the valuation service is undertaken by professional people.

The Swedish valuation process is based on the assumption that more information to all involved actors will in the long run increase valuation quality and the legitimacy of the whole property industry. One important part of the process is to bring property valuation closer to a financial approach. It is then natural to use the Discounted Cash Flow method where each parameter can be individually motivated and discussed in relation to other parameters. Each property then has to be treated individually, but consistently in relation to other similar properties. Another objective is to establish a strong link between cash flow projections and the unique net operating income for each property. This link can be achieved when the cash flow projections are tailor-made for each individual property and serve as an instrument for communication between the valuer and the property manager.

The following focus points, which follows normal financial considerations, illustrate the concept of consistent valuation assumptions when using the Discounted Cash Flow method:

- Risk should be considered in the discount rate and exit yield. Cash flow projections should be based on expected values.

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<sup>19</sup> The basic requirement for the Swedish authorization of commercial property valuers is three years of academic education in real estate economics and related subjects like real estate law and building technique.

- The exit yield should be motivated in relation to the expected risk, the nominal discount rate, expected inflation and growth of net income.
- Expected market rent should be motivated in relation to contract rent and vacancy take up.
- Actual vacancy should over time be adjusted to a normal vacancy rate in line with the individual market position for each property.
- Projections for operating and maintenance cost should be based on actual records and considerations of the actual market situation and what phase the building is in its life cycle.
- Every property should normally be inspected every three years with a focus on market position and need for reinvestment and periodical maintenance.

This kind of request for consistency forces the valuer to transform property management and market information to cash flow and risk projections. The transformation of data from property management, the rental market and capital market (interest rates) is checked against data from transactions in the real property market. A wider and deeper understanding of the interaction between the rental, capital and property markets will hopefully, together with a proper use of the discounted cash flow method, give valuations where both assumptions and results are "closer to reality". However, what reality really is, will always be a matter of discussion in a situation with few transactions of unique objects in a market with low liquidity.

### Feedback in the valuation process - some examples

One kind of feedback from the 1998 valuation process, as mentioned above, is the relation between assumptions about operating and maintenance costs for 1999 in relation to actual values for 1998. In table 1 these figures, as well as net income, are compared.

Table 1: The relation between assumptions (median values - SEK/m<sup>2</sup> per year) in cash flow analysis and factual outcome from property management (Source: SFI/IPD).

Property type	Number	Value assumptions - 1999			Reported values - 1998			Assumptions/Reported	
		I	II	III	I	II	III	I	III
Retail	228	262	55	601	338	54	525	78%	115%
Office	771	235	59	604	279	52	514	84%	117%
Housing	677	295	53	420	331	50	370	89%	113%
All	1 926	263	53	468	303	48	416	87%	112%

I= Operating and maintenance cost, II = Property tax and leasehold fee, III = Net (operating) Income

Here, it is evident that valuers on the average estimate lower operating and maintenance costs, and higher net income, compared with the actual outcome from property management. This result was followed up with a valuation experiment<sup>20</sup> in September 1999, where 67 valuers and analysts, among other things, gave their opinions about operating and maintenance cost for a hypothetical CBD office building in Stockholm. On the average their forecasts were about 25% lower compared to the average index result for that kind of property.

<sup>20</sup> The results from the experiment are presented in Lundström (1999).



The valuers argument for their comparatively low estimates of operating and maintenance costs is that they try to simulate the calculations of the most probable buyer. The following question - that we not yet have any answer to - is if net income in property bought and added to different portfolios is in line with valuation assumptions, or distributed around average outcome from property management as all other properties.

Another question in relation to net income is the rental forecast and market rent in relation to rent passing. Average figures for market rents, estimated by the valuer, and annual rent passing are illustrated in table 2, which also show the extent of the Swedish property index.

Table 2: Assumptions about market rent (SEK/m<sup>2</sup> per year) in relations to annual rent passing by 1 January 1999 (Source SFI/IPD).

