Different Regions with Few Transactions – An Approach of Systematization

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SUMMARY

Real estate valuation is mainly based on purchase prices in Germany. However, in some submarkets only a few transactions take place. The reform of the property tax in the next years creates the necessity of accurate and nationwide real estate market data for mass appraisal. The question arises whether all submarkets with few transactions work the same way. There is a possibility for differentiation between characteristic features.

In this paper, an investigation of these German real estate submarkets is presented. In a qualitative expert's survey, we determined a definition and categorization of those submarkets with the aim to derive different valuation approaches for different regions. The statements are derived with a Grounded Theory Method (GTM). The categorization is realized due to the small numbers of transactions as well as different spatial and functional submarkets. Two main categories are introduced. Spatial submarkets with a lack in demand and submarkets with lack in offer of real estates. A subcategorization is carried out by spatial types like urban and rural areas. For instance, some rural areas are typical areas with a lack in demand where one can find only few purchases. Depending on the derived categories, we investigate the availability and quality of alternative data. The focus is on offer prices, experts' knowledge and rents. First results of investigation on this topic are shown. For future work, this information can be used to find or develop different approaches of combining available data and give a better view on the real estate market.

ZUSAMMENFASSUNG

Die Immobilienwertermittlung in Deutschland basiert hauptsächlich auf Kaufpreisen. In einigen räumlichen Teilmärkten existiert nur eine geringe Anzahl an Transaktionen in bestimmten sachlichen Teilmärkte. Bedingt durch bspw. die Reform der Grundsteuer ist es notwendig, deutschlandweit flächendeckende Vergleichsfaktoren für Massenbewertung bereits zu stellen. Es stellt sich die Frage, ob alle Regionen, in denen nur eine geringe Anzahl an Transaktionen stattfindet, gleiche Eigenschaften aufweisen oder ob eine Systematisierung zielführend ist. Im Rahmen einer quantitativen Befragung sollten diese Fragen geklärt werden. Zur Ableitung der Theorie wurde die Grounded Theory Method (GTM) genutzt. Mit dieser Methodik wurden der Versuchsaufbau definiert und die Kodierung der Befragungsergebnisse durchgeführt. Im Ergebnis konnten verschiedene Kategorien abgeleitet werden die im Wesentlichen auf den Ursachen für die Kaufpreisarmut beruhen (Angebots- und Nachfragemangel). Unterkategorien können hinsichtlich räumlicher und demographischer Eigenschaften von Regionen definiert werden (einige ländliche Gebiete können als klassische Lagen mit geringer Transaktionszahl festgestellt werden). In

Abhängigkeit von der jeweiligen Kategorie kann die Datenverfügbarkeit und Qualität alternativer Daten wie bspw. Angebotspreise, Expertenwissen und Mieten untersucht werden. In weiteren Arbeiten sollen diese Daten dann zur gemeinsamen Auswertung mit den noch vorhandenen Kaufpreisen genutzt werden.

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1. INTRODUCTION

Appraisal of real estates is based on real transactions. The comparison approach is closest to the market. A minimum of purchase prices is necessary to use it (Gerady et al. 2016; Kleiber et al. 2014; Mürle 2006). The Sales Comparison Approach derives a functional relationship between the dependent variable and one or more independent variables – usually using the method of regression analysis. The regression analysis has been established in valuation for decades (Ziegenbein 2010). The planned reform of the property tax in the next years creates the necessity of accurate and nationwide real estate market data in Germany. Enough purchases are necessary in all spatial and functional submarkets to make these analyses. However, in a lot of markets only few purchases are available. No statistical analysis of purchases is possible in those regions. In the first paragraph of the German real estate valuation law (ImmoWertV), we can find a statement about special regions: "The following regulation should be admitted to the valuation objects where no market exists"[1]. An indicator for such regions could be a lack of transactions.

To derive alternative approaches for analysis of these markets, it is necessary to get a better view on these regions. In this paper, we present the results of a qualitative survey on this topic in Germany.

1.1 State of the Art

Regions with few transaction are in research focus for a long time. Günther (2003) and Reuter (2006) discussed them in the context of lack of purchases of undeveloped plots in cities. Beneath, there are also regions with few transactions in the market of developed plots where an empirical analysis of the data fails, as well.

