

Derivation of Standard Ground Values from Business Rents

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Key words: committees of experts, purchase price collection, standard ground values, business rents, regression analysis, typical shops, usable floor area, commercial situation, market factors, market value, gross yearly yield of a property, gross margin factor, iterative procedure

SUMMARY

The expert committee for values of premises within the urban area of Göttingen has assigned the administrative office within the land register agency to analyse the “standard ground value” in central Göttingen by a review of rents being paid for business buildings. The reason for this was the lack of sales of undeveloped premises. Consequently, the adaptation of values could only be made by usage of general trends.

In order to accomplish the review, 700 questionnaires were sent to retail traders. After a feedback of almost 400 questionnaires, the central area of Göttingen was visited in order to define a typical Göttingen business by means of photographs and questionnaires. Additionally, for every street, a typical business unit was created, and the town centre was divided into several retail units by an external count of the number of people passing by. Using a database, a normalised business rent was calculated for every typical business. A corrected ground value could then be derived from the yield of the business building.

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1 INTRODUCTION

Standard ground value maps are very frequently produced and used to describe the level of land prices. The standard ground values of a region are clearly arranged in these maps.

The branch offices of the committees of experts on real estate values (GAG) very often use these maps in analogue form or apply digital maps on CD Roms or via the Internet.

Every year the standard ground values are discussed and decided by the committees of experts during their meeting. In this connection all sales of the previous year are analysed and taken into consideration for the decision. The ideal case would be active real estate transactions with enough sales in all zones leading to a solid decision guidance for the experts in order to derive the standard ground values.

1.1 Problems

The evaluation of standard ground values within inner city sites has always been a problem for the committees of experts. There is a lack of sales of undeveloped properties. Concerning the real estates market, there is hardly any transfer of developed properties in the core of a city. Besides, the purchase prices of such transfers generally do not represent the unusual business connections. Every year, the experts of the committees adapt the standard ground values to the general trend, but this is not sufficient to obtain significant and reliable standard ground values in such areas. There is a risk to depart consolidated findings year by year. The sales in the inner city of Göttingen have always been very rare.

1.2 Approach - An Analysis of Rents

A laborious but quite common method to determine standard ground values of inner city sites implies the analysis of yield indicators of the located retail trade. The business rents of ground floors as a principal source of income represent the basis of the gross yearly yield of a property and largely reflect the value of the building.

2 DATA COLLECTION

The derivation of standard ground values from business rents presumes the implementation of a survey in order to have sufficient secure and current rents. A specially developed questionnaire was directed to the shop owners and sent to approximately 700 addresses. This project was supported by the Association of Retail Traders in Göttingen.

In order to strengthen a potential feedback of the retail traders, a press conference of the committee of experts Göttingen had previously informed the public through the regional newspapers.

The writings which had been sent to the shop owners contained a covering letter, a questionnaire and a business reply envelope for the return of the completed questionnaire. The adherence of data protection was expressly declared so that mistrust could be prevented. The questionnaire was clearly arranged. The shop owners only had to fill in a few columns the contents of which they had ad hoc at hand.

2.1 On-Site Inspection - „the Typical Göttingen Business“

After receipt and review of the questionnaires the participating shops were inspected and photographed on site. For the subsequent evaluation of the furnishings an evaluation sheet was developed which considered the different characteristics of the shops and their furnishings.

The evaluation sheets included the following aspects:

- ceiling height,
- shop window front in % of the whole facade,
- technical equipment,
- visual appearance and
- situation of the entrance area (number of stairs).

Following this inspection the shops were classified into five quality classes. The "typical Göttingen shop" was defined as medium class, hence a shop with medium-class furnishing, and provided an orientation for the evaluation of the above collected data.

The "typical Göttingen shop" (medium class 3) is defined as follows:

- medium window area (50-70 % of the facade),
- daylight
- entrance: at-grade up to one stair,
- shop area 80 sqm to 110 sqm,
- medium ceiling height (2.30-2.80 m) and
- medium-class technical equipment

The medium class was judged by grade "3", thus a spectrum between 1 and 5 was generated. The classes above the "typical Göttingen shop" presented all their characteristics in a good or better way, whereas the qualities of the classes 4 and 5 were hardly or not at all developed. Most of the shops were evaluated by grade "3".

