

# FROM ADMINISTRATIVE PRICE TO MARKET VALUE OF REAL ESTATE. THE EVOLUTION OF THE VALUATION SYSTEM IN POLAND

Sabina Żróbek<sup>\*1</sup>, Małgorzata Renigier-Biłozor<sup>1</sup>, Ryszard Żróbek<sup>1</sup>

<sup>1</sup> Faculty of Geoengineering, University of Warmia and Mazury in Olsztyn, ul. Michała Oczapowskiego 2, 10-719 Olsztyn, Poland, (SŻ) e-mail: [zrobek@uwm.edu.pl](mailto:zrobek@uwm.edu.pl), ORCID: 0000-0001-9481-7262; (MR-B) e-mail: [malgorzata.renigier@uwm.edu.pl](mailto:malgorzata.renigier@uwm.edu.pl), ORCID: 0000-0002-4630-7564; (RŻ) e-mail: [rzrobek@uwm.edu.pl](mailto:rzrobek@uwm.edu.pl), ORCID: 0000-0003-4241-4239

\* Corresponding author

| PAPER INFO                                                                                                                | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>Keywords:</b><br>evolution of valuation methodology, market value, cadastral value, real estate market, mass appraisal | The article applies the method of historical research, using a temporal perspective dating back to 1985, to trace the evolution of market valuation principles for real estate in Poland. These principles evolved similarly to those in many other post-socialist countries, influenced by political and socio-economic transformations and the resulting list of objectives for which these values became essential. The changing legal regulations allowing for the emergence and development of a free real estate market played a decisive role in this process. It was also a period of preparing real estate valuation professionals to meet these requirements. Today, the methodology of valuation, under increasing pressure from various real estate market entities and the rapid advancement of intelligent data collection and processing technologies, is undergoing further evolution. In many countries, including Poland, lively discussions and disputes are ongoing regarding the legal authorization of statistical tools and automated valuation models in valuation practice. These possibilities are being considered particularly in the context of mass property valuations for tax purposes. The methodology involves the analysis of Polish legal provisions, foreign literature, and documents proving the gradual marketization of valuation principles. |
| <b>JEL Classification:</b><br>R29, R30, R38                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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## 1. Introduction

In the contemporary world, accurately determining the value of land, alongside regulating land rights based on civil law foundations, land use, and land development, is a crucial pillar of modern land administration systems. From an economic perspective, space should be regarded as a resource with the characteristics of a fundamental good, characterized by high utility value and diverse exchange value.

Spatial management is closely linked to the rational management of real estate. The significant impact of the spatial planning policy at the national and regional levels on changes in the value of land properties has been pointed out by Wang et al. (2019), Krajewska et al. (2021), among others. Literature also

provides evidence that trust in the actions of local authorities is closely related to accurately determined property values (Cai et al., 2020; D'Amato et al., 2019). A particular measure of this trust is the level of societal acceptance of annual property taxes based on the value of taxable items. Hence, many countries have legally regulated spatial management principles concerning, among other things, the acquisition, disposal, taxation and expropriation of real estate. These decisions have specific spatial consequences in the social and economic dimensions. They alter the value of space, facilitate or hinder the location of new objects, and create new functional arrangements. Therefore, a well-functioning real estate valuation system is a crucial element of the real estate economy in every country. According to the authors of this

study, the concept of a valuation system encompasses not only commonly accepted types of property values in a given country and principles adopted for their determination, but also the procedures for establishing authorized entities to conduct valuations, specifying their competencies and obligations. Depending on the purpose of the established value, these can be either principles concerning the valuation of individual properties or mass valuation systems. The latter are mainly used in countries where ad valorem tax has been introduced.

Definitions, interpretations, and applications of different types of property values have evolved under the influence of individual circumstances, opportunities, needs, and social perspectives.

Previously, in many countries, knowledge of value was primarily necessary in the process of transforming their political and economic policies (Vandell, 2007; Lin et al., 2020). Concepts of value continue to evolve due to the increasing complexity of societies and economies, necessitating the rapid availability of values suitable for decision-making roles.

The methodology for determining value is mainly influenced by the availability of real estate market data, thus largely reflecting the economic situation of a given country. Valuation methodology has a long history. It can be assumed that the concept of property valuation is as old as civilization itself (Miller & Markosyan, 2003). As far back as in ancient Egypt, land and properties were measured and valued for tax purposes. The Romans developed detailed real estate registers for tax calculations, which was an early form of valuation. In medieval England, the Domesday Book (1086) was a groundbreaking document containing detailed information about land holdings and tax values. The current shape of valuation principles in the international arena has been most influenced by countries where valuation theory has the richest scientific legacy. These countries include the United States and the United Kingdom. Additionally, in many European countries, including Poland, the influence of the so-called German school was noticeable in the early 1990s, especially in valuations conducted for the banking sector (Kucharska-Stasiak, 2014).

Terms within the methodology have an internal hierarchy, consisting of various levels of division, such as approaches, methods, techniques, and models. Generally, three classical approaches to valuation are distinguished: the market approach, the income approach, and the cost approach. All of these are based on basic economic principles governing prices

in the real estate market. Each of these main approaches may include various detailed valuation methods, and within each method, different techniques and models are applied. Some models are more quantitative, while others are more qualitative, but all are techniques that assign a specific value to individual property characteristics (EVS, 2020).

Over time, the system of education and training for specialists in the broader real estate market has also evolved – from informal transmission of valuation traditions to a formal academic discipline within higher education institutions. Analysis of numerous international studies, particularly successive editions of valuation standards, allows for the conclusion that the maturation phase of real estate valuation methodology has been – and continues to be – oriented towards its global standardization (EVS, 2020; IVS, 2021; Żróbek et al., 2022). The situation is somewhat different with valuation methodology for property taxation purposes. Uniform rules for conducting mass valuation (e.g., Department of Finance, 2010) are essential for the economy of individual countries, and are largely dependent on national tax policies. It is also necessary to consider that the emergence of new technological solutions supporting the real estate market encourages modifications to valuation methodology, which not only benefits from new technologies but also adapts to changing realities, particularly regarding access to diverse sources of information and data in terms of information capacity, format, and representation structure.

