

Valuation of Retail Locations and Pedestrian Flow Data

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Key words: Valuation of urban land, Retail locations, Pedestrian flow data, Location quality, Rent approaches.

SUMMARY

The economic significance of the location is reflected not at least in the approaches for rents and land values. In Germany the important task of ensuring the transparency of the property market was transferred to the panel of valuation experts by law. These valuation committees operate at the level of the counties (Landkreise). To create transparency the panels identify average values for land according to typical sites (standard ground values) and publish them. Within the inner city areas, especially in retail locations, the data base is very inhomogeneous and transactions are rare, so special methods according to rent approaches are used to determine the Standard Ground Values. Three methods are mentioned. However, it is not less difficult to get the appropriate data necessary for these methods, especially appropriate local rents.

In the second part the paper suggests using pedestrian flow data to improve the situation. Pedestrian flow data are very relevant for the market actors and represent in detail the economical importance of retail locations. These data could be used as a supplementation within the mentioned methods. First results are reported. The existing methods can be improved through the additional use of pedestrian flow data and can be developed more corresponding to real market conditions.

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1. INTRODUCTION

In the centers of our cities a variety of functions are to be mixed to develop an attractive and lively inner city area. The important functions are represented in particular by the following land uses:

- Cultural facilities (theatres, museums, historic buildings),
- Public facilities (city hall, churches, important administrations),
- Retail facilities (specialized stores, specialty shops, shopping centers),
- Office Uses (corporate headquarters, banks, associations/federations)
- Recreational Uses (cinema, catering trade, restaurant industry)
- Mobility Facilities (train station, parking garages, bus station).

These commercial and public uses on one hand are competing for the best locations in the city, on the other hand, they are also dependent on each other, since only by the diversity of these uses the variety and importance of the inner city centres are formed (advantages of agglomeration). Only a very limited area of the city offers these special agglomeration advantages. This situation is reflected in values of urban land in conjunction with the use options.

A special significance comes from ancient times to the "market" function of a city. Most cities owe their importance to the surrounding countryside by their role as a market place. That has not changed in the core until today. The "Shopping", the "shopping experience" or the retailers still play a prominent role for the attractiveness of a city centre.

The goal is to express this priority valence in land values. The focus of the contribution is the question how one can set the determination of the location qualities/ land values for inner city locations to a secured basis?

2. DETERMINATION OF LOCATION QUALITIES BY LAND VALUES

The market-oriented functioning of the land and real estate market depends substantially on the existing information about the market trends, i.e. on the transparency of the market. This includes an overview of the estimate of the different locations for the developed land (location quality, Lagequalität), orientated at objective criteria. Naturally the range of possibilities within the proposed urban development is to be included.

The "quality" of a district in the city can be described differently. Often, in particular in the town geography, location factors are consulted in order to seize the advantages and restrictions/ limitations of an area. A distinction is made between the hard location factors

such as the transport accessibility and the soft locational factors such as e.g. the cultural offerings. On the location factors important for retail trade such as buying potentials, competitive situation, pedestrian flow etc. Bieberstein points out (Bieberstein 1989). However, a small-scale local subdivision of locations is not differentiated enough with the usual location factor systems.

Another possibility of seizing the economic advantages and disadvantages of an area exists in the indication of average land values. The average land value has to consider the potential land use of the site: is it a location for office and service uses, or rather for the manufacturing sector or for housing? In this, the planning concepts play an important role. In Germany it is substantial that the planning system produces legally binding statements - at least in a local development plan (Bebauungsplan) – which effect claims on the granting of a building permit. Insofar there is to a certain degree planning certainty for market players. This facilitates the determination of use-oriented land values.

With the introduction of the federal building law (BBauG) in 1960, the legislator also created the establishment of independent expert committees for valuation of land and property. By means of this law the important task of ensuring the transparency of the property market was transferred to this panel of experts. The valuation committees are organized on the level of the 16 German states; normally one committee is responsible for the area of one county, sometimes more than one. In most of the state there also exists an “upper panel of experts”, which is responsible for basic rulings within the state.