In regions with few purchases of undeveloped plots, a huge number of different approaches had been developed in the last years like deducting the price of the lot by the usage of rents (Fieder 2006), experts' surveys (Jeschke 2011; Strotkamp 2012), distances (Hendricks 2016), or pedestrian traffic in cities (Verwold 2005).

Reuter (2006) discovered in a survey that less than three to four purchases in an area with few transactions lead to problems for valuating undeveloped plots. With more than two purchases, first investigations on the market with an appreciation of each price can be made. Meaningful statistical analysis need at least two prices. Robust analysis like deriving a median need at least three prices. Ziegenbein (1977) proved that a minimum number of 15 purchases is necessary per influencing factor in a regression analysis of the functional submarket e.g. of one- and two-family houses. The

[1] „Die nachfolgenden Vorschriften sind auf (...) solche Wertermittlungsobjekte, für die kein Markt besteht, entsprechend anzuwenden." (ImmoWertV § 1 Absatz 2 Satz 1)

necessary number depends on the coefficient of variation in the functional submarket. This number of transaction is often not being reached.

Weitkamp & Alkhatib (2012) developed a first statistical approach that can deal with regions where only a few purchases takes place in the market of developed plots like one- and two-family houses. They use alternative data like experts' surveys and market value reports and combined them.

1.2 Research Question

It is necessary to develop new approaches to derive market data in areas with few transactions. It is expected, that not all approaches work in all areas. Three research questions arise to investigate this in detail:

1. *Are there different categories of regions with few transactions?*
2. *What are the categories based on?*
3. *What kind of alternative data are available in different regions?*

2. METHODOLOGY

The choice of the methodology is motivated by the open formulated research questions. As methodology, we choose a method from the qualitative social research – the Grounded Theory Method (GTM). The GTM was introduced by Glaser & Strauss in the 1960th (Glaser & Strauss 1967). It is used to derive a new theory from qualitative data sources like interviews, speeches or newspaper articles. It describes the collection and investigation approach for qualitative data sources. The investigation is based on coding and categorization of the data sources. The process is an iterative process (stepwise). After investigating the first source, the second source is collected. In general, the new data sources should differ a lot to the previous, to get a good contrast. New findings are investigated in specific aspects like regional or person specific issues (theoretic sampling). If no new information can be obtained, the source collection is completed (saturation). In the last step the theory is derived from the analyzed (coded and categorized) sources (Glaser & Strauss 2010). Due to the strong variation of the experts from different spatial and profession areas, a wide range of information can be obtained. However, there is no possibility to make sure that all aspects are investigated.

2.1 Guided Interviews

A typical way to collect information is a guided interview. We can assure that the main research questions are answered by all experts with a guided interview. The dialog is dominated by the interviewed expert.

The interview consists of 13 main question in 4 parts. The first three parts of the interview are handling the first two research questions. In the first part, general definition and characteristics of regions with few transactions are discussed. The second part handles the causes and incidence of few transactions. In the third part, we asked for personal experiences with these regions and how the experts handle problems arising with this situation. The last part handles the 3rd research question. It is about alternative data in addition to purchases in those regions as well as its availability.

2.2 Selection of the Experts and Pre-Test

Experts in context of research questions are valuation experts (appraisers in private and public sector) which work in a wide spatial and functional range. The experts should have long experience (at least more than 20 years of full time experience). They should have personal experiences with regions with few transactions.

The guided interview was tested with two experts. A 'problem coding' approach had been used (Häder 2015, p.400). The reaction of the interviewed people had been registered during the interview and coded with 1 (ok) and 0 (problem). After the interview the problematic questions had been discussed. A few word changes on the interview have been done after the tests.

3. SURVEY, CODING AND ANALYSIS

The survey took place from July 2016 until January 2017. The interviews were conducted by phone because of time and cost issues. They had been recorded and transcripted.