The emergence of automatic valuation models marked yet another breakthrough moment in the history of valuation. These models utilize data analysis to estimate property values, representing a significant advancement compared to traditional manual valuation techniques. However, similar to the early stages of all technological innovations, these models had limitations and underwent further evolution. Currently, the latest technological advancements based on artificial intelligence solutions are beginning to be incorporated into automatic valuation models, allowing, to some extent, for the inclusion of behavioral factors into machine analyses (Wilkinson et al., 2017; Renigier-Biłozor et al., 2020; Żróbek et al., 2020).

However, there are still many countries in the world where, due to various circumstances such as legal and geographical conditions, developing but still limited real estate markets, and cultural legacies, a valuation

methodology appropriate for the transitional period is sought. Poland also had to deal with such a problem, since after World War II, like other countries in Central and Eastern Europe, it found itself under the influence of the Soviet Union. Manifestations of this dominance included, among others, a single-party system of governance and the implementation of the principles of an inefficient centrally planned economy (command-administrative).

The political changes that took place in the post-socialist European countries in the second half of the 1980s, resulting from the economic crisis, made it possible for a systemic transformation, including the economic sphere. In Poland, most of the changes related to the transition to a market economy came into effect after January 1, 1990. In this context, it is worth tracing the evolution of the real estate valuation system in Poland, a country that has transitioned from a centrally planned economy to a market economy.

The beginnings of the emerging free real estate market in Poland at that time can be characterized by statements such as: "There was no real estate market before 1990. Previously, apartments were 'received' from housing cooperatives or workplaces. The exception was the 'villas' built by so-called the grey market trader. Morning announcements in the daily press about the sale of an apartment, or rather the cooperative ownership right to a unit, were outdated by the afternoon. Transactions were conducted in US dollars and were officially documented in goods vouchers of Bank Pekao SA" (Błaszczak, 2014).

Both the current methodology of valuation and the profession of property appraiser in Poland have developed over the past thirty years. Within this period, distinct phases of valuation methods can be identified, influenced by economic changes and the real estate market in the country, i.e.: the years 1985-1989, 1990-1997, and the period after 1998. This division results from the different conditions under which the valuation methodology emerged and evolved, considering historical, economic, and formal-legal aspects.

The provisions regulating methods of determining property values have also undergone changes, following the needs for which value was essential and the evolving real estate market. During this time, efforts were also made internationally towards standardizing both valuation methodology, code of conduct, valuation documents, and terminology. However, not all areas required or could achieve standardization. The greatest successes were achieved

in adopting common definitions, while standardizing valuation methodology was abandoned. Currently, there is a prevailing trend towards harmonizing valuation methodology.

For the purposes of this article, the provisions of Polish law since 1985 (the date of the enactment of the Act on Land Management and Real Estate Expropriation) and publications of both a practical and scientific nature from the early years of the emergence of principles for determining the market value of urbanized land were analyzed.

The article is structured as follows: Chapter 2, crucial for achieving the article's objective, illustrates the evolution of the land valuation system in Poland since 1985 in connection with changing legal regulations. Chapter 3 contains a summary and conclusions from the research, as well as indicating some contemporary directions for modernizing valuation methodology and real estate market analysis.

## **2. Real Estate Valuation System in Poland – Historical Overview vs. Current Status**

### **2.1. Property Valuation in Poland Before the Political Transformation (1985-1989)**

During the years 1985-1989, preceding the political transformation in Poland, the issue of valuation, specifically determining prices for undeveloped land and land under development, was regulated by the Act of April 29, 1985, on Land Management and Real Estate Expropriation (Act, 1985, Mizera & Poczobut – Odlanicki, 1974).

This law set an ambitious task, given the conditions of the centrally planned economy at the time, of introducing market principles for land management in Poland. Its aim was to create state land resources for urban and rural development purposes, to make state-owned land available to organizational units, socially-owned enterprises, social organizations, and other legal entities or individuals, and to manage funds allocated for acquiring and equipping land with the facilities necessary for its intended use. Regarding significant matters concerning the principles of determining land prices, maximum prices, and compensation principles for expropriated properties, the legislator delegated authority to so-called national councils at the provincial level. These regulations were based on the assumption that land prices could be determined by considering various factors. Among these factors were the costs of acquisition, the level of maintenance costs, as well as the current prices in land

transactions, incurred investments, the function designated in the spatial development plan for these lands, their location, and the level of equipment with communal facilities. These prices could be adjusted at intervals no shorter than 5 years. The prices of houses, other buildings, premises, and facilities were determined based on the costs of their reproduction, reduced by the degree of wear and tear. The final decision-making authorities in setting prices were local government bodies.

As evidenced by the following example of determining the prices of undeveloped state-owned land and land under development according to Resolution No. 56 of the National Council of the City of Warsaw dated December 5, 1985 (Czerwiakowski, 1988), this was a complex method of establishing value. According to this resolution, the costs incurred by the state related to land acquisition included: 1) the costs of preparing a geodetic map, 2) the costs of expert reports prepared by professionals determining the value of the land, 3) notarial fees paid, 4) the costs of preparing planning documentation, especially: a) detailed spatial development plans b) implementation plans, 5) the costs of preparing various types of geodetic studies; and 6) the cost of equipping the land with communal facilities. Invoices for completed work served as documents specifying the amounts of incurred expenses. Similarly, intricate methods were used to determine the remaining components of the land prices.

During that time, there was a justified belief that the administrative authorities appointed to implement the 1985 Act were not so much managing the lands as adhering to centrally imposed schemes. In practice, the determination of value boiled down to using official tables attached to resolutions of provincial councils (for lands) and official tables developed by insurance companies or industry institutions (for land components). In the socio-economic and legal system of the years 1985-1989, the value of real estate was equated with its price.

## **2.2. Years 1990-1993, attempts at introducing market principles in valuation practices**

The late 1980s heralded radical socio-economic changes in Poland. In June 1989, partially free parliamentary elections were held, resulting in the formation of a new government. This initiated a process of reforms aimed at transforming Poland's totalitarian regime into a democratic one. The change affected every sector of social and economic activity,

including the real estate sector. In the 1990s, Poland underwent significant economic reforms stemming from the so-called Balcerowicz Plan. The advancing democratization of the country also facilitated changes in spatial management, including those affecting the real estate sector, such as the principles of property appraisal. This also meant that the real estate market underwent significant changes. Attention was drawn to the fact that, in the altered legal and economic conditions in Poland, it was necessary to conduct real estate market research in the following areas:

- observation of changes in prices of urbanized land,
- analysis of the relationship between land prices and building prices (in the case of developed land),
- examination of factors influencing the market value of urbanized land,
- determination of the distribution of property prices and methods of presenting this phenomenon on maps,
- establishment of a real estate price registry.

