

Analysis of the consistency of the descriptive data in Land and Building Register with the Land and Mortgage Register on a selected example

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Summary

There are currently two basic public registers concerning real estate in Poland: the Land and Building Register (EGiB) and the Land and Mortgage Register (KW). The descriptive data in the Land and Building Register includes information on registered plots of land, buildings and premises, while the Land and Mortgage Register presents information on the legal status of the property. These systems operate independently, as they are maintained by different public administration bodies. However, the data contained in the Land and Building Register form the basis for the designation of the property in the Land and Mortgage Register, and thus both registers are interconnected and should contain consistent information.

It is crucial that the information repetitively reported in both the EGiB and KW are identical. Consistency of data attribute values contained in both registers provides technical and organisational opportunities for harmonisation and integration of data from both sets. It is also an important factor for conducting investment activities on real estate. Previous analyses by researchers indicate that data on plots in the real estate registers are not sufficiently consistent.

The aim of the article is to review the current situation with regard to the consistency of the basic data on land plots contained in the Land and Building Register and Land and Mortgage Registers on a selected example. The analysis by the comparative method was supplemented with the determination of the Jaccard index and the Russel-Rao coefficient. These are indices allowing to determine the degree of similarity between sets containing the same attributes.

Keywords

land and property register • land and mortgage registers • Jaccard index • Russel-Rao coefficient

1. Introduction

Land and Building Register

The Land and Building Register (EGiB), as the basic register containing information on plots of land, buildings and premises, is maintained for the county or city with county rights, by starosts or mayors of cities with county rights. According to the Geodetic and Cartographic Law [Act 1989], it is an information system ensuring the collection, updating and provision of information on plots of land, buildings and premises, their owners and other entities owning or managing these plots of land, buildings or premises. The provisions of the Geodetic Law also include the notion of objects permanently attached to a building. Przewięźlikowska [2018] points out the important role of their correct registration as they must be shown together with the building. The Land and Building Register is customarily referred to as the real estate cadastre although these registers are not entirely identical. Currently in Poland, the cadastre is in the process of being created by transforming and adapting the EGiB register to the requirements of the cadastral system.

The real estate cadastre is kept on the principles that include universality, uniformity, completeness, publicity and reliability [Felcenloben 2009]. According to the principle of universality, the land and buildings located on the territory of the country are included in the discussed data set. The principle of uniformity governs the entry of data into the register according to the same method and procedure. The principle of completeness indicates that the data in the register should be complete and updated. According to the principle of publicity, all subject data on land, buildings and premises contained in the register are publicly available, and subject data are issued in the form of extracts. The principle of reliability is related to the issuance of official documents in the form of certificates to persons requesting them [Ciak and Wąsiewicz 2015]. The entries in the EGiB are declaratory in nature, i.e. they reflect the current legal status of a given property. The EGiB does not shape a new legal status of the property, but only confirms the legal status that already existed.

Information on the Land and Building Register are important when undertaking civil and legal proceedings, such as buying and selling a plot of land or establishing the land and mortgage register. Furthermore, the data contained in the Land and Building Register are indispensable for spatial planning, real estate management and the registration of agricultural holdings. An obligatory document for performing the above-mentioned activities is an extract from the Land and Building Register database, which is a document containing a compilation of data on a given plot of land, building or premises, and which in its nature should be reliable [Regulation 2021].

Land and Mortgage Register

The main document allowing for the establishment of the legal status of a plot or property is the Land and Mortgage Register (KW). The Land and Mortgage Register is maintained by divisions of the regional courts. The register is distinct in that it is open to the public and therefore one cannot plead ignorance of the entries [Act 1982].

The Land and Mortgage Register is divided into four sections. The first comprises the designation of the property and the entries related to its ownership. The second section concerns entries related to ownership and perpetual usufruct. The third section of the Land and Mortgage Register is for entries relating to limited rights in property, with the exception of mortgages, for entries relating to restrictions on the disposal of the property or perpetual usufruct and for entries relating to other rights and claims, with the exception of claims in respect of mortgages. The fourth section is devoted to entries related to mortgages on property.

Land and mortgage registers are kept for land, buildings and also for premises [Act 1982]. Land property may consist of several separate plots of land provided they belong to the same owner. The owner of several properties constituting a single economic unit or neighbouring each other may request that they be merged into one property in the land and mortgage register. According to Polish law, there are no contraindications for an owner who owns several plots of land to apply for an entry in one Land and Mortgage Register. The only stipulated requirement is to draw up an agreement on the transfer of real estate as a notarial deed.