The first four experts were chosen from different regional and functional submarkets. They have the profession real estate appraisers (western Germany), research (west/east and north Germany) and administration (east/north Germany). In the next step, two more experts from administration (west Germany and north Germany) had been interviewed. In a last interview another real estate appraiser (north-west Germany) had been interviewed. The last two interviews show that a saturation was reached and no new information could be obtained. The theoretical sampling was stopped here. There are different methods of coding. Two main methods can be described: substantive coding and theoretical coding. Substantial codes conceptualize the empirical substance of the area of research and theoretical coding conceptualize how substantive codes may be relate to each other (Urquhart 2013, p.107). We decide to use a coding strategy that forces the theory down to a particular route and find relationships. As coding strategy, we choose a slightly modified theoretical approach by Strauss & Corbin (1990) based on the following 6C:

- Causes (what is the reason for the situation)
- Context (what is the origin for the reason)
- Consequences (what is observable)
- Covariance (are there interactions or similarities)
- Conditions (is there a special framework or pattern)
- Contradictions (are there contradictions in any field)

All the transcripts had been coded with these main codes and derived sub codes. The results have been sorted and classified. A main category is the category 'contradictions'. All contradictory arguments of the experts need to be investigated in detail. If they are incompatible with other statements, the origin of the statement and the framework and conditions of the statement should be analyzed in detail. If the contradiction isn't caused by a misunderstanding or exception, the statement should be investigated in a wider range. Discussions with more experts should be done to make sure they are not in a contradiction to the theory itself.

For each statement in the following section the source for the statement is added in squared brackets:
[1]: Appraiser from west Germany
[2]: Researcher from west/east Germany
[3]: Researcher from north Germany
[4]: Administration from east Germany
[5]: Administration from west Germany
[6]: Administration from north Germany
[7]: Appraiser from north Germany

4. RESULTS

The number of transactions is regularly not dependent on the area itself. In most cases, the cause of the small number of purchases is only given for special functional submarkets. [1,2,3,4,5,6,7]
Derived from the coding strategy two main categories can be found depending on the cause of the small number [1,2,3,4,5,6,7]:

- Lack in offer
- Lack in demand

Basically, these two categories depend on external factors especially the demography [1,2,6,7]. Depending on region types and functional submarkets more subcategories can be derived.

4.1 Lack in Offer

We summarize different types of regions with a lack in offer in Table 1. The different subcategories could be made on the population (number of all existing objects in functional and regional submarket) of the specific real estate. The sample out of this population is formed by the market participants (people who decide to sell or buy a real estate). The representative nature of these samples is not investigated.

Table 1: Causes for a lack in offer

	Derived Subcategories for Lack in Offer			
	Rare in its condition	Not available in special condition	Normal number but not sold in a time period	Unique
Example	Office building in rural areas	Undeveloped plot in city area	Owner occupied Buildings	A castle
Sample	Small population, small sample	Huge population but in a different (not comparable) condition	Huge population, but small sample in specific time period	Population = 1 Sample ≤1

A typical cause for a small number of purchases is, that the real estate in a specific condition exists only a few times [1, 3]. Within this category, a normal number of transactions (relative to other categories) take place, but the absolute number isn't high enough to investigate this market with statistical methods [3, 6].

The second category has already been in research focus for several years. Real estates are not available in a specific condition [1,2,3,4,5,6,7]. For example, buildings stand on these plots, so they are not undeveloped. Comparable prices are not available to appraise undeveloped plots in a comparison approach. Deductive methods have been developed for these markets (Section 1.1).
In these days, low rates on financial market cause a lack in offer in some regional real estate markets. Caused by decreasing official interest rates since 2008[2], the owners decide against selling a house. At the moment, alternatives with low risk and high profits are missing.
It is observable that vacant houses in good conditions aren't sold nowadays [6].
We can find small number of purchases in agricultural and forestry market [6,7]. This could be explained by owner structure, too. Usually There is no reason to sell own-used plots.
We can identify the special case where we have objects with a singular quality (unique) [2]. Historical buildings like castles are often only available one time in a wide range. There could only be one purchase for this functional submarket at all (number of transactions ≤ 1).
An analysis of this case is regularly not possible. A lot of work is necessary to investigate the market for these real estates to handle these objects. All data which are in any way comparable should be investigated [2,7].
Other special cases are plots which quality is developed from agricultural use to building land [2,6,7]. Arable land which is close to the edge of the town has the possibility to get building land within an often unknown waiting time. Nearly all plots are purchased as quality 'arable land' by municipal administration or investors and sold as fully developed building plots [2,6,7]. It is difficult to investigate the quality between these steps. A second issue is, that it's difficult for the employee at the committee of valuation experts, who enters the data to the purchase price database, to detect such plots with a developing quality. Many meta information e.g. about the urban land use planning is necessary [1,7].