2.2 Retail Locations

Thanks to a frequency report which had been written in 2001 by a real estate broker from Göttingen, a very current graduation of the inner city into retail locations could be used for this analysis. The generated results came up to the ideas of the branch office of the committee of experts, so that the classification of the investigation area could be made into 1 A -, 1 B -, 2 A - and 2 B - locations.

2.3 Compilation and Administration of the Data - (Aks)

In order to realise a statistical processing and analysis of the data, it was necessary to feed all the results of the data entry into the automatic purchase price collection (AKS). Besides the classic data of the collected purchase contracts, the AKS also permits the entry of additional data. By means of file references a precise identification of the data was possible. Additional parameters were

- classification of the equipment
- location indicator „block number“ and
- retail location.

The location indicator „block number“ was only for orientation.

After the data entry of the questionnaire, every "sale" (that means: every rental) had a data record with the following minimum input:

Property: *AKS Sale No., Type of Building, Usable Floor Area, Net Rent, Rent/sqm.*

Location: *District, Cadastral Section, Coordinates, Address, Area with Particular Standard Ground Values, Standard Ground Value*

Reference: *Year of Construction, Start of Rental, Date of Data Collection*

Analysis: *File References of Survey, Block Number, Graduation, Retail Location.*

3 INTERPRETATION OF THE DATA

3.1 Interpretation Method

Although the land value of business properties is included in the market value (under the terms of § 194 BauGB - German Federal Building Code), it can be separately derived when using the calculation methods of income approach to valuation and asset value method.

These valuation methods imply that the real estate value is calculated by means of comparative values and added to the respective building value. As is known comparative values are not available, another strategy is therefore required.

Should it be possible to deduct the income value of a building from a known market value, the result would be the land value.

For the present rent analysis a theoretical market value of a typical business property was calculated on the basis of the inquired rents and the corresponding gross yearly yield of properties. A gross margin factor which had been determined during a comparative analysis was used for this calculation. Besides, an income value of a building was calculated by means of market factors which had also been derived from this comparative analysis. For damping reasons, the land value which was generated by deducting the market value and the income value of a building, was finally adjusted with the existing standard ground value. The previous standard ground value thus flows into this damping as well as into the calculation of the income value. Without this initial value the presented method is not practicable.

3.2 Determination of Value Influencing Criteria

During the first analysis it was noted that year of construction, block grading and contract period had no significant effects on the target value. The regression analysis used for the preparation of the data was expressed with the following target values and influencing factors:

target value:	rent / sqm (vgmp)
influencing factor:	usable floor area (nfl)
	commercial situation (hl)
	classification (kl)

$$\text{vgmp} = \text{b0} + \text{b1} \times \text{nfl} + \text{b2} \times \text{hl} + \text{b3} \times \text{kl}$$

The analysis showed a great significance of the three above mentioned influencing factors. With the present data it was possible to determine the average values of the variables as follows:

- usable floor area on average 108 sqm
- (min. 14 sqm, max. 405 sqm)
- commercial situation 1 up to 5, on average 3,
- classification 1 up to 5, on average 3.

With the regression analysis, estimated values were established with reference to the above mentioned influencing factors and charted in rental overviews.

