The Challenge of Real Estate Valuation for Secured Lending

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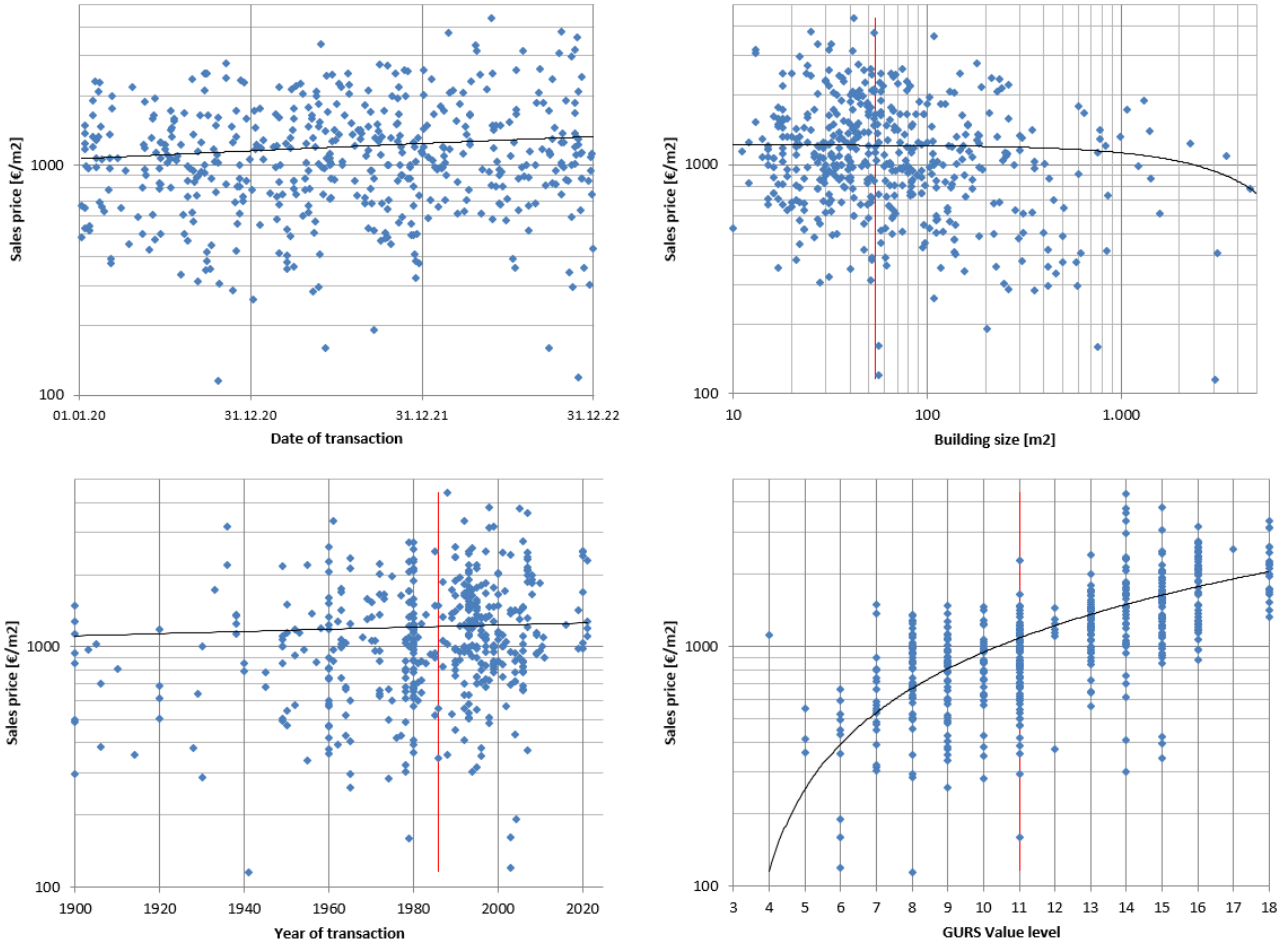
The paper deals with prevailing challenges of real estate valuations. Real estate, heterogenous and diverse in nature, are characterized by a wide variance of selling prices which cannot be statistically fully explained. This makes it difficult to objectively evaluate a property. The selection of the right set of comparable transactions (and the implementation of adjustments) has therefore by far the greatest impact on the valuation. And loose valuation standards do not provide much guidance. Real estate valuations might be therefore subject of high uncertainty. In addition, valuation bias may even increase valuation imperfections. A reviewer of a valuation reports must be therefore aware of all pitfalls and know how to challenge a report in the right way.