The evolving real estate market situation necessitated the establishment of a universally recognized, consistent definition of market value for properties.

In 1990, the initial assumptions for a property valuation system were developed, marking the commencement of crafting a property valuation methodology in Poland under market economy conditions (Hopfer (ed.), 1990). Two fundamental concepts of value were considered: as exchange value, market value – in economic terms, and as utility value reflecting its technical merits. To determine utility value, physical, technical, or economic price units can be utilized. In this conceptual sense, land in urbanized areas primarily serves a passive function, as it predominantly exists in the form of building plots. Consequently, in the absence of transaction prices, it may be determined based on the so-called initial land value and adjusting factors.

The proposed methodologies were adopted at the governmental level, and the proposed methodology was implemented in practice. In the same year (December 5, 1990), a significant amendment to the Act on Land Management and Real Estate Expropriation came into force (Act, 1990). For the first time in legal provisions, the concept of "property value" was introduced as a distinct concept, separate from the concept of "property price," although

without specifying the type of this value yet. Simultaneously, non-administrative principles for property valuation were introduced, separately for land and separately for buildings. The value of land was to be determined taking into account the currently developing prices in land transactions, while the value of buildings and other facilities, as well as premises, was to be determined based on the costs of their reproduction, reduced by the degree of wear and tear.

It was also stipulated that these values would be determined by appointed experts listed by the voivode or other individuals with qualifications in property valuation. Under the same act, the Minister of Spatial Planning and Construction at the time appointed the first Qualification Commission for Professional Qualifications in Geodesy and Cartography, including a sub-commission for property valuation. Since 1991, professional qualifications in property valuation have been granted based on the provisions of the Act of May 17, 1989, on Geodetic and Cartographic Law (Act, 1989).

In the early 1990s, property values were primarily needed for expropriations, liquidations, and bankruptcies of state-owned enterprises, determining compensation for expropriated properties, as well as for banks providing loans secured by mortgages. It is important to emphasize that, during this time, the specified value still did not fully reflect market value but rather its utility value according to the principles outlined in the aforementioned methodological guide due to the absence of a market (Hopfer (ed.), 1990).

Due to the insufficient number of reliable land prices recorded in the free market during the transition from a centrally planned economy to a market economy, it was necessary to first determine the so-called initial land value ( $W_w$ ) during the valuation of urbanized land.

The proposed method for valuing urbanized land took into account the size of the city measured by its population, the distance of the land from the center, the infrastructure facilities, and other local factors influencing the value of these lands.

Ultimately, the following formula was proposed to determine the initial value of land located in urbanized areas:

$$W_w = W_o * u * s \quad (1)$$

where:

$W_o$  - basic rate (benchmark value),

$u$  - coefficient considering the size of the city,

$s$  - coefficient considering the location of the valued

land relative to the city center or the center of the urbanized area.

It was established that the basic rate  $W_o$  is determined based on indicators related to the sale price of State Land Fund class I lands in the first tax district (according to current free-market prices for wheat) – drawn from a table included in the Act of March 12, 1958, on the principles and procedures of property expropriation (Act 1958). From 1992 onwards, this rate could be replaced by the average price of lands in the peripheral zone of the city, as reliable transaction prices became available.

The following threshold values were also defined for the coefficient  $u$  (from 1.0 to 1.2 for cities with populations up to 5,000, and from 5.5 to 6.0 for cities with populations exceeding 100,000) and the coefficient  $s$  (from 1.0 to 1.2 for the peripheral zone of the city, and from 1.8 to 2.5 for the central zone of the city). The calculated initial value ( $W_w$ ) was then adjusted by a series of coefficients affecting the value of the land, such as:

$k_1$  - coefficient for infrastructure amenities (increasing the rate from 10% to 30%)

$k_2$  - coefficient for geotechnical conditions (from 10% to 30%)

$k_3$  - coefficient considering land use in relation to public utility objects (from 0% to 30%)

$k_4$  - coefficient for social and neighborhood characteristics (from -30% to +30%)

The expert conducting the land valuation could additionally increase or decrease their value by a maximum of 40% of this value, based on the influence of other local factors.

The final formula for determining the value of urbanized land took the following form:

$$W = W_w * (1 + \sum_{i=1}^n k_i) \pm E \quad (2)$$

where:

$W_w$  - initial value of the land,

$k_i$  - adjusting coefficient,

$E$  - an amount to be determined by the expert, contained within a range of -40% to +40%  $W_w$ .

This method of valuing urbanized land underwent refinement (Hopfer A., ed., 1992). This was associated, among other things, with the increasing number of land transactions in local markets. This popularly known "index" method for valuing urbanized land was used at the beginning of economic transformations in Poland until 1993. In subsequent years, it was replaced by valuation methods based on transaction prices and property income.

### 2.3. Property valuation 1994 - 1997

Building on previous experience, the Ministry of Spatial Planning and Construction issued the Temporary Real Estate Valuation Rules in 1994 (MGPiB, 1994). This introduced, for the first time in Poland, a systematization of property valuation methods, established the use of valuation approaches, methods and techniques, classified types of value and established that the result of a valuation would be presented in writing and entitled - Valuation Report.

From a formal point of view, the Temporary Real Estate Valuation Rules did not have the force of law; they can rather be classified as guidelines of the relevant Ministry for the industry, but the valuation methods presented there have been widely accepted for practical application.

Transitioning from the indicator method to comparative approaches for estimating the value of urbanized land, it has been emphasized that the market value of land is influenced by numerous factors, such as external characteristics impacting property value (economic factors, level of urbanization, legal regulations), the property's surroundings, and the current and anticipated demand for land linked to urban development (Hopfer et al., 1994). It has been noted that: in the comparative and income approaches, the market value of the property is determined, understood as its anticipated price achievable in the market, whereas in the cost approach, the reproduction value of the property's components is determined. This value is understood as the amount equal to the costs of reproduction or replacement of the property's components, taking into account their degree of depreciation.