4.2 Lack in Demand

The survey of experts results in two different subcategories for a lack in demand in regions with few transactions (Table *2*).

A few regions are very rural areas, where you can find a small number of purchases in all functional submarkets [1,2,3,4,5,6,7]. The experts talked about unattractive regions [1,2,3,4,5,6,7]. These are regions with sharply declining number of inhabitants [1,2,3,4,5,6,7] and with a lack in demand. This phenomenon can primarily be observed in rural areas in east Germany (e.g. the region Uckermark [6]).

Table 2: Causes for lack in demand

	Derived Subcategory for Lack in Demand	
	Quality of offered real estates doesn't satisfy the demanded quality	Demographic reason
Example	unusual size and shape of plots in city centers	Rural areas with decreasing number of inhabitants (e.g. Eastern Germany)

[2] https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/ (last checked 14.02.2017)

Sample	Normal population, small sample	Huge population, small sample

In old village centers, the typical plot size and design of buildings isn't contemporary. A lot of real estates in this area are vacant and the marketing of these real estates is difficult. They are often sold to demolish them.

4.3 Contradictions

A few contradictions are based on regional specifics and different observations of the experts. One expert describes that mostly real estates in a good condition are on sale in regions with a lack decreasing development of population in Rhineland–Palatinate (Strotkamp & Laux 2015).

Other experts have suggested, that there is no overall scheme [2,6]: They describe that a lot of people buy old houses in bad condition for a cheap price and renovate it on their own vision.

The risk of contingencies is much higher here. Non-repairable circumstance like a proper dry rot can appear [5]. The other contradictions refer to theoretical word definition issues of German language. This will be discussed in detail in a following work in German.

In a future survey, we will investigate if these observations by the experts are caused by regional particularities or on different focus on this topic (investigation on this topic only in few areas like Rhineland -Palatinate).

5. USED APPROACHES IN AREAS WITH FEW TRANSACTIONS

If only few data are available, appraisers widen the spatial and functional search radius [2,6,7]. All available data are collected and critically analyzed (subjective assessment). If only a few purchases are available, alternative data could be used to valuate reliably. Many more or less purposeful approaches had been developed in the recent years. In this survey, we asked experts what kind of data is available and how to use it. In the following subsections, these data are discussed.

5.1 Regional Indicators

To estimate the future use of a real estate which is highly correlated with the price/value of the real estate, it is necessary to investigate exterior factors on the market. Development of population and economic strength play an important role for offer and demand in every market. Good indicators are e.g. demographic development, purchase power, economic power or unemployment rate.
All indicators can be used to compare regions and find comparable regions. The German valuation law allows the usage of purchase prices from other 'comparable' regions[3]. Indicators should be investigated to find such regions in an objective way.

5.2 Standard Land Values

[3] „*Finden sich in dem Gebiet, in dem das Grundstück gelegen ist, nicht genügend Vergleichspreise, können auch Vergleichspreise aus anderen vergleichbaren Gebieten herangezogen werden*" (ImmoWertV § 15 (1), 3)

In Germany, a nationwide coverage with Standard Land Values (German: *Bodenrichtwerte*) is available for defined uses. Standard Land Values indicate an average location quality. They represent the value (in Euro per square meter) of a described plot (value relevant parameter like size, usability etc.). Nature and extent of the structural use delimit zones (§ 196 BauGB).

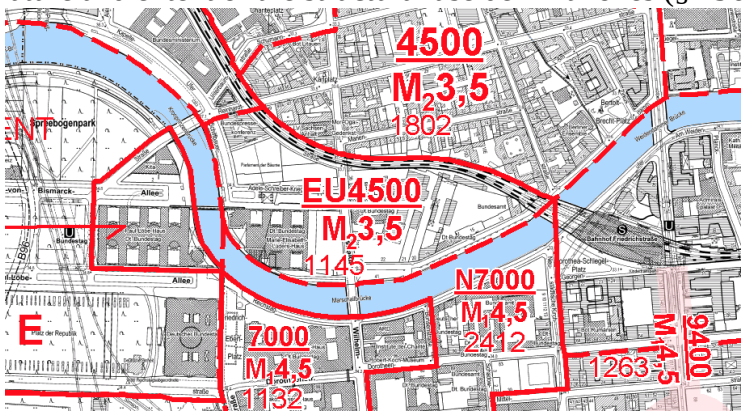

Figure 1: Standard Land Value for the city center of Berlin
(Source: Gutachterausschuss für Grundstückswerte in Berlin, 2017)

The committees of valuation experts estimate the Standard Land Values. They are published in an online portal (see Figure 1). In some federal states, all Standard Land Values are free of charge due to open data policy. In others, you have to pay a fee to get access (AKOGA 2015).