1. Comparable selection - the heart of all real estate valuations

Property valuations are based on market data of past comparable sales (and rent) transactions with similar property. However real estates are very divers and heterogeneous, reliable and complete transaction data are rarely available, therefore it is very difficult to identify suitable comparable transactions which can be used to determine a proper value of the subject of valuation. This is especially true for less liquid property, like commercial real estate. An example of the wide distribution of actual realized sales prices for office space in Slovenia is shown in graph 1. Even if the sales price per m2 is displayed as a function of major explanatory/predictor variables, the scattering of values appears to be very high.



Graph 1: actual realized sales prices in the market (€/m2) of sold offices space between 2020 in 2022 in Slovenia. Sales prices are presented as a function of the date of transaction, building size, year of transaction and location. The measure for location is the so called "value level" defined by GURS. The median of each predictor variable and a trend line are added to each graph. Sample size = 489. Source: own calculations - www.cenitvenepremicnin.eu

Using an appropriate regression model, this wide distribution of values can only be partly explained by explanatory variables such as date of transaction (price increase over time), property size (large property is cheaper per m2 then smaller property), year of construction (newer property are more expensive) and location (higher prices are achieved in better locations) etc. The following simple but meaningful linear regression model for various types of real estate has been used [Tuma, 2023]:

$$\ln Y = B_0 + B_1 X_1 + B_2 \ln X_2 + B_3 X_3 + B_4 X_4 + B_{\dots} X_{\dots} + \varepsilon_i$$

Y … Predicted variable: actual realized sales price (or rent) in €/m²

X_i … Predictor variables / relevant property element: 1-date of transaction, 2-building size, 3-Year of construction, 4-location, additional variables may be added

B_i … partial regression coefficients

ε_i … error terms

The model however, can explain only a portion of variance of the sales prices. R-Squared (R^2 or the coefficient of determination) is the statistical measure in a regression model that determines the proportion of variance in the predicted variable that can be explained by the predictor variables. In other words, R-squared shows how well the data fit the regression model.

	Apartments	Houses	Office	Retail	Industry
Years	2022	2022	2020-2022	2020-2022	2020-2022
SALES TRANSACTIONS					
R squared	0,73	0,59	0,55	0,50	0,32
Sample size	4.723	2.093	489	486	165
Median Sales price €/m2	1.974	914	1.070	960	340
RENT TRANSACTIONS					
R squared	0,51	0,35	0,22	0,46	0,21
Sample size	1.383	92	2.836	773	783
Median Rent €/m2/month	10,0	5,7	9,0	8,5	4,0

Table 1: R^2 values calculated using a basic linear regression model for different types of property. R^2 equals 1, if all variance can be explained and 0 if no variance can be explained by the predictor variables/model. For residential property transactions from the year 2020 have be used, for commercial real estate, due to less liquid markets, transactions from 2020 to 2022 have been used. Source: own calculations.

By using the equation above, R^2 values are obviously higher in more liquid residential markets than in less liquid markets like commercial property: 73% of the variance of the sales prices for apartments can be explained, but only 32% for industrial property in comparison. The remaining part of the price variance is almost impossible to explain. Other factors, such as special technical and/or legal characteristics of the property, special circumstances of the transaction are not known to the valuer and can therefore not be considered in the valuation. The valuer might very well know all technical and legal details of the subject of valuation, but not details of comparable properties (e.g., construction standard, level of equipment at the moment of transaction) and transaction circumstances (e.g., the bargaining power of the seller in buyer). Furthermore, missing and unreliably data contribute to the imprecision. Therefore, even when using advanced statistical models - like regression models, a reliable indication of value is very difficult to make, especially for less liquid property. This is also why automated valuation models might never be reliable enough for less active markets.

However, regression coefficients calculated using a regression model, are a useful tool for estimating adjustments. But because of low reliability of such models, such adjustments will always be a major source of uncertainty. Anyway, a mathematically backed adjustment is still better than a subjectively determined adjustment.

The focus of every valuation must therefore be a thoughtful, objective and unbiased selection of the most suitable comparable transactions. The set of comparable selections must be well-balanced, comparables should be selected which are both superior and inferior to the subject of valuation for a specific element of comparison (e.g., larger and smaller, older and newer, worse and better located properties), outliers must be avoided, properties/transactions with low adjustments are preferred. Further, a higher number of selected comparable transactions can significantly increase the reliability of the valuation.