By definition, the information contained in the land and mortgage register should be equivalent to the actual legal position [Act 1982], but often deviates from it for various reasons. The inconsistency may arise from many aspects, such as the erroneous entry of data, the entry of an invalid encumbrance, or the failure to delete a right or encumbrance. The Land and Mortgage Register Act [Act 1982] regulates this inconsistency. In the event of a conflict between the legal status of a property disclosed in the land and mortgage register and the actual legal status, the law of the warranty of public credibility of land and mortgage registers resolves in favour of the person who, by a legal transaction with the person entitled according to the contents of the register, acquired ownership or another right in property.

Currently, all Land and Mortgage Registers are maintained and established using ITC systems [Act 1982] and made available on the Internet, so anyone who knows the full Land and Mortgage Register number can view it. There is no need to apply to the court for a copy, which often involved waiting several weeks and an additional fee. The process of transferring the content of the Land and Mortgage Register from paper to electronic version, called land and mortgage register migration, began in 2003. The legal basis was the Act of 14 February 2003 on transferring the content of the land and mortgage register to a land and mortgage register structure maintained in an IT system [Act 2003]. The Electronic Land and Mortgage Register (EKW) ICT system is the only legal data source maintained by the Ministry of Justice. It is possible to view the Land and Mortgage Register by accessing the website <https://ekw.ms.gov.pl/>.

Relationship between EGiB and KW

The information from the Land and Building Register is the basis for the designation of the property in Section I of the Land and Mortgage Register. Any inconsistencies are settled by the county court at the request of the owner of the property in question. The

authority in charge of the real estate cadastre must provide the courts with free access to the database in order to verify the property [Act 1982].

Updating the land and building register is not the appropriate procedure to eliminate inconsistencies between the land and mortgage registers and the EGiB. The county office has the right to refuse to make changes, as the EGiB is a registry and thus does not deal with the settlement of disputes concerning rights to property. The settlement of disputes is done by the court.

It should be kept in mind that in accordance with the regulations of the Land Surveying and Cartographic Law [Act 1989] and the Land and Mortgage Register Act [Act 1982], in the event of an inconsistency between the description of the property in the Land and Mortgage Register and the data of the Land and Building Register, the data of the EGiB take precedence, not those entered in the KW.

Surveying practice indicates a lack of consistency between the registers. Lengthy court procedures result in prolonged investment processes. Analyses by researchers such as Hycner and Mika [2000], Bagnicki and Mika [2013], Ruchel and Widz [2013], Buśko and Przewięźlikowska [2013], among others, prove that the consistency of information is at an unsatisfactory level, and the way data are exchanged between the two registers requires many improvements.

Attention should also be paid to archival cadastral materials available in Poland in the areas of the former partitions. Their use, for the purpose of regulating the legal and evidential status of properties on the territories of the former Prussian partition can be allowed due to their high accuracy and reliability [Przewięźlikowska and Skotnicki 2001]. Whereas the use of materials from the former Austrian partition entails problems resulting from the existence of two separate registers at that time and the incompatibility of the data contained in them [Mika 2010].

2. Research subject and methodology

The research area covered the town of Tomaszów Lubelski, which is the seat of Tomaszów county, located in Lubelskie voivodeship. The available descriptive data concerned random registered plots belonging to the State Treasury or to the town of Tomaszów Lubelski. Information on 100 registered plots was used to carry out the study.

The aim of the study was to analyse the consistency of descriptive data on property, in the two main real estate registers, i.e. the land and building register and the land and mortgage registers.

A comparative method was used to carry out the study. The consistency of the information in the registers included in the analysis was checked with regard to the number of the plot, its area, identifier, owners, class of land in the plot and with regard to its location. As Przewięźlikowska [2020] demonstrated, the location attribute is extremely important from the point of view of data synchronisation in the systems, but data consistency in the aforementioned studies proved insufficient.