In the comparative approach to property valuation, the price-comparison method has been distinguished. An essential aspect of this method was adjusting for differences between the property being valued and comparable properties. A limitation to the broad application of this method has been the still small number of reliable transactions in the local market. The determination of price adjustment indicators for properties selected for comparison could be carried out using two techniques:

- paired real estate comparison,
- statistical market analysis.

Attention was drawn to the possibility of using an expert coefficient in determining the final valuation result. This coefficient accounted for the high level of inflation during that period and its likely impact on the real estate market. It was assumed that the value of

this coefficient should range from 0.85 to 1.15 (MGPiB, 1994). The goal was to limit the subjective influence of the expert on the final valuation result. In 1995, the Minister of Spatial Economy and Construction issued a regulation regarding the detailed principles for determining property value (Regulation 1995). This regulation also included substantive provisions from the Temporary Rules for Real Estate Valuation (MGPiB, 1994). It was decided that the valuation result would be presented in a document called an Appraisal Report, rather than the previously used Valuation Report.

In the same year, the Professional Standards for Property Valuers were developed for the first time within the framework of the Polish Federation of Property Valuers' Associations, establishing the standards for the practice of the property valuation profession (PFSRM, 1995). The standards elaborated on certain issues of property valuation defined in the aforementioned decree of the Minister and constituted the third level of regulations concerning property valuation principles (law, decree, standards). The procedures for implementing these two valuation techniques were also published in various training materials, conference papers, and scholarly works. It is worth noting that the procedure for the paired comparison technique was fundamentally consistent with the "paired sales comparison method", which is widely used in many countries, and did not raise substantive objections. However, the procedure for determining market value using the market statistical analysis technique elicited extreme opinions from the outset, both among property valuers and academics. Proponents argued that it was easier to apply in practice as it required knowledge of only two properties - those with the lowest and highest prices within a set of transactions.

However, one of the main reasons for the criticism was likely the fact that the name "market statistical analysis method" did not correspond with the practical implementation procedure outlined in the 2000 standard III.7 Property Valuation using the Comparative Approach (PFSRM, 2000). The application of this technique in valuation requires:

1. Calculation of the average price ( $C_{sr}$ ) from the set of transaction prices used as the basis for valuation, and determination of the minimum price ( $C_{min}$ ) and maximum price ( $C_{max}$ ).
2. Characterization of the property with the minimum price ( $C_{min}$ ) and the property with the maximum price ( $C_{max}$ ), highlighting their

evaluations in relation to the adopted scale of market characteristics.

3. Calculation of the lower boundary  $[C_{\min}/C_{sr}]$  and the upper boundary  $[C_{\max}/C_{sr}]$  of the sum of adjustment coefficients, and determination of the ranges of adjustment coefficients for individual market characteristics.

The unit value of the estimated property ( $W_j$ ) is calculated using the formula:

$$W_j = C_{sr} \times \sum_{i=1}^n u_i \quad (3)$$

where:

$u$  - represents the value of a specific adjustment coefficient,

$n$  - is the number of adjustment coefficients.

Czaja (2001), in a comprehensive analysis of the assumptions underlying this technique, argued that the presented procedure is based on methodological errors and is in fact unrelated to statistical market analysis. Therefore, it should not be recommended for use, as it:

1. does not require calculating the average price or using it to determine the coefficients  $u$ ,  $n$ , as this has no impact on the valuation result,
2. constitutes a linear interpolation determined only by the extreme property prices in the database and the extreme values of individual property attributes within that database.

During the analyzed period, the collection of sufficient reliable market data remained a significant challenge for property valuers. The development of the real estate market relies on numerous transactions between private entities. In post-socialist countries, including Poland from 1990 to 2010, public entities such as the State Treasury, state legal entities, local government units (primarily municipalities), and local government legal entities played a major role in the real estate market. These entities were subject to special procedures for property disposal (Żróbek (ed.), 2020). The involvement of the public sector in property transactions often resulted in significant discrepancies between the value and price of properties, typically around  $\pm 30\%$  of the average transaction price.

#### **2.4. Turning Point in Valuation Methodology: January 1, 1998**

Along with the development of the real estate market in Poland and scientific analysis of the behavior of market participants, the principles of valuation also evolved, manifesting themselves in changes to the classification and nomenclature of valuation methods.

A turning point in the development of valuation methodology was the entry into force, on 1 January 1998, of the Act of 21 August 1997 on Real Estate Management (the 1997 Act). Its provisions comprehensively regulated the functioning of the valuation system by introducing some of the principles of real estate valuation, typical of market economies, defining the basic types of real estate value (market, replacement, bank and mortgage, cadastral), as well as amending the rules for granting valuation rights. The Act repealed all previous laws governing the determination of property values. It was also at that time that, for the first time in Polish legislation, the rules and procedure for carrying out a general real estate valuation were included. According to the Real Estate Management Act, the term "general real estate appraisal" should be understood as a real estate appraisal resulting in the determination of the cadastral value of real estate. It is stipulated that the cadastral values should take into account the approximation to the market value obtainable by applying the principles adopted for mass valuation.

The competences of the authorities responsible for carrying it out are enshrined in the Act of 17 May 1989. Geodetic and Cartographic Law (Act 1989 in 2001, a Regulation of the Council of Ministers on the general valuation of real estate was published (Regulation 2001). A team led by Zdzisław Adamczewski developed a model for universal property valuation used in the draft Guidelines for carrying out universal property valuation (Telega et al., 2002). A further version of this regulation was published in 2005 (Regulation 2005). However, due to a lack of political will, no laws were passed to change the tax base of real estate, hence the regulations on the determination of cadastral values have not entered into force to date. Instead, they have become the inspiration for scientific research and many practical publications (e.g. Czaja & Parzych, 1996; Prystupa & Brodaczewski, 1998; Wolanin, 2005; Kuryj & Żróbek, 2017).

The Regulation of the Council of Ministers of July 7, 1998 on detailed rules for the valuation of real estate and the principles and procedure for preparing an appraisal report (Regulation 1998) states that the term determining the value of real estate means determining the market value or replacement value of real estate as an object of ownership or the value of other rights to real estate. The provisions from previous acts were repeated that the comparative or income approach is used to determine the market

value of real estate.