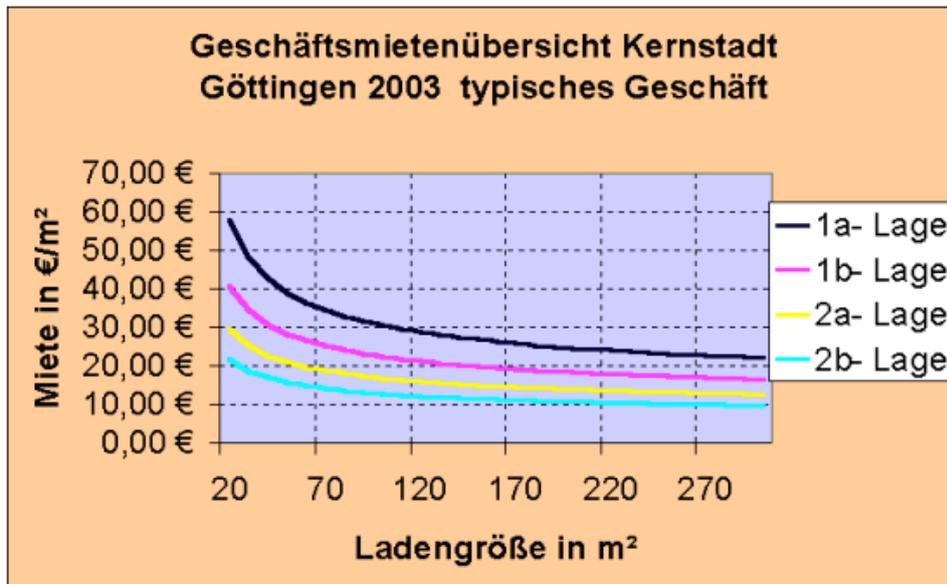


Figure 1: Regression analysis: Rents above influencing factors „usable floor area“ and „commercial situation“

3.3 Calculation of Standardised Rents for Each Street of Houses

By means of the calculated coefficients of regression a standardised rent could be generated for all data records. Then the standardised rents were averaged separately for each street of houses and for each side of the street. Thus 86 streets of houses within the core city of Göttingen could be provided with a "standardised" rent.

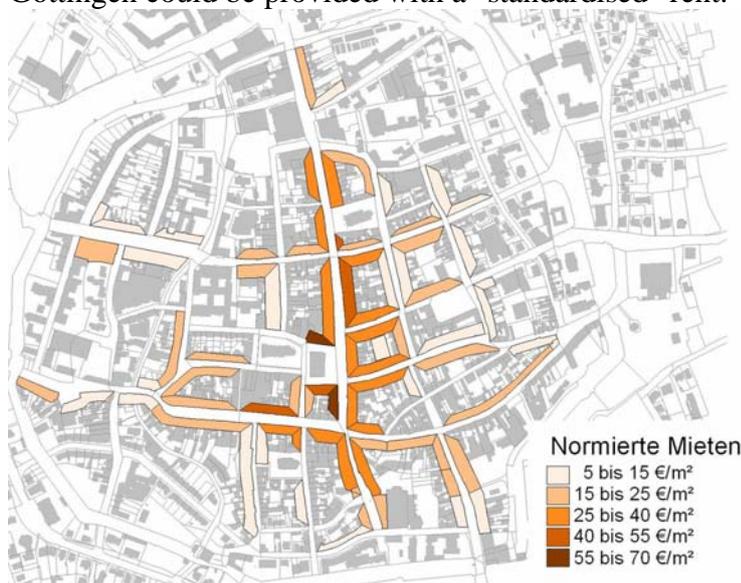


Figure 2: Standardised Rents for each street

3.4 Determination of Market Factors for the Core City of Göttingen

The sales made in the core city of Göttingen during the last ten years and recorded in AKS were hence considered to determine market factors. The existing sales were sorted according to the above mentioned retail locations and evaluated separately. The rental contracts which had been recorded after the passage of the ownership, the residential as well as the business areas were used to calculate the real gross yearly yield of a property, the building area and the plot ratio of the property.

$$\text{market value} = \text{gross yearly yield of a property} \times \text{gross margin factor}$$

The remaining useful life was estimated by a long experience and due to the date of the last fundamental refurbishment. The net profit was calculated by subtracting the management costs from the gross income. For these management costs the following assumptions were made and even later applied:

The maintenance costs were taken up to 1 % p.a. of the objective value of the usable floor area of about 1,500 € / sqm and the administration costs on the basis of a long experience to 3 € / sqm. According to value R (Wert R) for mixed used properties the risk of rent loss was set up to 2 %.

The analysis revealed that the market factors have developed quite constantly since 1995. The above-mentioned calculation methods were the general basis of the derivation of market factors mentioned in the following table. The reduction of the land size for 2b-locations is due to the increasing original urban development of the 19th century in the peripheral areas of the inner city.