The next step was to calculate the Jaccard and the Russel-Rao similarity coefficients to determine the scale of similarity between the two sets. Attributes present in the

objects being compared can fall into one of four categories of matching. Both objects may have the given attribute (positive matching between objects), both objects may not have the given attribute (negative matching between objects) or one object may have the given attribute and the other does not (a + - or - + mismatch means that the objects are different). In the discussed comparison between the KW and EGiB sets, a negative match – the absence of data in both sets – does not make them similar. For this reason, the Jaccard and Russel-Rao coefficients were used to indicate the scale of similarity between the sets under study. In the Jaccard index, negative matches are ignored (when both sets do not have a given value), while in the Russel-Rao coefficient they are taken into account, but instead of indicating greater similarity, they represent a mismatch [Bryja 2011]. Furthermore, in both coefficients, equal weight is given to matches and mismatches. The values taken in the aforementioned coefficients are within the set of real numbers $\langle 0,1 \rangle$. Data close to 0 indicate a mismatch, while data close to 1 indicate a convergence of the two sets. The calculation of both coefficients will allow to assess the impact of missing data for a given attribute in both sets under study simultaneously.

Following Bryja [2011] it was assumed:

a – number of positive connections between sets (+ +),

b – number of mismatches of type (+ -),

c – number of mismatches of type (- +),

d – number of negative connections between sets (- -).

Thus, the equations for the adopted coefficients are as follows:

Jaccard index (J):

$$J = \frac{a}{a + b + c} \quad (1)$$

Russel-Rao coefficient (R-R):

$$R-R = \frac{a}{a + b + c + d} \quad (2)$$

3. Results and discussion

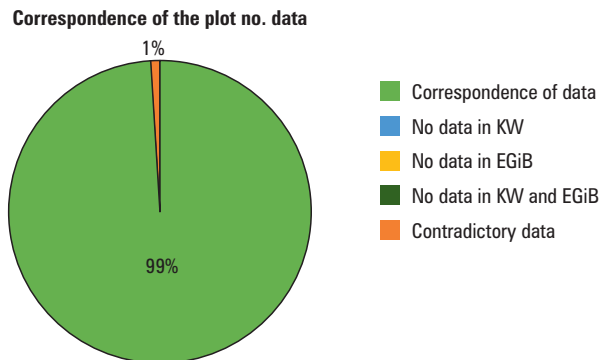
The errors identified in the course of the analysis were attributable to several reasons related to the divergence of the content of the databases under examination. We can distinguish the lack of entry of the value of the examined attribute in the land and mortgage registers, in the land and building register, as well as in both registers and the contradiction of data contained in both registers. These reasons are highlighted in the charts showing the percentage range of consistency and inconsistency of the surveyed data (Figures 1–6). A fragment of the analysed data is presented in Table 1.

The number of the registered parcel was analysed first. Of the 100 surveyed plots, only one number has a different value in the EGiB and KW. All analysed plots both in the Land and Building Register and the Land and Mortgage Register have a number. A graphical overview of the results is presented in Figure 1.

Table 1. Extract from the table of data used to test the consistency of the KW and EGIB databases

Plot no.	Status according to EGIB						Status according to KW						Notes
	Area	Identifier	Owner	Land use class	Location	Plot no.	Area	Identifier	Owner	Land use class	Location		
19/4	60	061801_1.0001.AR_13.19/4	Municipality of Tomaszów Lubelski	Tp	Reja Street	19/4	60	061801_1.0001.AR_13.19/4	Municipality of Tomaszów Lubelski	Tp	Reja Street	Data correspondence	
21/3	126	061801_1.0001.AR_13.21/3	Municipality of Tomaszów Lubelski	R	Reja Street	21	126	061801_1.0001.AR_13.21/3	-	R	Reja Street	Inconsistency of data – difference in plot no.; no owner stated in KW	
58/1	413	061801_1.0001.AR_13.58/1	Municipality of Tomaszów Lubelski	R	-	58/1	413	061801_1.0001.AR_13.58/1	Municipality of Tomaszów Lubelski	Tp	-	Data inconsistency – difference in land use classes; no location data in EGIB and KW	
58/2	33	061801_1.0001.AR_8.58/2	Municipality of Tomaszów Lubelski	dr	Długosza Street	58/2	33	061801_1.0001.AR_13.58/2	Municipality of Tomaszów Lubelski	R	Reja Street	Data inconsistency – difference in land use classes; difference in location data	
58/3	30	061801_1.0001.AR_13.58/3	Municipality of Tomaszów Lubelski	Tp	Reja Street	58/3	30	061801_1.0001.AR_13.58/3	Municipality of Tomaszów Lubelski	Tp	Reja Street	Data correspondence	
90/4	27	061801_1.0001.AR_90/4	Municipality of Tomaszów Lubelski	Tp	Reja Street	90/4	29	061801_1.0001.AR_90/4	Municipality of Tomaszów Lubelski	Tp	Reja Street	Data inconsistency – difference in plot area	