However, in the comparative approach, there are two valuation methods, previously called techniques, instead of the price-comparison method, i.e. the paired comparison method and the statistical market analysis method.

„In the subsequent Regulation of the Council of Ministers of November 27, 2002 on detailed principles of real estate valuation and the principles and procedure for preparing an appraisal report (Regulation, 2002), the current method of statistical analysis of the market was named the average price correction method, and moreover, a new, third method was introduced to the comparative approach, called the statistical market analysis method". It is stated that: *In the method of correcting the average price, the comparisons include at least a dozen or so similar properties that were traded on the market and for which the transaction prices, terms of concluding the transaction and the features of these properties are known. The value of the property that is the subject of the valuation is determined by adjusting the average price of similar properties with correction factors that take into account differences in the individual characteristics of these properties.*

In fact, this was already a well-known valuation method functioning first under the name of a technique and then as a statistical analysis method, as already mentioned above. Also the valuation procedure using this method was carried out in accordance with the quoted standard III.7. developed for the statistical market analysis method. Since 2008, this standard is called Interpretative Note I 1. Application of the comparative approach in property valuation (PFSRM, 2008). Hence, objections continued to be raised in the scientific community regarding, among other things, the name of this valuation method, which has little to do with average value (Hozer et al., 2002).

It has been demonstrated that - contrary to its name - the value of real estate determined by the average price correction method is not at all dependent on the level of the arithmetic mean of the transaction prices adopted for the valuation of real estate similar to the property being valued (e.g. Cellmer, 2004 & Pawlukowicz, 2009). This is because the results of the valuation are identical for each numerical quantity inserted in the formula in place of the average price, not only from the price range determined by the lowest and the highest price from the adopted set of similar properties, but any other

numerical quantity. The provision concerning the method of statistical market analysis has also been changed to: The statistical market analysis method shall adopt a set of transaction prices appropriate for determining the value of representative properties referred to in Article 161(2) of the Act. The value of the property shall be determined using the methods used for statistical analysis.

The cited Article 161 of the Real Estate Management Act refers to the general valuation of real estate. The assignment of a different role to this method, due to the lack of provisions on the commencement of general valuation, has rendered this method "dead" (Pawlukowicz, 2009). Therefore, clear rules and procedures for the application of the statistical market analysis method for property valuation purposes have not been developed to date.

There have, however, been a number of academic publications offering suggestions and examples of the application of various statistical models to market analysis and property valuation. However, these have not become a professional norm (standard) in the practice of property valuers. Kokot even wrote that the lack of standardized principles for statistical market analysis method is like an unfinished article in Polish real estate valuation methodology (Kokot, 2011). The year 2002 also saw the beginning of increased activity concerning valuers' associations manifested mainly in training valuers in new regulations and their interpretation. It was also from this date that valuation was added to the list of professions. Moreover, establishing a system for recording property transaction prices together with factors characterizing the local market became important. In later years (after 1997), the Property Price and Value Register was established, transformed in 2020 into the Property Price Register. This register was intended to be a database of transaction prices for the valuation of individual properties and, in addition, the recorded values derived from the extracts of appraisal reports submitted by the appraisers were to be used in the general property taxation (mass appraisal) to determine cadastral values.

In 2004, a new Regulation of the Council of Ministers on the valuation of real estate and the preparation of a valuation report (Regulation 2004) came into force. This legal standard defined the methods of valuation in detail for the first time, according to the purposes for which knowledge of the value is needed and depending on the types of real estate, as well as the manner of preparation, form and

content of the valuation report. Changes were made to the income approach - the cash flow discounting technique was renamed to the income flow discounting technique and the liquidation cost method was qualified to the mixed approach. In the mixed approach, the estimated land rate method was called the estimated land index method. This provision of the law has been amended several times (e.g. in 2005, 2011, 2019, 2021). Subsequent versions did not change the essence of the methodology and the naming of the different valuation methods, and mainly concerned the clarification of certain provisions.

## 2.5. Valuation principles beyond 2023

Currently, the most important normative act in Poland regulating the issues of real estate appraisal and property valuation is the Act of 21 August 1997 on Real Estate Management (Act 2023), which has been updated and amended many times. On the other hand, the methodological principles for the valuation of different types of real estate are set out both in this Act and in the Regulation of the Minister of Development and Technology on Real Estate Valuation of 5 September 2023 (Regulation 2023). The scope of these legal regulations is very broad, as they apply not only to the real estate of the State Treasury and local government units, but also to the real estate of all other owners, perpetual usufructuaries and entities holding limited rights to real estate. The Act also defines the types of values and the methodology for their determination by the property valuer. Moreover, it contains the previously mentioned regulations on the mass appraisal of real estate. In addition to the above, the Real Estate Management Act is a source of law in Poland when it comes to the definition of market value and the methods of determining it.

It is worth recalling that the original definition of this value as first recorded in the 1997 Act was as follows: The market value of a property is its anticipated price, obtainable on the market, determined taking into account the transaction prices obtained when the following conditions are met: 1) the parties to the contract were independent of each other, did not act in a coercive situation and had a firm intention to conclude the contract, 2) the time necessary to expose the property to the market to negotiate the terms of the contract had elapsed (Act, 1997). The definition in this wording was in force until the end of August 2017 with the only modification made in 2010, when the expression "... its anticipated

price "was replaced by the expression, "... its most likely price" (Act, 2010).

However, the latter formulation has also caused debate in academia and among valuation practitioners. It has been pointed out that it is impossible to interpret unambiguously. What is more, in order for the market value to be treated as a predicted or most likely price, it is always necessary to present the result of a property valuation in the form of a confidence interval. A valuation based on linear transformations of transaction prices of similar properties, without specifying confidence intervals, cannot represent the most likely price of a property (Czaja, et al., 2005). The definition of market value as it stood also differed from that previously adopted as internationally agreed by the major professional organizations - The European Group of Valuers Association (TEGoVA) and the International Valuation Standards Committee (IVSC). In 2013, it was also adopted by the European Parliament (EPIR Regulation, 2013). As if under pressure from these resolutions, the definition of the term was amended as part of a further amendment to the Real Estate Act in 2017 (Act, 2017). International valuation standards (IVS 2005) have been important in changing the perception of the market value of property and the process of arriving at it. They emphasized the need to take into account, in the valuation, the potential inherent in the property, if it is perceived in the market and if the applicable legislation does not place restrictions on its use.

