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ORIGINAL PAPER
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RECURRENT PROPERTY TAX MODEL: THE CROSS-BORDER COMPARATIVE APPROACH

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ABSTRACT

Property tax is a tax levied on the right to own/use property. It is typically a compilation of various taxes related to property ownership. In many countries, an annual/recurrent tax is levied, which is used by local government authorities for their daily operations. The method for calculating this tax is usually based on a value known as the cadastral/administrative/tax/income value, which is, to some extent, linked to the market value of the property. In certain European countries, there are also fixed models, which are not linked to the property market. The article attempts to compare the recurrent property tax rates in various European countries in relation to residential property. The analysis was conducted using cluster analysis, with particular emphasis on Ward's method, as well as a survey study employing the CAWI (Computer Assisted Web Interviewing) technique. The main research framework focused on developing and comparing scenarios for the level of the recurrent property tax based on methodologies and indicators applied in countries characterised by a similar standard of living. The comparative criteria included the purchasing power of residents – understood as the relationship between income levels and price levels – housing affordability, and broader economic and financial conditions. Tax rate scenarios were developed based on assumptions related to the most frequently traded residential property. Housing markets across countries exhibit substantial structural heterogeneity. In certain jurisdictions, small-scale apartments constitute the predominant segment of residential transactions, whereas in others single-family houses prevail. Consequently, the present study employs the concept of a reference property as an analytical benchmark. This reference property is defined as a standard dwelling within multi-family residential construction, characterized by an average floor area representative of the respective national market, a medium technical and functional standard, and a location situated within a typical urban environment.
The study demonstrated that, despite the recurrent property tax model used, which is not dependent on property value, the level of property-related taxes levied does not differ significantly from the European average. Reforming the method for calculating recurrent property tax in Poland would be advisable, but only in terms of incorporating the concept of social justice. This means that taxation should be proportional to a citizen's payment capacity. The implementation of RPT reforms should be undertaken in a phased and methodologically sequenced manner, with due consideration for systemic stability and societal acceptability, while ensuring robust safeguards for the most vulnerable segments of the population.

Keywords: recurrent property tax, reform of property taxation, social justice

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INTRODUCTION

Property tax revenue serves an important role in the functioning of the state. Property tax is measured in percentage both of GDP and of total taxation of the property (OECD, 2022a, 2022b). The levels of property tax in relation to the GDP in OECD countries vary, as shown in Fig. 1. In most Central and Eastern European countries, property tax revenue is low. Poland collects more revenue from property taxes (slightly over 1% GDP) than the average OECD country. There are also many countries that collect considerably less, e.g. Estonia, Turkey, Luxembourg, etc. (Fig. 1). Most countries in Europe have not taken advantage of the rapid rise in property values over the last ten years to increase their budget revenues from this source, relying largely on taxes on labour income or consumption taxes. Property taxes can help increase revenue with less damage to economic growth than alternative taxes. They can also help mitigate boom cycles and contribute to reducing inequalities in the tax burden on citizens (Oguzhan et al., 2017).

The property taxation method has a multi-faceted impact on sustainable development and can be considered from an environmental, social and economic perspective. This includes, for example, the introduction of different tax rates for energy-efficient and passive buildings, buildings that use renewable energy sources, and green roofs, which encourage property owners to modernise and invest in environmentally friendly technologies. Consequently, taxpayers receive tax breaks that support the modernisation and renovation of existing buildings, which promotes the reduction of CO_2 emissions by reducing the number of new houses built, and making more efficient use of space. The taxation level can be an incentive for reasonable spatial development, as higher taxes on unused land in cities can reduce the phenomenon of so-called "land banking". It also contributes to a more intensive and thoughtful use of the existing urban infrastructure, which limits the so-called urban sprawl and pressure on natural areas (Kocur-Bera & Pszenny, 2020). In the context of one of the sources of municipal revenue, property tax may also be allocated for the development of public transport, improvement of air quality and urban greenery, adaptation to climate change (e.g. rainwater retention), and brownfield regeneration.