2. Loose valuation standards - not of much help

Various valuation standards and other valuation regulations [IVS] [RICS] [TEGoVA] [USPAP] provide little instructions and guidance on how to properly determine the right indication of value. These standards mainly concentrate on providing very general rules and instructions, definitions on various terms, theoretical descriptions on different valuation approaches, list of required elements in a valuation report, etc. - but little or no guidance on comparable selection and adjustments.

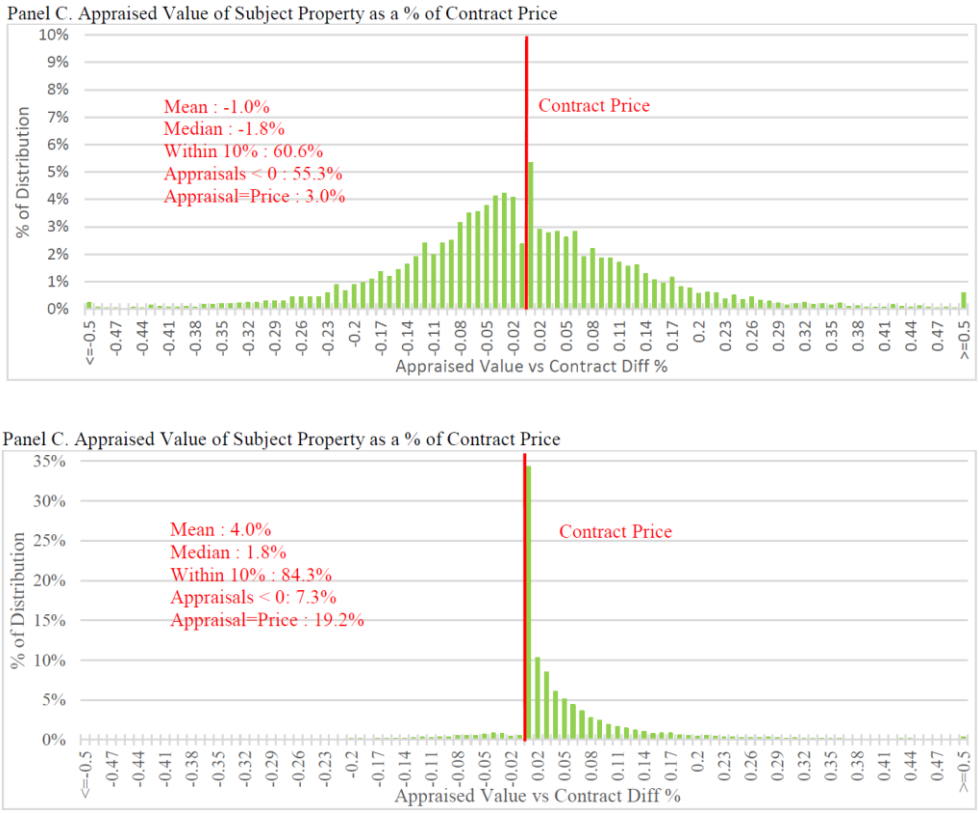
For example, regarding comparable selection, which has a material impact on the value, [IVS 105-30.7] states: "evidence from transactions of very similar assets provides a better indication of value…" but does not explain what "similar assets" actually are and/or how to measure the degree of similarity. The same goes for adjustments "the valuer should analyse and make adjustments for any material differences … valuers must document the reasons for the adjustments and how they were quantified" but without explanation on how these adjustments should be determined. In case of inactive markets, even subjective adjustments are explicitly allowed [IVS 105 10.8.]. Regarding the number of comparable transactions to be considered in the valuation process, only a general rule exists "evidence of several transactions is generally preferable to a single transaction". Similar loose rules are specified to determine the cap or discount rate. In the income approach section, there are no rules at all on how to determine an assumed or saved rent [IVS 400 60.1]; no rules on how to select comparable rents nor on how to calculate adjustments.