Since then, the definition of market value has been: "The market value of real estate is the estimated amount that, on the valuation date, can be obtained for the property in a sales transaction concluded on arm's length terms between a buyer and a seller who have a firm intention to enter into a contract, act with discretion and prudence, and are not in a forced situation." From September 2023, the Real Estate Management Act (Act 2023) includes the following clarifications regarding the paired comparison method and the average price correction method:

- In the pairwise comparison method, at least three properties are selected for comparison from the set of similar properties constituting the basis for the valuation.
- In the average price correction method, the value of the property is determined by adjusting the average price of similar properties in the set constituting the basis for valuation by means of correction coefficients resulting from

the assessment of the property being valued with reference to the adopted scale of assessments of particular market characteristics, taking into account the location of the average price in the interval between the minimum price and the maximum price.

Currently, in Poland, the valuation methodology generally reflects the valuation methods used in many countries around the world with established economies and developed real estate markets. The majority of methods rely on some form of comparison to assess market value. This may involve, in its simplest form, a direct price comparison, or it may be based on a series of observations that allow the valuer to determine a regression model. Classic real estate valuation is based on traditional methods, such as the comparative, income and cost methods. As part of this process, the real estate valuer takes into account the basic physical characteristics of the property and conducts market analyses using the available data and his own experience. Using the comparative or income approach, the market value of the property is determined. If the existing conditions do not allow the use of a comparative or income approach, the market value of the property is determined using a mixed approach, containing elements of the previous approaches. Using the cost approach, the replacement value of the property is determined.

Other models or methods attempt to analyze the market by directly mimicking the thought processes of entities in the market. These models tend to be more quantitative and are referred to as "advanced". Advanced methods use artificial neural network (ANN), machine learning, geographic information systems (GIS) and spatial analysis methods, fuzzy logic and mixed methods (Pagourtzi, et. al., 2003, Renigier-Biłozor et. al., 2022a). Advanced valuation methods can be defined as follows: the advanced or non-classical approach in real estate valuation is based on the valuer working closely with a computer to enable the use of more advanced techniques and analytical tools. In this approach, the valuer uses mathematical

models and exogenous data available in the property market. This integration allows more complex phenomena and factors affecting property value to be taken into account, resulting in a more objective and broader-ranging forecast of market trends. The use of methods (models) classified as Advanced Valuation Methods (AVMs) is still controversial amongst Polish valuation practitioners and they have not been formally and legally accepted as valuation methods.

It is worth noting that currently only a property valuer can determine the market value of real estate in Poland. This is a natural person with professional qualifications in the field of real estate valuation, granted by the competent minister. Such a person acquires the right to use the professional title "property valuer", which is subject to legal protection.

### 3. Summary of research and outline of future developments

The analysis of legal provisions and other studies shows that, in Poland before December 5, 1990, the value of real estate in the current understanding of this concept was not determined because the price (not value) was determined by a local state administration body based on official tables. In this situation, it should be considered that the period of intensive creation of market methods of real estate valuation and legal regulations of the valuation system fell during the period 5/12/1990 - 31/12/1997. It was then that, for the first time, the concept of "real estate value" was distinguished in legal provisions as an independent concept with a universal meaning and as the basis for many administrative actions taken in the field of setting prices, compensation and fees for real estate. However, the period from January 1, 1998 is a period of perfecting the principles of valuation and standardizing the rights of people to value real estate - professional property valuers. Table 1 is a summary of the changes made in the valuation methodology. Changes in the individual years are marked in grey in the table cells.

**Table 1**

Evolution of real estate valuation methods in Poland since 1994

| 1994 - Temporary Rules for Real Estate Valuation (MGPIB, 1994) |                                     |                    |                             |                        |                        |              |                   |            |             |
|----------------------------------------------------------------|-------------------------------------|--------------------|-----------------------------|------------------------|------------------------|--------------|-------------------|------------|-------------|
| 1. Comparative approach                                        |                                     | 2. Income approach |                             |                        | 3. Cost approach       |              | 4. Mixed approach |            |             |
| Methods                                                        | Techniques                          | Methods            | Techniques                  |                        | Methods                | Techniques   | Methods           | Techniques |             |
| 1.1. Price-comparison                                          | 1.1.1 Paired real estate comparison | 2.1 Investment     | 2.1.1 Direct capitalization | 3.1 Reproduction costs | 3.1.1 Detailed         | 4.1 Residual | -                 |            |             |
|                                                                | 1.1.2 Statistical market analysis   |                    | 2.1.2 Discounted Cash Flows |                        | 3.1.2 Jointed elements |              |                   |            |             |
|                                                                |                                     |                    |                             |                        |                        |              |                   |            | 3.1.3 Index |
|                                                                |                                     |                    |                             |                        |                        |              |                   |            |             |
|                                                                |                                     | 2.2 Profits        | 2.2.1 Direct                | 3.2                    | 3.2.1                  | 4.2 Property | 4.2.1 Value       |            |             |