The property taxation method has a multi-faceted impact on so-called *social justice* (Musalimov, 2022). The property taxation system should also be progressive and socially just so as not to exacerbate

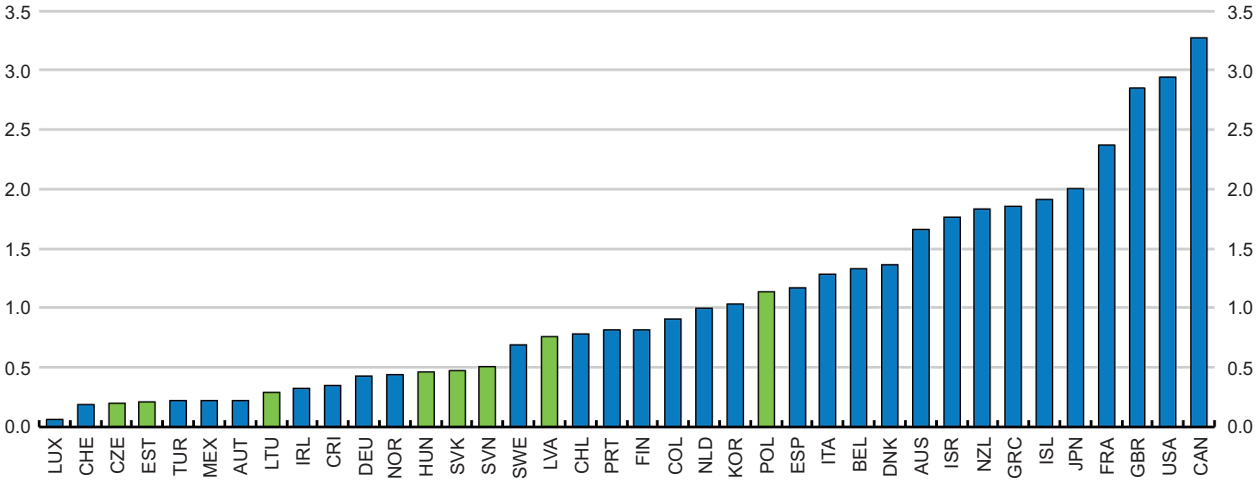


Fig. 1. Revenue from recurrent taxes on immovable property, % of GDP, 2020 or latest available year
Source: (OECDb, 2023).

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economic exclusions, e.g. by putting an excessive burden on elderly inhabitants with lower income.

Countries' economies have different approaches to property taxation systems. This group of taxes includes recurrent/annual tax on ownership (possession, use of property) (RPT), net wealth tax, tax on transfer of ownership (on the acquisition/sale/gift/inheritance of property), capital transaction tax, property value increase tax, property rental tax, etc. (see Fig. 2, which presents property-related taxes using Poland as an example).

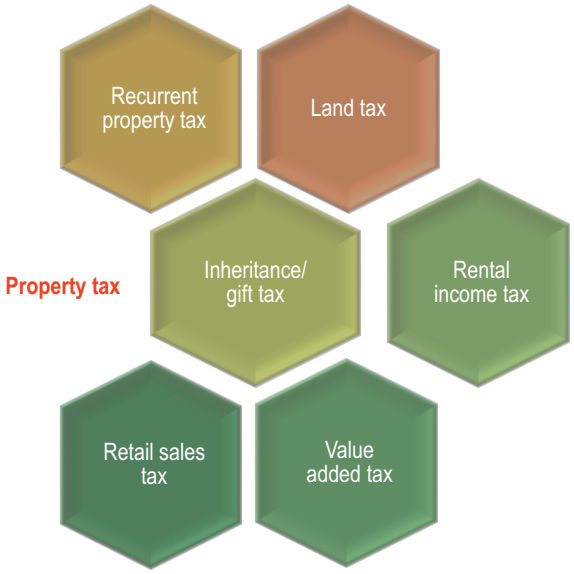


Fig. 2. Taxes related to the life cycle of property, with Poland serving as an example
Source: own elaboration.

Countries also have varying approaches to taxation. Most frequently, taxation targets land, components of land (buildings, structures, paved areas, etc.), or the size of the capital owned/used. In general, property tax is paid by natural persons and legal persons. In some countries, e.g. the United Kingdom, Switzerland and Sweden, only natural persons pay property tax (Stronyanska et al., 2020). The literature also indicates a different approach to who is the administrator of funds derived from property taxes. It can be divided between different levels of administrative management, as is the case in Sweden, Switzerland, Belgium, France, Greece and Iceland. As a rule, however, property tax (recurrent property tax/annual tax) is the main source of local/municipal revenue in the municipality where the property is located. This is the case, e.g. in Estonia and Poland. In such a situation, the tax constitutes the municipality's own revenue and is used for the municipality's daily operations or is one of the sources of funding for public services. Property taxation has a positive effect on municipalities' budgets and is an instrument that enables the decentralisation of revenue (Awasthi et al., 2020).