Segment	Market rent								Rent Passing
	1	2	3	4	5	6	7	8	
1. Retail Shopping Centres	132	1 123	474	815	1 029	1 263	2 269	573	1 193
2. Retail Other	125	1 038	496	768	978	1 179	1 631	538	1 082
3. Office Stockholm CBD	88	2 327	1 533	2 072	2 347	2 622	3 074	454	2 224
4. Office Stockholm Central Area	156	1 527	930	1 225	1 428	1 788	2 376	447	1 482
5. Office Rest of Greater Stockholm	194	1 032	551	757	952	1 242	1 617	397	1 061
6. Office Göteborg Central Area	79	1 071	755	866	1 020	1 192	1 574	276	1 139
/. Office Rest of Greater Göteborg	43	721	440	547	661	804	1 456	274	779
8. Office Malmö Central Area	50	965	493	810	974	1 169	1 334	243	1 040
9. Office Rest of Greater Malmö	38	802	390	698	790	917	1 221	248	839
10. Office Other Major Cities	199	822	473	706	838	910	1 183	233	897
11. Office Rest of Sweden	81	713	350	616	718	831	987	195	780
12. Industrials	218	477	226	346	443	585	856	202	522
13. Hotels	30	1 122	457	696	1 000	1 536	2 097	564	1 136
14. Other Commercial	73	1 010	301	540	832	1 142	2 800	735	1 036
15. Residential Stockholm Central Area	216	895	694	773	863	984	1 221	177	898
16. Residential Rest of Greater Stockholm	194	839	653	726	800	948	1 133	233	861
17. Residential Göteborg Central Area	64	892	722	780	877	990	1 101	127	905
18. Residential Rest of Greater Göteborg	37	761	651	684	733	823	947	100	756
19. Residential Malmö/Lund Central Area	56	790	656	737	783	826	987	88	805
20. Residential Rest of Greater Malmö	10	744	668	727	745	787	799	47	754
21. Residential Other Major Cities	120	734	592	662	734	793	895	99	746
22. Residential Rest of Sweden	43	635	386	607	662	703	782	157	667
23. Other	100								
All	2 346	956	372	689	840	1 077	2 003	533	985

1 = Number of observations, 2 = Unweighted average of market rent assumptions, 3 = Bottom 5%  
4 = Lower quartile, 5 = Median value, 6 = Upper quartile, 7 = Top 95%, 8 = Standard deviation  
9 = Unweighted average of rent passing.

Market rent appears, on the average, to be close to annual rent passing. Some of the deviation in this case can be explained by the fact that property tax is included in rent passing but excluded in the market rent. In this case it has not been investigated how the distribution of market rent assumptions is related to the distribution of annual rent passing and how assumptions about market rent is related to the market position of properties.

### Factors related to the discount rate

Table 3 illustrates relations between critical cash flow parameters and how these relations have changed between 1997 and 1998. As the property population has increased and changed, no deeper conclusions can be drawn. An interesting observation is that the average discount rate and exit yield has not been lowered by the same amount as the interest rate for government bonds.

Table 3: Unweighted averages of cash flow assumptions 1997 and 1998 (Source SFI/IPD).

	1997	1998
Nominal discount rate (%)	10,3	9,1
Exit yield (%)	8,0	7,5
Rental growth during the calculation period (%)	3,3	2,7
Market value development during the holding period (%)	2,3	1,6
Inflation assumption for the holding period (%)	2,6	1,7
Government bonds - 5 year (% , December)	5,74	3,86
Government bonds - 10 year (% , December)	6,06	4,25

The relation between the discount rate and the exit yield for office buildings in Stockholm CBD is illustrated in diagram 1. As expected, there is a pretty stable relation, which perhaps follows from the fact that many of the valuation firms and analysts have an automatic relationship between these parameters in their spread sheet models.

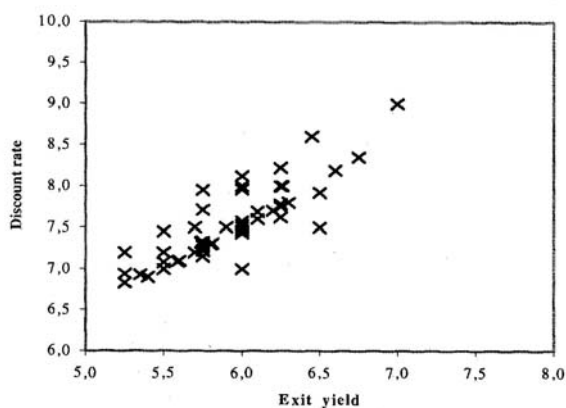


Diagram 1 The relationship between the nominal discount rate and the exit yield for office in Stockholm CBD (Source: SFI/IPD).