There are however useful guidelines suggested by the US based Appraisal Foundation. In the non-mandatory advisory section, the Appraisal Foundation [USPSP, APB Valuation Advisory 4 in 5] provides advice on how to identify comparable properties: like for example the use of "bracketing" – use of comparable properties that are both superior and inferior to the subject for a specific element of comparison - and more advanced comparable selecting tools. In [USPSP, Advisory opinion 37] the pros and cons of linear regression models, used for calculating adjustments, are explained. These guidelines are however non-mandatory and predominantly intended for automated valuation models and supporting tools, but can be also very useful for individual valuations too.

3. Valuation bias – an ongoing headache

Based on a recent study on client satisfaction on valuation reports made in Slovenia [Tuma, 2022], delivering a low-priced valuation report on short notice is favoured over a reliable valuation report. Furter, it seems to be crucial for clients, that the indicative value is consistent with their expectations. Clients often order the valuation report after the deal, loan or sales contract, is already closed and it seems they are more seeking for a confirmation of the already negotiated value and less for an independent valuation opinion. There is a substantial risk of so called "confirmation bias". An example [Michael, 2016] of such bias is presented below, where residential properties were valued by the same valuers twice within a 6 months' time period between 2012 in 2015: first the valuers were not informed about the contract price - valuations were commissioned

to assist the foreclosure process - and the second time they were - valuations were commissioned in the loan origination process.



Distribution of the difference between appraised value and contract values. In the first case the contract price was not known by the valuer, in the second case the contract price was known in advance. Sample size = 8.533

The difference is evident: the second time the valuers used a completely different set of comparable transactions and different price adjustments to justify the values. When the contract price was known to the valuer, in one third of all cases the indicative value exactly matched the contract price and more than 95% of the valuations "confirmed" the contract price (equal or higher as the contract price). Due to heterogeneity of properties, insufficient data and loose regulations, an experienced valuer can easily customize the indication of value to any value desired by the client. Various other studies have been done on that topic; many of these studies point to severe risk of valuation bias [Gračanić, 2020] [Cable 2019].

In the US the Home Valuation Code of Conduct [HVCC] was introduced, a set of guidelines designed to make the home valuation process more reliable. The HVCC prohibits mortgage brokers and real estate agents from selecting or paying valuers. Instead, lenders or third-party companies selected by the lenders are the only parties allowed to contact, retain, and compensate valuers. In Europe however, EBA regulation allows valuations to be also ordered at the request of the borrower [EBA, 2020, article 212] which substantially increases the risk of valuation bias.

4. Reliability of valuations – the most ignored element of a valuation

It is clear by now, that uncertainty plays a major role in each real estate valuation. The reliability of a valuation depends of several factors, such as availability of reliable market data & activeness of the market, valuers' skills & experience, level of valuers' subjectivity, number of valuation approaches used, etc. Some valuations of very liquid property such as apartments in active markets can be highly reliable compared to vacant large industrial complexes in rural areas or development property. IVS do not specifically mention valuation reliability, only a short note that "significant uncertainty that directly affects the valuation must be disclosed"

[IVS 103 10.2]. RICS Valuation – Global Standards VPGA 10 (non-mandatory) however address matters, that may give rise to material valuation uncertainty in more detail. The guideline suggests to comment any issue resulting in material uncertainty preferably in qualitative terms. A mathematical measure of uncertainty (quantitative term) is only permissible, if the method/model is adequately explained. The Slovenian Business Financial Standard [SPS, 2013] also requires, that valuers include in the valuation report "uncertainties associated with the valuation" but add "if it is necessary and reasonable".

A useful mathematical measure of uncertainty can be the variance of comparable sales prices (or rents). The wider the range, the less reliable the valuation might be. A useful indicative confidence measure could be therefore the standard deviation or interval of confidence of adjusted sales prices (or rents) from selected comparables. Such statistics can be easily calculated, but also easily manipulated by using a biased selection of comparable transactions. Another useful mathematical indication for reliability might be R^2. A higher R^2 means more explained variance, better data quality and thus, in general, less uncertainty and more reliable valuations.

The following table provides an indication of reliability of different types of property for Slovenia, based on personal experience and calculations.