The method for calculating recurrent property tax (RPT) varies significantly from country to country. Property taxation in European countries also affects different parts of the taxpayer's capital (see Fig. 3).

As shown in Fig. 3, in Europe in 2021, the highest property taxes as a share of private stock were recorded in the United Kingdom at 1.77%, followed by Iceland at 1.14%, and Greece at 1.1%. The lowest ones were noted in Luxembourg (0.05%), Switzerland (0.08%) and Austria (0.10%). In Poland, this indicator amounted to 0.9% (in 2021) and remains at an average level.

Recurrent property tax is calculated in various ways (Carrillo et al., 2021; Mika, 2016; 2017; Park, 2024; Wyatt, 2019). Most often, it is a percentage of: the current market value of the property (e.g. in Denmark); the historical market value (e.g. in Germany); the cadastral value (e.g. Latvia); the mass value (e.g. Estonia); the tax value (e.g. Bulgaria); a special value set by the tax collecting authority (e.g. Romania); the score based on property characteristics (e.g. Slovenia); fixed/variable rates/amounts set by decision makers at the national/local level, based on the minimum remuneration in the market economy (on minimum salary indicators set for the fiscal year (e.g. Ukraine), etc. (Brunori, 2007; Close, 2013; Felis et al., 2023a; Kiss & Clamba, 2022; Preuss, 2024; Spaliński, 2024).

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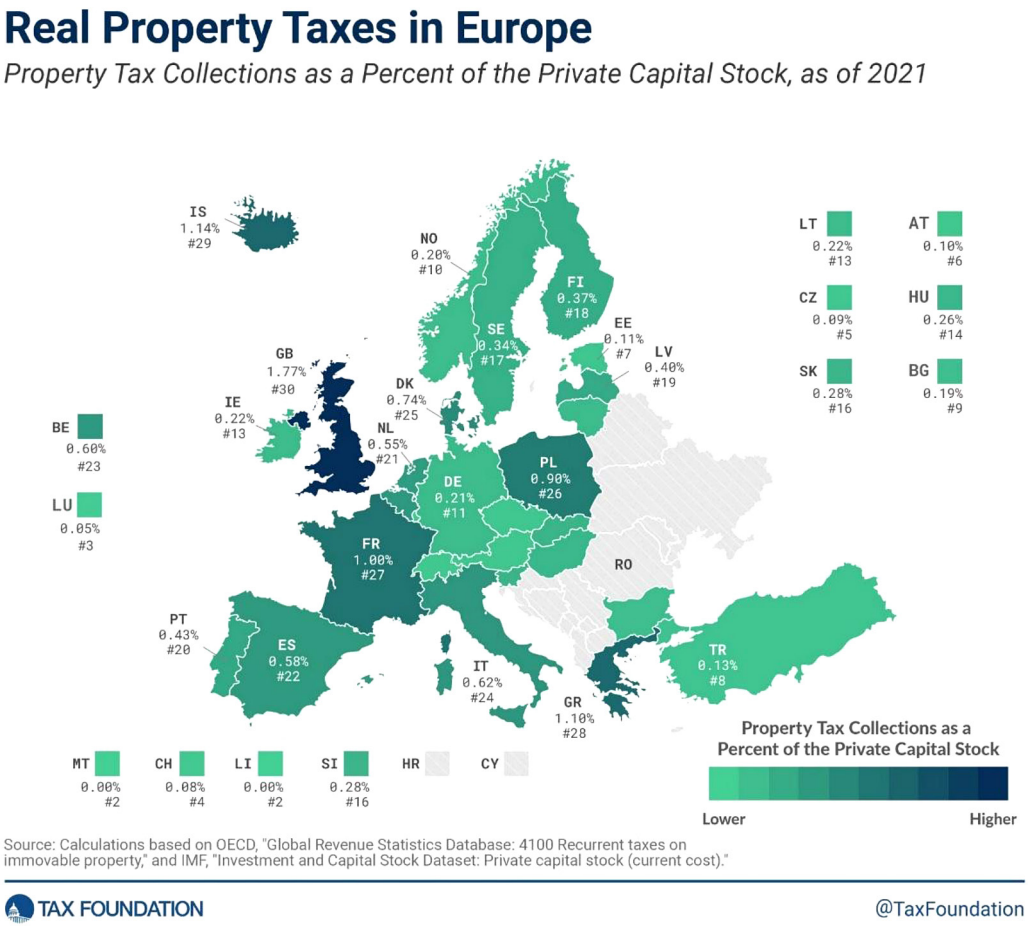


Fig. 3. Property tax as a percentage of the private capital stock
Source: (Tax Foundation Europe, 2023).