Location	Land Size (GRFL)	Remaining Useful Life (Rnd)	Property Yield (LiZi)	Gross Margin Factor (RoF)
1a, 1b	approx. 300 sqm	50 years	6.5 %	13
2a	approx. 400 sqm	45 years	7.0 %	11
2b, others	approx. 250 sqm	40 years	7.5 %	10

3.5 Calculation of the Gross Yearly Yield of Typical Properties

Combining the plot ratios, the medium floor area and the number of leased floors – these data are specified in the standard ground value map – it was possible to calculate the annual rental incomes with the existing standardised rents.

$$NFL = GRFL \times GFZ \times 0.75$$

The following rent level indicated in the table below was considered for the corresponding renting situation which resulted in a standardised gross yearly yield of

a typical property for each street of houses.

FLOOR		Utilisation	Rent
ground floor		shop area	100 % of the shop rent
1 st floor		shop area	50 % of the shop rent
	or	office area	10 € / sqm
	or	living area	5 € / sqm
2 nd floor		office area	10 € / sqm
	Or	living area	5 € / sqm
3 rd floor		living area	5 € / sqm
4 th floor	option	living area	5 € / sqm
5 th floor	option	living area	5 € / sqm

3.6 Calculation of a Theoretical Land Value

The multiplication of the gross yearly yield of a property by the gross margin factor shows the market value of the standardised property, whereas the calculation of the income value of a building follows the common principles of the income approach to valuation. According to the above mentioned market factors, a theoretical income value of a building was calculated on the basis of the determined standardised rent.

With the difference between the market value and the income value of the standardised property, a ground value could be calculated from rental incomes for each occupied street of houses. For damping reasons, this ground value was averaged with the existing standard ground value. This shows the appreciation of the fact that the existing standard ground value had just been used for the definition of the property yield and for the subtraction of the land value proportion. The average replaces an iteration which would then have to cover all appraisals.

The standard ground values of the core city of Göttingen are not separated by streets of houses. Such a fine classification would go beyond the scope of a standard ground value map. In order to appreciate the existing standard value limits as well as previous standard value levels, the new land values had to be combined in larger zones. Though the previous structures were confirmed, new structures had been established.

The determination of standard ground values in city locations by using the analysis of business rents is an adequate tool to verify the existing standard ground value level and zones. Another iterative calculation of the property yield by using the ground values resulting from the authentic sales collected in the AKS and the following recalculation of the income values of each street of houses would lead to exacting results.

REFERENCES

- Günther, Ellen (2001); Diplomarbeit:
„Bodenrichtwertermittlung bei mangelnden Kaufpreisen unbebauter Grundstücke“
- Kertscher, Dieter & Volle, Günter (1983);
„Marktgerechte Grundstückswertermittlung mit Hilfe des Vergleichswertverfahrens“
- Kohlenberg, Friedrich (1999);
„Geschäftsraummieten in niedersächsischen Städten“, VR 61/4+5
- Schmalgemeier, Helmut (1977);
„Bodenpreisanalyse für den Innenbereich einer Großstadt“, VR 39/8
- Troff, Herbert (2001);
„Bodenbewertung in Citylagen“ Skript
- Ziegenbein, Werner (1999);
„Bodenrichtwerte für die Innenstadt Hannover“, VR 61/6+7
- BauGB (1997) - Baugesetzbuch
- WertR; Richtlinie für die Ermittlung der Verkehrswerte (Marktwerte) von Grundstücken.
in der Fassung vom 19.Juli 2002
- WertV; Verordnung über Grundsätze für die Ermittlung der Verkehrswerte von
Grundstücken, vom 06.Dezember 1988.

BIOGRAPHICAL NOTES

Dipl.-Ing. Dieter Kertscher was born in 1946. Graduated in 1972 as Dipl.-Ing. in Surveying from University of Brunswick and Hannover in Lower Saxony. Member of several Committees of Valuation of Real Estate and member of international Committees (FIG and PCC). Since 2005 Head of Department of Geodesy and Geoinformation and Landmanagement in Braunschweig, GLL Braunschweig.

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