|                                                                                                                                           |                                                                                   |                                                    |                                                                  |                                                         |                                                                  |                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                                                                                                           |                                                                                   | capitalization<br>2.2.2<br>Discounted<br>Cash Flow | Replacement<br>costs                                             | Detailed<br>3.2.2<br>Jointed<br>elements<br>3.2.3 Index | rights                                                           | adjustment<br>4.2.2<br>Benefits<br>obtained                                       |
|                                                                                                                                           |                                                                                   |                                                    | 3.3 Liquidation<br>costs                                         | 3.3.1<br>Detailed                                       |                                                                  |                                                                                   |
| 1995 – Detailed rules for determining the value of property (Monitor Polski, 1995)                                                        |                                                                                   |                                                    |                                                                  |                                                         |                                                                  |                                                                                   |
| 1. Comparative approach                                                                                                                   |                                                                                   | 2. Income approach                                 |                                                                  | 3. Cost approach                                        |                                                                  | 4. Mixed approach                                                                 |
| Methods                                                                                                                                   | Techniques                                                                        | Methods                                            | Techniques                                                       | Methods                                                 | Techniques                                                       | Methods Techniques                                                                |
| 1.1 Price-<br>comparison                                                                                                                  | 1.1.1 Paired real<br>estate<br>comparison<br>1.1.2 Statistical<br>market analysis | 2.1<br>Investment                                  | 2.1.1 Direct<br>capitalization<br>2.1.2 Discounted<br>Cash Flows | 3.1<br>Reproduction<br>costs                            | 3.1.1<br>Detailed<br>3.1.2<br>Jointed<br>elements<br>3.1.3 Index | 4.1 Residual -                                                                    |
|                                                                                                                                           |                                                                                   | 2.2 Profits                                        | 2.2.1 Direct<br>capitalization<br>2.2.2 Discounted<br>Cash Flows | 3.2<br>Replacement<br>costs                             | 3.2.1<br>Detailed<br>3.2.2<br>Jointed<br>elements<br>3.2.3 Index | 4.2 Property<br>rights 4.2.1 Value<br>adjustment<br>4.2.2<br>Benefits<br>obtained |
|                                                                                                                                           |                                                                                   |                                                    |                                                                  | 3.3 Liquidation<br>costs                                | 3.3.1<br>Detailed                                                |                                                                                   |
| 1998 - Detailed principles for property valuation and the principles and procedure for drawing up the valuation report (Regulation, 1998) |                                                                                   |                                                    |                                                                  |                                                         |                                                                  |                                                                                   |
| 1. Comparative approach                                                                                                                   |                                                                                   | 2. Income approach                                 |                                                                  | 3. Cost approach                                        |                                                                  | 4. Mixed approach                                                                 |
| Methods                                                                                                                                   | Techniques                                                                        | Methods                                            | Techniques                                                       | Methods                                                 | Techniques                                                       | Methods Techniques                                                                |
| 1.1. Paired real<br>estate<br>comparison<br>1.2 Statistical<br>market<br>analysis                                                         | -                                                                                 | 2.1<br>Investment                                  | 2.1.1 Direct<br>capitalization<br>2.1.2 Discounted<br>Cash Flows | 3.1<br>Reproduction<br>costs                            | 3.1.1<br>Detailed<br>3.1.2<br>Jointed<br>elements<br>3.1.3 Index | 4.1 Residual -                                                                    |
|                                                                                                                                           |                                                                                   | 2.2 Profits                                        | 2.2.1 Direct<br>capitalization<br>2.2.2 Discounted<br>Cash Flows | 3.2<br>Replacement<br>costs                             | 3.2.1<br>Detailed<br>3.2.2<br>Jointed<br>elements<br>3.2.3 Index | 4.2 Land<br>estimate<br>rates                                                     |
|                                                                                                                                           |                                                                                   |                                                    |                                                                  | 3.3 Liquidation<br>costs                                | 3.3.1<br>Detailed                                                |                                                                                   |
| 2002 - Detailed principles for property valuation and the principles and procedure for drawing up the valuation report (Regulation, 2002) |                                                                                   |                                                    |                                                                  |                                                         |                                                                  |                                                                                   |
| 1. Comparative approach                                                                                                                   |                                                                                   | 2. Income approach                                 |                                                                  | 3. Cost approach                                        |                                                                  | 4. Mixed approach                                                                 |
| Methods                                                                                                                                   | Techniques                                                                        | Methods                                            | Techniques                                                       | Methods                                                 | Techniques                                                       | Methods Techniques                                                                |
| 1.1 Paired real<br>estate<br>comparison<br>1.2 Average<br>price<br>correction<br>1.3 Statistical<br>market<br>analysis                    |                                                                                   | 2.1<br>Investment                                  | 2.1.1 Direct<br>capitalization<br>2.1.2 Discounted<br>Cash Flows | 3.1<br>Reproduction<br>costs                            | 3.1.1<br>Detailed<br>3.1.2<br>Jointed<br>elements<br>3.1.3 Index | 4.1 Residual -                                                                    |
|                                                                                                                                           |                                                                                   | 2.2 Profits                                        | 2.2.1 Direct<br>capitalization<br>2.2.2 Discounted<br>Cash Flows | 3.2<br>Replacement<br>costs                             | 3.2.1<br>Detailed<br>3.2.2<br>Jointed<br>elements<br>3.2.3 Index | 4.2 Land<br>estimate<br>rates                                                     |
|                                                                                                                                           |                                                                                   |                                                    |                                                                  | 3.3 Liquidation<br>costs                                | 3.1.1<br>Detailed<br>3.1.2<br>Jointed                            | -                                                                                 |

|                                                                                                   |  |                   |                               |                        |                        | elements                   |                        |
|---------------------------------------------------------------------------------------------------|--|-------------------|-------------------------------|------------------------|------------------------|----------------------------|------------------------|
|                                                                                                   |  |                   |                               |                        |                        | 3.1.3 Index                |                        |
| Since 2004 - Valuation of real estate and the drawing up of a valuation report (Regulation, 2004) |  |                   |                               |                        |                        |                            |                        |
| 2 Comparative approach                                                                            |  | 3 Income approach |                               | 4 Cost approach        |                        | 5 Mixed approach           |                        |
| Methods                                                                                           |  | Techniques        |                               | Methods                |                        | Techniques                 |                        |
| 1.1 Paired real estate comparison                                                                 |  | 2.1 Investment    | 2.1.1 Direct capitalization   | 3.1 Reproduction costs | 3.1.1 Detailed         | 4.1 Residual               | -                      |
| 1.2 Average price correction                                                                      |  |                   | 2.1.2 Discounted Income Flows |                        | 3.1.2 Jointed elements |                            |                        |
| 1.3 Statistical market analysis                                                                   |  |                   |                               |                        | 3.1.3 Index            |                            |                        |
|                                                                                                   |  | 2.2 Profits       | 2.2.1 Direct capitalization   | 3.2 Replacement costs  | 3.2.1 Detailed         | 4.2 Estimated land indices |                        |
|                                                                                                   |  |                   | 2.2.2 Discounted Income Flows |                        | 3.2.2 Jointed elements |                            |                        |
|                                                                                                   |  |                   |                               |                        | 3.2.3 Index            |                            |                        |
|                                                                                                   |  |                   |                               |                        |                        | 4.3 Liquidation costs      | 4.3.1 Detailed         |
|                                                                                                   |  |                   |                               |                        |                        |                            | 4.3.2 Jointed elements |
|                                                                                                   |  |                   |                               |                        |                        |                            | 4.3.3 Index            |

Source: own elaboration on the basis of: (MGPiB, 1994), (Monitor Polski, 1995), (Regulation, 1998), (Regulation, 2002), (Regulation, 2004).