Essential components of this order were the setup of a systematic collection and analysis of all purchase contracts (purchase price collection) and the identification of average standard ground values for the land (Bodenrichtwerte) and the publication of these values. Standard ground values are a surface covering generated and in practice strongly used product for the rating of the level of land prices. They form the basis for the settlement of a large number of private and public transactions on land and property.

Standard ground values additionally are important for the taxation of land. In near future they should be the basis for the local land tax and for the inheritance tax.

Collected cases of sold vacant properties in recent years which are inferred from the purchase price collection form the basis for the determination of the standard ground values. These cases are analyzed purchase. On this basis the standard ground values are advised and decided by the responsible expert committee in an annual meeting. The ideal case would be an active real estate market, which supplies in all land benchmark zones sufficient buying cases and thus provides a solid decision support for the experts for the disposal of the standard ground values.

Despite the varied uses of the standard ground values, as the name implies, they are only approximate values and have indicative and no binding effect. They represent only a valuation tool for the consultants, and guideline assistance for participants in the land market. In the case of a special valuation their validity and adaptation must be considered.

The standard ground values are registered in maps; two representation methods became generally accepted:

Site-specific standard ground value:

The panel of experts indicates the site-specific value for a individual position along a road or in a block of the city. Apart from the value of the land (€m²) the 3 or 4 most important criteria determining the value are also indicated in the map. How dense the net of the standard ground values can be indicated, depends substantially on the variety of values and on the available material of transactions. For the city centers with strongly varying location qualities a dense net (e.g. all 300 m an indication) would be desirable.

Zonal standard ground value:

The second form of the indication of standard ground values determines a zone, to which the average location value refers. The panel of experts additionally decides over the area, which lies between the site-specific values. Here in particular equivalent conditions for access and the range of possibilities within the proposed urban development play a role. The zonal standard ground values have extended expressiveness, because the zone demarcation gives information about the relative value differences, while the ground values inform about the absolute value differences.

3. STANDARD GROND VALUES IN INNER CITY AREAS

The agglomeration advantages of the central ranges in the cities, already mentioned, lead to rapidly rising land values in the central business districts. But the values vary strongly within short distances. Depending upon land use structure and density the location qualities vary clearly within the city centers. This value reduces just as abruptly in the neighbouring areas, where this centrality is not any longer attached. This situation leads to strong differences in the economic estimate of the value of the land in the narrow area of the inner cities. The zones of comparable location qualities have usually only small expansion in the city centers, while they can cover large areas in homogeneous districts of residential use.

3.1 Difficulties in determining Standard Ground Values in inner city areas

It is to be assumed that numerous, small structured and in the height very different standard ground values has to be estimated to describe the location qualities in the city centers. With this task the panel of experts meets different problems.

Under normal conditions the standard ground values are derived out of market transactions for vacant land according to the comparative method. The data base should be formed by transactions within a year in a zone of equivalent location quality. These requirements are hardly to be fulfilled to nearly all city centers.

- Vacant land is naturally in the city centre hardly still present. - The number of comparable transactions per year is altogether extremely small in the city centers. - Frequent in cases of

purchase market participants with special interest situation take part (e.g. extension desire of existing uses).

As in the urban centres a lack of undeveloped land can be reported that fact forces the valuation committees to consult already built-up land for the derivation of standard ground values. The sale of built-up land also is rare in central locations and often the separation of the building's value from that of the land is not possible. By these circumstances there will be difficulties in establishing appropriate standard ground values. The annual adjustment of the existing standard ground values to a general trend over a long period of time is inadequate, because of the risk to depart more and more further from the market.

3.2 Methods used for determining Standard Ground Values in inner city areas

Since the mid-seventies there were already several procedures and investigations developed to solve this problem. Despite today none of these procedures could itself intersperse as standard procedure. Main topic is the derivative of standard ground values on the basis of return indicators. It is proceed with the fact that in central city locations the return, which can be gained with a property should be directly reflected in the height of the standard ground value. The ground floor rent is a main indicator.