LITERATURE REVIEW

In general, recurrent property tax (RPT) is a "levy" that is not positively viewed by citizens (Andriopoulou et al., 2020; Brunori, 2007). Difficulties also arise when attempting to reform it in relation to other taxes. In certain countries, especially those where it is based on the property market value, the low popularity of this tax is due to its volatility and unpredictability (Sheffrin, 2010). The property value increases when it is improved and developed by the owner. There is also an increase when changes, beyond the direct control of individual taxpayers, occur in the neighbourhood. For example, the location of a new business may make the neighbourhood more attractive and increase the property value. The construction of a new road or the development of public transportation (such as new urban rail, metro, or bus stops) may have a similar effect. Consequently, the taxpayer will pay higher property taxes, even though they have not actually contributed to this increase.

Property taxes may also tend to decrease, most often when political decisions regarding layoffs are made, or due to incentives to invest in a specific location, e.g., through the establishment of special economic zones, where property tax is exempt. The introduction of rebates and exemptions results in lower financial revenues for the municipal budget. When deciding to introduce discounts and rebates, municipalities typically raise tax rates for other

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taxpayers to maintain the same level of revenue in the budget.

In the years 2007–2021, due to property tax rebates and exemptions, municipal budget revenue in Poland decreased from 8.4% to 12.93% (see Fig. 4).

In each country, there is also a group of properties that is exempt from property taxation (Bird & Slack, 2004). This mostly applies to properties used by governmental and educational institutions, churches and cemeteries, public hospitals, charities, public roads, parks, libraries, foreign embassies and properties belonging to international organisations, etc.

Different and unequal treatment of taxpayers means that the owners or administrators of taxable properties pay higher costs than those of tax-exempt properties (Slack, 2011). This consequently affects decisions concerning the location of business activities. Certain authors, such as Garcia-Mila & McGuire (2001) and Glaeser (2001), are of the opinion that tax incentives are justified and very much needed. Companies/institutions that are granted exemptions and rebates provide benefits to the community that outweigh the costs. This applies to both business services and environmental degradation. Wassmer (2007) claims that incentives in the form of exemption from RPT may result in the development of one location at the expense of another. RPT rebates and exemptions may also lead to unfair competition between companies, and result in a situation in which no large investment project would be implemented without tax incentives.

The implementation of a recurrent property tax (RPT), based on property value, has both advantages and disadvantages. The advantages include: (a) increased revenue for local governments, which may result in the expansion of infrastructure and the development of spatial economy; (b) an increase in budget revenue without changing the tax rates; (c) servicing property value-based tax using IT techniques increases safety in property market transactions, clarifies ownership issues, facilitates the determination-n of the actual property value, and prevents investment speculation; (d) this tax may contribute to the revival of the property market (Kozłowski, 2023).

This method for calculating RPT also has its adverse effects. Property value-based tax does not encourage owners to repair and modernise, as this may contribute to an increase in the property value, and thus affect the rates of tax payable. In addition, an *ad valorem* tax (1) is based on characteristics of properties that are difficult to determine without doubt; (2) it contributes to the impoverishment of citizens, as it fails to lead to an increase in their income;