The move from administrative price determination to property valuation and market value determination clearly shows that it was inspired by changes in the legal and economic environment, dependent mainly on national regulations. It is these that stimulate the market development necessary for the emergence and modernization of valuation methodologies allowing more accurate values for valued objects to be obtained. For the property taxation system, this is driven by the need to better justify the results obtained - the values of the valuation objects which form the basis of the tax.

The presented path of transition from a system of administratively determined prices of land and buildings to a system of market values of real estate may serve as a hint for countries encountering objective difficulties in applying classical, and even more advanced, methods of determining the market value of the object of valuation. A transitional solution may be to apply the quasi-market principles that were used in Poland during the emerging and gradually developing free market in the early 1990s.

On the other hand, a detailed analysis of selected legal regulations on valuation methodology revealed inconsistencies or flaws in some of the solutions. This leads to, among other things, the suggestion that the words "average price" should be removed from the name of the average price adjustment method, or that the procedure for implementing this method should be brought into line with the requirements of the comparative approach under the real estate valuation

regulation 2023 (Regulation, 2023). This requires knowledge of the characteristics and prices of a minimum of 3 properties similar to the subject of the valuation and not two as is currently the case. In this respect, this is not a new proposal, as there have already been many calls for this in the professional Polish-language literature for many years.

On the other hand, the name "statistical market analysis method" should be changed to "statistical market analysis methods" and this group of methods should be excluded from the comparative approach. This is because the directive to take properties as similar as possible in the comparative approach for valuation is mathematically directed against statistical techniques, functioning the better the less similar the elements of the analyzed sets are to each other (Zyga 2014, 2021; Sawiłow, 2010). This group of methods should also be allowed to be used by appraisers in valuations of individual properties (Parzych & Czaja, 2015).

Valuation principles that include hope value in the procedure for determining the market value of a property should also be more widely disseminated (Grzesik & Żróbek, 2017). This issue is still ambiguous in interpretation and there is no comprehensive method for its determination (Drapikovskiy et. al., 2020). The use of traditional comparative approach methods does not fully provide these opportunities. First of all, these methods are, by definition, oriented towards establishing the relationship of the market value to the location and physical characteristics of

the subject property, as the highest and best use of comparable properties is assumed to be similar to the subject property, which is the key criterion of similarity.

The norms contained in the Real Estate Management Act concerning the methodology for carrying out the general real estate valuation need to be thoroughly modified as they are already outdated and do not take into account the current state of the market and today's possibilities to carry it out faster and cheaper. In addition, it is emphasized that the complicated algorithm on the basis of which properties would be valued is a weakness of ad valorem taxation (Piekut, 2014). An essential element of an ad valorem tax system requires clear and unambiguous rules for determining the value of the property as the basis for fair taxation (Wang, Li 2019). It would be appropriate to consider that the general principles of value determination for this purpose should be regulated in the tax law. On the other hand, detailed procedures for mass valuation should be described in separate, specifically developed guidelines and/or standards, such as, for example, the Standard on Mass Appraisal of Real Property (IAAO 2022 or RICS 2021, The Appraisal Foundation, 2019).

When analyzing the evolution of property valuation methodologies, it is difficult not to consider further changes in the near future. With the rapid development of digital technology, investor expectations and demands for property valuations are increasing. Investors want to benefit from the full potential that technology offers for valuations, potentially making them faster, less prone to human error and sensitive to a much wider range of evidence than is currently the case (Bilozor & Renigier-Bilozor, 2014; Cieslak et al., 2020).

The emergence of automated valuation models at the end of the 20th century was a turning point. These models used data analytics to estimate property values, a significant advance over traditional manual valuations. However, like the early stages of any technological innovation, these models had limitations and were ripe for further evolution. Of particular importance is the recognition of evolution in property valuation, when cognitive science methods came into play, which made it possible to faithfully mimic certain functions of the human mind, sometimes even surpassing them by eliminating certain human imperfections such as making mistakes, limited access to information or subjectivity. One example of an effort made at addressing the challenge of human and

machine cooperation a hybrid approach called Automated Assisted Valuation Methods (AAVMs) (Renigier-Bilozor et al., 2022b).

Big data, blockchain and automated valuation models (AVMs) are likely to play an important role here. Importantly, AVMs allow for increased transparency in the property market, objectify the outcome of the valuation, reduce valuation time, and allow for the processing of a wider context and range of information. With the growing interest in technology in property valuation, a key challenge is to integrate these advanced tools into existing valuation processes and ensure their reliability and effectiveness (Trojanek et al., 2023; Wisniewski & Brzezicka, 2020, 2021). At the same time, the growing role of digital technologies in real estate valuation has the potential to improve market efficiency by increasing access to more accurate and objective data and improving investment decision-making processes. In addition, developments in cognitive science and artificial intelligence technologies are opening up new opportunities to incorporate the behavioral factor into analytical analyses. However, this is also a challenge for valuation systems, especially in the context of the evolution of AVMs. The view is also being expressed that the future of property valuation lies in integrating the time dimension with AVMs. This means not only assessing the current value of a property, but also predicting how its value may change over time, depending on market conditions. This is about understanding the process of property valuation, much like tracing the historical evolution of a city (Mc Kissock Learning, 2024).

Finally, it is worth referring to TEGoVA's philosophy for the development of property valuation methodology guidelines. It is worth noting here that the European Valuation Standards issued by this international organization do not impose any particular valuation methodology because, unless regulated by legislation, methodological decisions in each case depend on the professional judgement of the valuer. In addition, methodologies are likely to continue to evolve under the influence of many factors and therefore attempting to limit evolution by insisting that valuers use specific currently recognized methods/models in the future does not seem appropriate (EVS 2020).

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