The basic principles of the procedures are similar, but they use different indicators and consider different value-affecting characteristics. Furthermore, it has been shown that these factors are very specific and not area independent. Therefore, for each region the relevance of a procedure must be tested or the existing model has to be adapted at the regional peculiarities.

Gross Rent method - Mietlageverfahren

For the gross rent method here exemplary the surveys of Schmalgemeier are mentioned. Result of this survey was the proof of a functional link between the ground floor raw rent and the land value in Osnabrück, derived from over 100 concrete evaluation appraisals and from cases of purchase (Schmalgemeier, 1977). Different indicators were examined; the highest relevance comes to the indicator „gross ground floor rent“. In very good agreement Paul can obtain independently the same results for Offenbach (Paul, 1983), the results for further cities are documented (Gerardy 2007). The result for the city centre of Goettingen is presented by Kertscher on the FIG WW 2008. It has to be considered that the respective amount of rent depends on further factors, like the respective economic situation and competitive situation in the period of the contract or the shop size and the frontage at the road (Gerardy 2007).

Rent column method - Mietsäulenverfahren

In the rent column method the fact that especially the yields originated from the ground floor prove as land value-determining. Here comes the index of site coverage (Grundflächenzahl), which causes that a lot of space on the ground floor is available, in the determination of land value. In the rent column method existing purchase cases are transferred to the evaluation location by comparing the ratio of rent and land value. The rental rates per usable space, which in commercial building in the inner city are very different in the various floors, are

converted in a summerized rent per sq.m. of the plot. The correspondingly higher rental income flowing out of the ground floor has a strong impact on the rent column. If in the evaluation location the local rents are known, is a conversion of the land value possible (Kleiber 2007).

Interrelated expert method – Intersubjektiver Preisvergleich

A procedure, based on independent expert knowledge of local market players was proposed and tested in the last few years by Reuter (for example in Dresden; Reuter 2007). It is based on a separate questioning of experts (appraiser) in order to determine the standard ground values in locations with very few transactions. The opinions of a number of experts (not less than 10) are independent of each other and simultaneously caught up. Through median formation the expert opinions will be merged. The value is not queried directly, but the underlying factors, such as traffic conditions, neighbourhood situation and the development condition, each weighted. Even here at least some comparison prices have to be available. These cases also will be estimated by the experts. By this relation then the transferability is given.

All methods need to use the - few - useful cases of purchase as value references (focal points). The transfer to the evaluated locations takes place with the help of the actual or the usual local market rents. The data problem is thus shifted to the collection of the rents while using the Gross rent method and Rent column method; at least however the cases of purchase of build-up objects can be consulted in these methods. At some places regular collection of the rents were established, but the figures are provided by the owners on voluntary basis. A data exchange with other market participants (e.g. the brokers) takes place only rarely. Therefore also these models fail in many cities because of the insufficient data situation about rents. The Inter-related expert method does not depend on the existence of other data, but the result depends here on the experience of the experts and its realization is less transparent. This method is suitable well in order to determine the location differences and the demarcation of the zones of equivalent locations (relative ground values), while the two rent-based methods are rather suitable to determine the value in its height (absolute ground values).

4. IMPORTANCE OF PEDESTRIAN FLOW DATA FOR RETAIL LOCATIONS

4.1 Factors relevant for retail locations

In the trade research usually location factors are used to describe the macro- and the micro-site for retail uses. Surveys on the quality of the retail locations will be published in Germany from some private providers. For example for the 100 largest cities annually city-profiles with the following data are available:

- Population/ number of inhabitants
Total population is already a good reference to the turnover potential of a City.
- Visitor volume

- The figure indicates the number of nights (overnight accommodation) spent in the city and quantifies the attractiveness of the city.
 - Employees
- Total number of employees as an indicator of the local purchasing power.
 - Purchasing power index

The purchasing power is calculated from the income of inhabitants and is thus a reference to the consumption ability and the potential demand in the city.