Stockholm CBD is also a market that is focused on by investors and analysts. However data from the inner city (outside CBD) show, as expected, much more spread, see diagram 2.

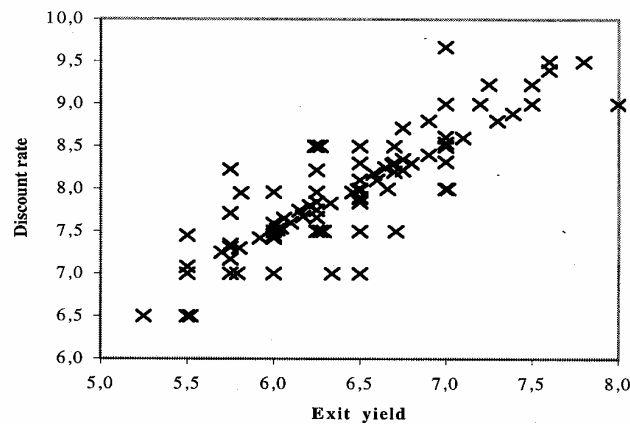


Diagram 2 The relationship between the nominal discount rate and the exit yield for office in the inner city of Stockholm with CBD excluded (Source: SFI/IPD).

A typical feed back discussion is as follows: "In the inner city of Stockholm the exit yield varies from 5,8 to 7,0 % for the same discount rate (8%). What factors can motivate that spread?" The discussion that follow from this kind of question will hopefully increase the awareness of the effects of different market positions, contract structures, technical status etc on return and risk. The aim is that the valuer should come closer to both property management and the real property market. This kind of questions will also be subject of empirical tests.

## 6 CONCLUSIONS AND FURTHER DEVELOPMENT OF THE VALUATION PROCESS

With valuation assumptions confronted with benchmark information from property management and transaction information from the property market, as well as investor assumptions, it is supposed that the market will become more professional and valuation dilemmas like smoothing, lagging and serial correlation will be reduced. However, there will always be a discussion of what factors constitute quality?

If we take the standpoint of the main consumers of valuation figures - investors and analysts - it can be concluded that increased quality in market value figures for index purpose can only be achieved if:

- The valuation process is open and transparent.
- Input errors are traced and eliminated.
- There is a feedback of information from index valuations, market transactions and property management to the valuation community.
- Valuers have an ongoing communication with investors about their principles for decision making and the use of decision support.
- Market valuations of real property are based on common and worldwide-accepted definitions.
- Market valuations of real property are conducted in the same way as other financial assets are evaluated. There should be no hocus-pocus.

Further research on the valuation process and valuation quality should focus on:

- How valuation assumptions and results differ between individual valuers and valuation firms and to what extent these differences have an effect on the value of individual properties as well as whole portfolios.
- What is a "normal" spread in valuation assumptions between different kind of properties, submarkets and between valuers?
- How valuation assumptions and results change over time for the same properties.
- How it is possible to come to the same valuation result with different input and how these inputs can be motivated.
- How differences in net income performance is reflected in the valuation result.
- The stability in net income performance from individual properties and portfolios.
- The information content in transactions from different submarkets.

A transparent valuation process that is in line with current financial theory is most probably the only way to have real property valuations that fulfil the needs of the investment community. A more academic and open approach to valuation is also a way for the valuation body to strengthen its position on the service market for real property.

The investment community wants to have more timely and detailed market information that is not smoothed, lagged or in any other way deviate from "true" market records. This demand gives a strong push for increased transparency and supply of more information with high quality. However, high quality index figures can only be achieved if all actors in the market co-operate and provide the valuation process with relevant information.

A re-allocation of resources for valuation can likewise contribute to higher valuation accuracy. Future monthly or real time based index figures are most certainly based on expert systems where the valuer is more a kind of information co-ordinator. The valuer as the expert and information co-ordinator in the expert system is one part of a new role for the valuer. One step towards a new role is a transparent valuation process which has one obvious result; the valuer can no longer "hide behind" the market value estimate!

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