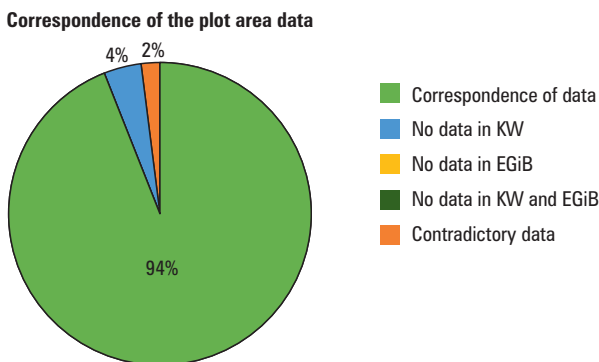
Source: Authors' own study



Source: Authors' own study

Fig. 1. Dependence of the correspondence of the plot no. data contained in the EGIB and KW in percentages

Next, the consistency of the plot data was checked. There were inconsistencies noted in six out of 100 plots. In four cases, the inconsistency was related to the lack of recorded area in the Land and Mortgage Register, while in two cases it was probably caused by rounding of the area of the plot in the KW. The results of the analysis for the area attribute are shown in Figure 2.



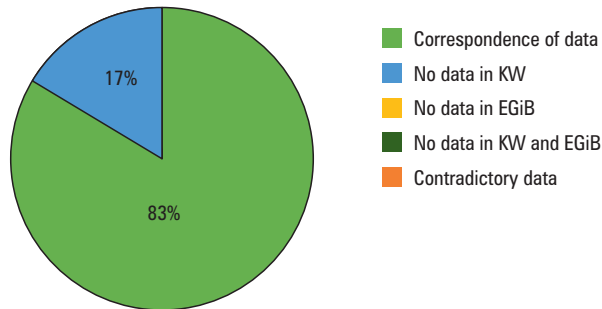
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Fig. 2. Dependence of the correspondence of the plot area data contained in the EGIB and KW in percentages

The information on the identifier of the plots contained in the two registers is consistent in 83%. The inconsistency is attributable to the absence of recorded data in the KW in 17 registered parcels. These data are illustrated in Figure 3.

Another piece of information examined concerns the owners of plots of land. In this case, the consistency in both registers reaches 93%. The difference in data is due to the lack of specification of owners in the KW. A data graph is shown in Figure 4.

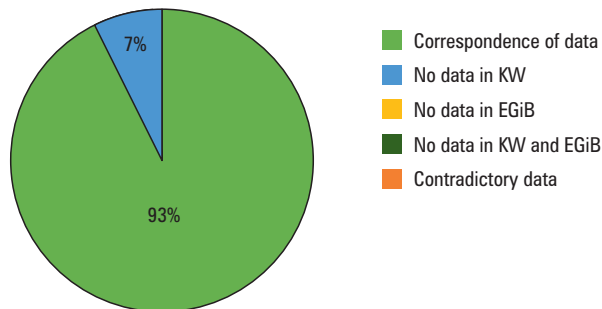
Correspondence of the plot identifier data



Source: Authors' own study

Fig. 3. Dependence of the correspondence of the plot identifier data contained in the EGiB and KW in percentages

Correspondence of the data on the owners of the plot



Source: Authors' own study

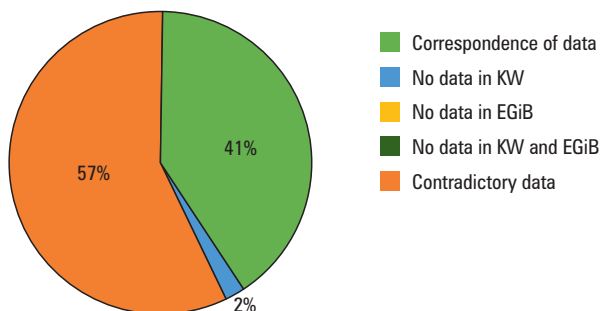
Fig. 4. Dependence of the correspondence of the data on the owners of the plot in the EGiB and KW in percentages

Out of 100 plots surveyed, 59 were found to contain inconsistent information regarding the land use class of the plot. There were 57 plots with different entries in the EGiB and KW, while the remaining 2 cases lacked an entry of land use information in the Land and Mortgage Register. The extent of consistency is illustrated in Figure 5.