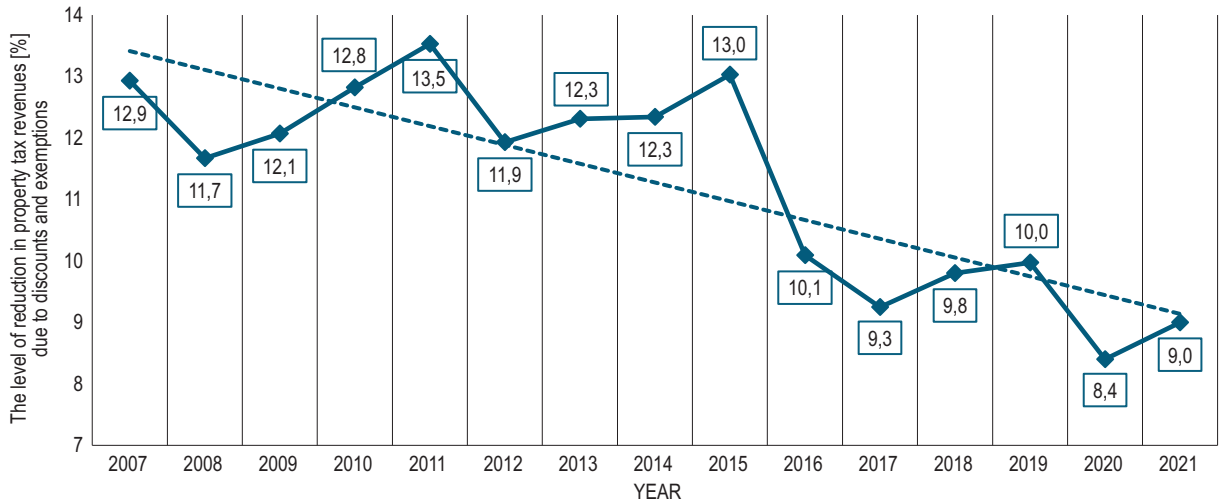


Fig. 4. Reduction in property tax revenue due to tax rebates and exemptions granted in selected municipalities in Poland in the years 2007–2021

Source: own elaboration based on (Felis et al., 2023a; 2023b).

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(3) implementing a value-based system is costly, as it requires hiring specialists to appraise properties; (4) it imposes the development of a catalogue of tax exemptions (e.g. power lines, airports, ports, energy generation facilities, etc.); (5) it leads to an increase in rental prices.

The implementation of a tax reform also involves the emergence of gainers and losers. Taxpayers who were overtaxed with RPT before the reform will pay a lower tax, whereas taxpayers who were relatively undertaxed before the reform will pay a higher tax (Andriopoulou et al., 2020; Angelovska & Časni, 2022; Slack, 2011). Those affected by policy changes (even if they are in the minority) tend to express their disapproval very loudly, because they value their losses more than those who have gained. Moreover, as losses tend to be concentrated, and gains tend to be dispersed, those adversely affected by the tax reform will be motivated to devote time and resources to political activities to oppose the reform that has forced them to pay higher fees. Another problem associated with the RPT reform is the suspicion that the change in tax policy will be used by the government to raise the overall level of taxes in a manner that the scale of tax revenue increase will exceed the scale of rebates and exemptions. Consequently, the authority that introduced the changes is not viewed favourably in subsequent elections.

Tax reforms are not revenue-neutral (Andriopoulou et al., 2020), and their aim is to increase local government revenues. Therefore, the success of the RPT reform depends mainly on public education, and the taxpayers should understand how their property taxes are calculated (Close, 2013). The success of the RPT reform may also depend on the introduction of a gradual mechanism. Tax breaks and rebates will still be necessary, especially for low-income taxpayers (Slack, 2011). According to Bird & Slack (2004), reforms of recurrent property taxes in countries that have implemented them have been very difficult. Regardless of how economically desirable the long-term outcome of such a reform may be in terms of equality and efficiency, the transitional effects of changes to the taxation system are politically undesirable (Andriopoulou et al., 2020; Blöchliger, 2015) to such an extent that those currently in power are preventing any attempts at reform in this direction. Discussions on changing the property taxation method have been ongoing in Poland for three decades (Para, 2020).

Currently, recurrent property tax (RPT) is based on rates specified in legislation, which depend on the use of the property and its area (Bird & Slack, 2004; Felis et al., 2023). To date, no *ad valorem*-based RPT model that the government could decide to apply has been developed, although attempts to develop such a model between 1995 and 2010 were at an advanced stage. The current method for calculating the tax in Poland is often criticised as being non-equivalent. The lack of equivalence is because properties with a high capital value are burdened with RPT to an extent comparable to that of properties with a value several or several dozen times lower.

The aim of the study is to compare the rate of recurrent property tax (RPT), referred to the reference property, considering the methodologies applied in selected homogeneous countries. A reference property is a property that has the attributes of the most frequently purchased/sold residential property in the region under analysis. RPT calculation methodologies in homogeneous countries were selected for comparison. The following research hypotheses were formulated in the study.

H1: The effective level of RPT burdens in Poland does not significantly differ from the European average, despite the use of a non-value-based calculation method.

H2: Countries characterised by a similar standard of living tend to employ more comparable RPT calculation methodologies than countries with divergent socio-economic conditions.

H3: Cluster analysis, including Ward's method, enables the statistically significant identification of country groups sharing similar economic, fiscal, and tax-related characteristics.

H4: The primary barriers to RPT reform in Poland are social concerns regarding increased tax burdens and political concerns related to potential loss of electoral support among policymakers.