The estimation of Standard Land Values bases on purchase prices. But in some areas, no purchases of undeveloped plots are available. The deriving of these values is done by different methods described in Section 1.1. Due to the missing data base, Standard Land Values are often subjective values. Also, the choose of purchases and the rounding of these values are often done intuitively in a subjective way by opinion/expertise of the appraisers (Gerady et al. 2016, pt.1.2.5/14).

Standard Land Values are another good indicator to compare regions [2,5,6,7]. They are used by many valuation experts to estimate the local quality and derive economic development.
Plausibility of Standard Land Values should always be investigated [1,2].

5.3 Offer Prices

Market participants especially purchasers use marketing platforms (e.g. Immoscout24) to find real estates and compare them [7]. Soot et al. (2017) showed in a nationwide survey, that most appraisers in Germany use also offer prices as data source. Soot et al. (2016) and Dinkel & Kurzrock (2012) showed that there is a relationship between offer prices and purchase prices. In regions with a lack in demand, there is often still a huge offer of real estates. The marketing periods are longer than in regions with a well-balanced market. Results of Henger & Voigtländer (2014) showed that the price offset depends on the market pressure (demand on the market). Offer prices are available in regions with a lack in demand in a large number. If there is a lack in offer, it is implicit, that there are only few offer prices available.

5.4 Rents

A lot of data exists, but they are only rarely available. Rents are collected nationwide by the German tax authorities, but only in very few cases the data are made available for others [1,2,3,4,5,6,7]. Even the official committee of real estate experts doesn't have access to these data [4,5,6]. Rents could be used in a lot of different cases. Rent for shops can be used to derive the locational quality and to derive the Standard Land Value as mentioned in Section 1.1. Rents are also necessary to derive property rates.

Rents are often inhomogeneous. Many influencing parameters have effects on the height of the rent like time of rent, quality, locational quality (micro- and macro-location) etc. [6].

Rents are typically available for investment properties. However, in some regional markets, a lot of typically owner-used real estate like one and two family houses are rented, as well. This could be regions with only few apartment blocks [6]. Another reason could be, that it is an area where people live only for a short period (e.g. around military bases).

6. CONCLUSION AND OUTLOOK

We can confirm, that there are different regions with few transactions. Two main categories can be found. They depend on the causes of the small number of purchases (lack in offer or demand). The different subcategories can be derived by the situation of the population and samples. The main category is the category with lack in offer. The small number of purchases is typically only in specific functional submarkets. Only in a few regions, the small number of purchases can be found in all functional submarkets. This is often based on a lack in demand caused by demographic reasons.

As additional data, the experts named offer prices, rents, experts knowledge, Standard Land Values and regional indicators. Approaches that combine experts' knowledge, offer prices and purchase prices like Dorndorf et al. (2016) are only possible if there are enough alternative data available. These approaches use offer prices and can especially be used in regions with a lack in demand.

Another problem to be pointed out is the fact that the quality of the data in the database of the purchase prices is often rare. The quality description of the influencing parameters like lot size and living-space only recorded with an (unknown) uncertainty. Especially all the parameters which outline the condition of real estates are very uncertain. Getting this information is hard. Problems arises especially, if there are only few purchases left for analysis. In future works, these uncertainties should be handled.

To validate the findings, we will do a quantitative survey with more than 200 real estate experts. In addition, we are going to investigate the quality and quantity of alternative data in different regions. The ongoing research will focus on relationships between different data. The findings of the relationships between offer and purchase prices as well as the investigations on experts' knowledge should continue. For future investigations, the use of property rents together with purchase prices should be investigated.

The derived categorize of regions with few transactions from this work can be used to develop different approaches for different regions with specific characteristics.

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