The last examined feature shared by both registers is the information on the location of the registered parcels. The data correspond in only 47 cases. The lack of location information in KW is observed for 18 parcels, while in EGiB for 6. The inconsistency of content in both registers is observed in 31 cases. The consistency of data regarding the location of the parcel is illustrated in Figure 6.

Table 2 summarises the numerical results for each studied attribute. On their basis, Jaccard and Russel-Rao set similarity coefficients were calculated.

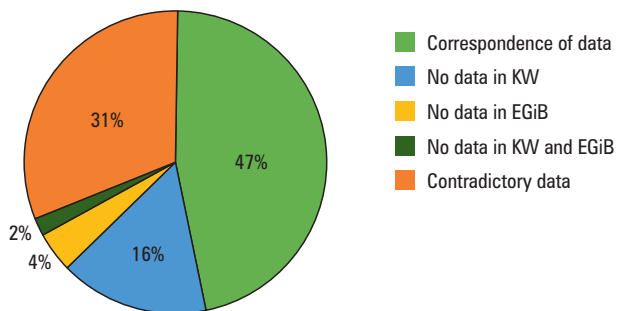
Correspondence of the data on land use classes in the parcel



Source: Authors' own study

Fig. 5. Dependence of the correspondence of the data on land use classes in the parcel in the EGIB and KW in percentages

Correspondence of the data on the location of the plot



Source: Authors' own study

Fig. 6. Dependence of the correspondence of the data on the location of the plot in the EGIB and KW in percentages

Table 2. A numerical overview presenting the consistency and inconsistency of the surveyed attributes

Attribute	Data correspondence	No data in KW	No data in EGIB	No data in KW and EGIB	Contradictory data
Plot no.	99	0	0	0	1
Area	94	4	0	0	2
Identifier	83	17	0	0	0
Owner	93	7	0	0	0
Land use class	41	2	0	0	57
Location	47	16	4	2	31
Sum	457	46	4	2	91

Source: Authors' own study

The presented data demonstrate that the most frequent reason for data inconsistency was the conflict of entries in the Land and Mortgage Register and the Land and Building Register. The second most common reason was the lack of entries in the KW, whereas the lack of entries in the EGiB occurred in only 4 cases. Two plots had missing data in both KW and EGiB for a given attribute.

The research showed that full correspondence between the entries in the two registers for all the adopted criteria of comparison occurred only 27 parcels out of 100 surveyed. This is not satisfactory, as the remaining 73 plots feature inconsistent information.

On the basis of the collected data, the Jaccard and Russel-Rao similarity coefficients of the sets were determined. From the analysis of the descriptive data contained in the land and building register and land and mortgage registers, it can be noted that the correspondence of the content of the sets determined by the Jaccard equation (1) is 0.764. In turn, the correspondence coefficient calculated by the Russel-Rao equation (2) is 0.762.

It should be noted that both similarity coefficients showed essentially the same level of similarity between the KW and EGiB sets within the examined scope. The consistent result of both coefficients indicates that, in the discussed case, the situation when both sets do not have an entry of a given attribute is negligible for the assessment of the similarity of the sets. This is due to the fact that a negative correspondence is shown only for the two plots under study.

4. Summary

The concordance of content in the Land and Building Register and the Land and Mortgage Register at the level of 76% is not sufficient to speak of full consistency between the data contained in both databases. The best situation in terms of consistency can be observed in plot numbers, as only one plot is characterised by different numbering in the Land and Building Register and Land and Mortgage Register. The location and land use classes stand out negatively, as the correspondence here amounts to 47% and 41%, respectively.

In conclusion, in the area of the town of Tomaszów Lubelski, there is no complete consistency between the descriptive data contained in the Land and Building Register and the Land and Mortgage Registers. This is a serious problem because the discrepancy between these registers does not make it possible to reliably obtain information about the rights to the property. As is well known, land and mortgage registers provide an insight into the legal status of a property, while land and building registers allow land resource management tasks to be undertaken. Differences between the registers under study should be cleared up as soon as possible with proper documentation and registered identically in both registers. It is necessary to examine the actual legal status and descriptive information for data harmonisation and the possibility of integrating the main Polish real estate databases.

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