Level of Reliability	Interval of confidence (α = 5%)	Description	Typical examples
Very high	Close to 0%	Many comparable transactions available, very similar or identical to the subject of comparison, transactions happened very close to the valuation date.	Land plots in an industrial zone where several similar plots have been recently sold. Highly liquid apartments in good locations.
High	10%	Many comparable transactions available, similar to the subject of comparison, transactions happened close to the valuation date.	Ordinary apartments and houses in bigger cities, small commercial properties in good locations.
Average	20%	Sufficient but limited number of suitable comparable transactions, average or above average adjustments required.	Large commercial property in good locations, small commercial property in small-town/rural areas. Less liquid residential property.
Low	30%	Few comparable transactions, properties have significant differences, high adjustments required	Large commercial property (e.g., industrial complex), especially in small-town/rural areas. High-quality development properties.
Very low	40% and more	Inactive market, very few low quality or no comparable transactions.	Large commercial property in rural areas, especially when vacant, substantial reconstruction required, non performing properties, castles, development properties.

Table 2: indication of reliability of different property types in Slovenia. The measure for reliability is the interval of confidence of adjusted comparable transaction. Source: based on own experience and calculations

In future valuers should also consider to provide a mandatory indication of reliability/uncertainty of the indicative value. This might be very useful for users of the valuation report, for example for determining an appropriate LTV (Loan-To-Value) ratio or estimating the level of risk of a property. Very unreliable valuations with very low level of reliability might not be suitable for secured lending at all. An estimation of reliability/uncertainty of the indicative value should be a standard part of each valuation report.

5. The challenge of challenging a valuation report

EBA requires that financial institutions critically review the valuations they receive. Besides comprehensibility and prudence of assumptions, the focus should be on "reasonable identification of comparable properties" [EBA, 2020, article 214]. This is especially important because selected comparables have the greatest impact on the indication of value. It seems however, that reviews are more focused on legal and technical attributes

of the collateral, such as availability of permits, possibility to use the property as a complete and independent unit, legal accessibility of the facility, data quality etc., than on the actual indicative value. [Pirc, 2023].

The reviewer should first check the valuers' sample of analysed comparable market date (sales or rent transactions). The sample must be large enough to allow a basic statistical analysis to be performed. According IVS, the valuer must maximize the use of relevant observable market information [IVS 105 10.7 and 20.4]. Often only very limited data are used for comparable selection; limited to a small geographic area or a short time period. Selecting comparables from a limited sample can very easily result in a misleading indicative value.

Secondly, the valuer should justify the selection process explaining the criteria of selecting comparable transactions, especially when selected comparables differ in a high degree from the sample average. The valuer should select a well-balanced set of comparables, avoid selecting outliers and use the "bracketing" principal. A benchmark for the selection should be low adjustments. In order to increase the reliability of the indicative value, a larger set of comparables should be selected - ideally between 5 and 10. A low number of comparables, three is often the standard, makes it very easy to manipulate the indicative value, especially when the variance of values is very high.

Revising adjustments is very difficult and almost impossible without performing complex statistical calculations. According [IVS 105 20.5] the valuer has to disclose such calculation. However, this will be rarely the case, because valuers usually determine adjustments very subjectively. Anyway, a reviewer should challenge all unjustified large adjustments beyond 10-15%. Similar other important elements which have a material impact on the indicative value should be carefully reviewed in a similar way, like the cape rate / discount rate.

It is also vital to get an idea of the reliability of the valuation. Due to lack of sufficient reliable market data, valuers are often not able to provide a reliable indication of value. Signs of an unreliable indication of value is limited market data – small used sample, high variance of comparable sales prices (or rents) and large applied adjustments. If this is the case, a bank reviewer might decrease the value of the collateral, suggest a lower LTV and/or require a higher interest rate to compensate for the additional risk.

6. Conclusion

Valuation standards and regulations focus on general rules, theoretical descriptions of the valuation process and less on how an indicative value should be estimated. Guidance on comparable transaction selection and making adjustment, which have the greatest impact on a valuation, is lacking. Because of less active real estate markets and the heterogeneous nature of real estate, complete and reliable market data are not always available. As a consequence, statistical methods are of limited use: they are helpful when determining adjustments and in selecting comparables, but less suitable for automatically calculating a reliable indicative value. Due to loose regulations and missing reliable market data, valuers can easily manipulate and customize the indicative value. Valuation bias risk is especially high when the client has an interest to influence the valuation and/or the valuer is economically dependent on the client. Because of high possible imprecision of real estate valuations, more attention should be paid to the reliability of a valuation. A prudent reviewer must be aware of all mentioned and above all focus on reviewing the indicate value: what marked data have been analysed, how the comparable selection process was carried out, how adjustments have been made, which cap/discount rate was selected and what is the degree of uncertainty. All these elements have by far the greatest impact on a valuation.

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