The value of 100 gives an average purchasing power in the country.

- Turnover index

The item describes the turnover of the local retail trade per capita of the inhabitants and is indicative of the attractiveness of the city as a retail location.

- Centrality index

The centrality index is the relationship of purchasing power bond in the city and the purchasing power inflow from outside and shows its attraction of retail trade for the non-resident population.

- Grade of chain-store extension

The Grade of branch extension refers to the percentage of chain-stores compared with the total number of enterprises in the 1a-locations.

- Top pedestrian frequency

The pedestrian frequency has been allocated on a Saturday from 1 to 2 pm on the most frequented point of the city and is thus counted as a maximum.

- Length of road fronts in 1a-location

The relevant frontages are taken from the cadastral without deductions for entrances or stairways.

- Rent-1a location

Renting of a fictitious, ground level business with 100 qm effective space and at least six-meter-wide showcase for newly lease contracts.

Most of these indices describe the macro-site and are interesting for the comparison between different cities. This paper deals with the small-scale location differences below the micro-site level.

For the consideration of the micro-site the number of pedestrian frequency becomes a key importance. It expresses both, customer potential and net yield expectation. Also in the literature about evaluation of trading locations and retail properties regularly the pedestrian frequency is specified as substantial quality criterion (Heidemann 1966, Aerni 1992,

Monheim 1999). According to Kleiber (2007), the pedestrian frequency is correlated with the store rent, particularly the ground floor rent, which – on the other hand - stands in functional context with the land value. If comparative prices are present, the ground value can be derived by the available frequencies of passers-by. This is done either in direct relationship to pedestrians' frequencies or by means of derivation of a functional relationship in the context of a regression study (Kleiber 2007). Obvious example is the corner- property location with overlaying pedestrian flows.

Within the town centre location the retail research differentiates between different business locations.

- Ia-situation: Best business location, highest pedestrian frequency, highest quota of retail businesses.
- Ib-situation: Adjacent to the best business location, still high pedestrian frequency, road crosslinks.
- Ic or II-situation: pedestrian frequency significantly reduced, less density of retail businesses, predominantly specialised trade and services enterprises
- Urban fringe location, district centers: These situations are not to be found in the city centre; here the importance of the pedestrian frequency decreases clearly in comparison to other criterions. (Kleiber 2007)

The highest pedestrian frequency is reached in the Ia-situations, which also have the highest business density. A further criterion of Ia-situations is the good mixture of shop types. The adjacent Ib-situations are less frequented. The next graded II-situation has significantly reduced pedestrian frequency with a less density of retail businesses.

Such graduations of the business centres are available for many cities. At some places they are underlaid by appropriate countings of pedestrians. There also are individual cases, in which a relation is made to the standard ground values (e.g. in Dorsten or Moers in North Rhine-Westphalia).

For a differentiated indication of the location qualities/ standard ground values in larger city centers a distinction in 3 - 4 classes however is not sufficient. Here the pedestrian frequency could be used as basis for a fine-linked differentiation. To capture the situation of real market conditions if necessary further distinctions are to be considered.

Beside the pedestrian frequency and the renting level data about the grade of chain-store extensions or the shop ratio in a road (shops front in relation to the length of the building fronts) are of interest if these data are referring to sections of the most important shopping streets. Also distinctions are possible on the basis of the typical shop width at the road and the shop depths.

It also should be noted that proven Ia-situations with very high-quality business are not illustrated by highest pedestrian frequency. Here also other factors e.g. the trade mixture has to flow into an evaluation („department store running miles“ vs. „luxury miles“). Also there are day-time differences, which could be caused e.g. by commuters in the surrounding of the

railway station in the morning and the evening. Their influence on the location value must be particularly considered.

4.2 Previous measurements and location quality by pedestrian frequency

Currently many institutions (for example, city-marketing, consumer research, advertising industry) collect pedestrian frequencies selectively at certain times on certain key points of the pedestrian zones, counting manually. The different agencies pursue with their observations different goals. While, for example, in the advertising industry often the information on absolute numbers is sufficient, research institutes, in terms of a more comprehensive analysis, need far more sophisticated tests.

Basic measure is the number of passers-by. The quantity of pedestrian flows on various points as well as their direction is the basis of the usual pedestrian traffic measurement.

For the retail trade sector, the number of pedestrians must be associated with the customer numbers. This approach needs already a differentiated approach to the pedestrian flows in order to be able to filter the shares of the commuter-, shopping- and entertainment-traffic out of the total number.

More detailed investigations (sex, groups, analysis of typical paths) are only made by scientific institutes in individual cases. When extensive surveys as e.g. in the Berne city centre were held in addition other data like the sex and age of pedestrians or the purpose of the visit were also noted by questioning (Aerni 1993, Sewer 1992). Information on the pedestrians' traffic usually originates from selective, punctual counts at major/important retail locations.

Pedestrian flow counts are very good suitable for the determination of the location quality and for the classification of the above mentioned business locations. Benefits of the pedestrian flow data arise from their independence from special items, such as the duration of a lease, land speculation or shape of a plot. Pedestrian frequencies react, in contrast to the more long-term rentals, quickly to changes. Moreover, they are to be raised (legally) unproblematic without considerations for data protection or business secrets. And the indicator "pedestrian frequency" could be registered in accordance to small subdivisions – in relation to the corresponding operating expense.

However, the initial data collection is extensive at first. About the required duration of the countings there are - older - studies, a model describing that considered the daily, monthly and annual fluctuations (Heidemann 1966, Sewer 1992; Zweibrücken 2005). Thereafter 2-hour counting periods on certain days and hours of the week are sufficient to acquire the pedestrian flow data. The network of counting positions depends on the size of the inner city and the expected location differences. There are also possibilities for automated counting to examine.

5. PRESENT EXPERIENCES

First attempts for the determination of standard ground values including pedestrian frequencies were undertaken at the Geodetic Institut of the Leibniz University of Hanover (Germany). Ziegenbein reported about experiences from a study project (Ziegenbein 1999), furthermore partial results exist in form of diploma theses (Verwold 2005, Alves 2008). A concluding result is not to be derived from it yet.

The study project "standard ground valuation in the city centre of Hanover" aimed with consideration of different approaches - besides the evaluation of the rather scarce cases of transactions and of some surveys of vacant land - to derive the standard ground values from purchase prices of built-up properties and in the light of the pedestrian frequency. The pedestrian frequency was used to select the area into zones of equivalent location qualities. The standard ground values could be determined by means of regression analysis depending from the parameters of "store size" and "zonal rent value" (Ziegenbein 1999).

In the context of the work, "standard ground values in locations with market function of the Hanover region" especially the locations of lower and middle center towns in the Hanover region had been investigated. Questionings of business owners of various inner cities in the region were accomplished, which was evaluated through regression analysis. With the help of the data obtained, a dependency of the ground floor rent related to location and shop windows resulted. However, the significant dependence on the standard ground values- which resulted in previous procedure - is not proven for these locations in the Hanover region (Verwold 2005).

In a survey for the city center of Osnabrück (163,000 Einw.) the gross rent method, the inter-related experts method and the pedestrian frequencies method were explored parallel, in order to derive zonal standard ground values. The count of the pedestrian frequency took place at 30 counting positions. The relative location values in form of the demarcation of zones of equivalent location could be best determined with the help of the expert opinions in the inter-related experts method; the interpolation of the frequency figures has without assistance (such as the consideration of building edges and street lines) no plausible result. The height of the standard ground values (absolute values) has been in the result of the interrelated expert estimation significantly higher than with the two other methods; here the standard ground values, derived from the pedestrian frequencies and the building density, result in appropriate values (Alves 2008).

A further development of this approach will be worthwhile. The existing methods of determining standard ground values can be improved through the additional use of data of the pedestrian flow and can be developed more corresponding to real market conditions.

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