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H5: The implementation of a value-based RPT model in Poland would enhance fiscal efficiency and improve the transparency of the tax system compared with the current area-based model.

The article comprises the following sections. The Introduction section reviews the literature in terms of the role and methods of property taxation. In the research part, surveys were used to select a group of attributes that were employed to select homogeneous countries that have become the basis for developing scenarios of RPT rates for the reference property. The results were analysed, compared, discussed and summarised.

MATERIALS AND METHODS

The study was conducted in several stages, which are summarised in a block diagram (see Fig. 5).

The first stage of the study was based on an analysis of indicators describing socio-economic conditions, including the Human Development Index (HDI, 2025), Quality of Life (QoL, 2025), Better Life Index (BLI, 2025), and Gross National Happiness (GNH, 2025). According to Gaweł-Luty (Gaweł-Luty & Lemańczyk, 2022) and Schalock (2000), living conditions comprise both subjective and objective dimensions, encompassing physical and mental well-being, social relations, the living environment, prosperity, economic position, belief and value systems, the external environment, and the degree of individual independence. The objective dimension reflects the economic aspects of life and includes indicators such as income level, inflation rate, unemployment rate, income inequality, and poverty rate.

Based on HDI, QoL, BLI, GNH, and data availability, a set of indicators was selected and incorporated into a survey administered to respondents. A point-allocation method was applied (0–10 scale), allowing respondents to distribute points freely, provided that the total did not exceed 10. A higher score indicated greater perceived importance

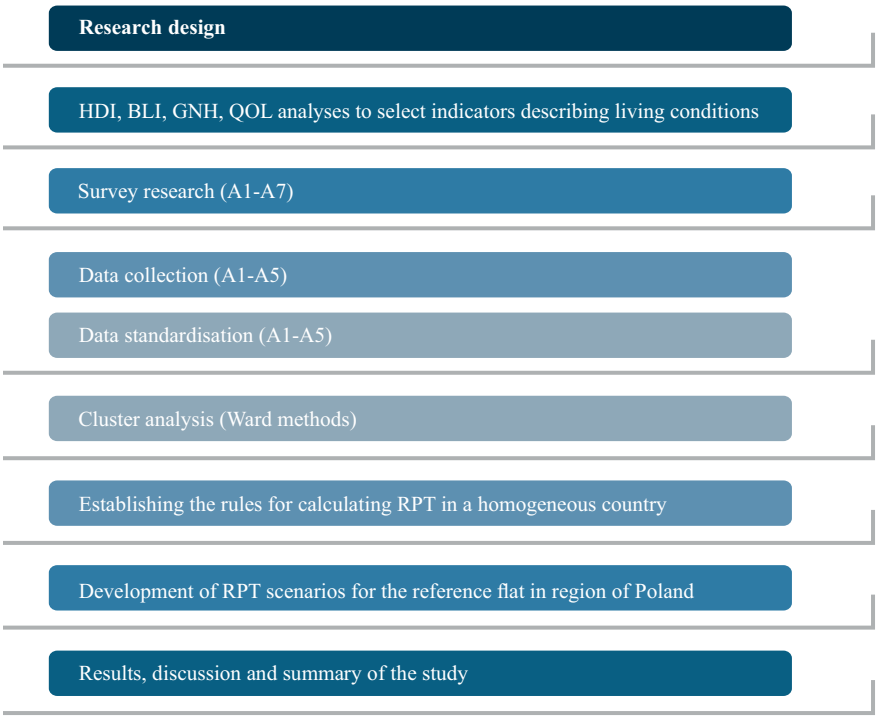


Fig. 5. Methodology diagram of the research
Source: own elaboration.

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of a given attribute. The survey included eight attributes, and the sample size was sufficient to identify key trends and preferences. The results informed subsequent analytical and methodological decisions. Indicators receiving the highest number of points were selected for further analysis, and detailed data was collected for 27 countries. The selection of countries depended on several factors, including the existence of a comparable form of recurrent property taxation (e.g., in Estonia, RPT is levied solely on land) and the availability of sufficiently detailed information on RPT calculation methods to enable the model to be adapted to Polish conditions. Using eight attributes, Ward's hierarchical clustering method was applied to identify socio-economically homogeneous countries. Ward's method generates clusters characterized by minimal within-group variance and tends to produce groups of comparable size. It is particularly suitable for analyses aimed at the precise classification of units exhibiting similar characteristics, such as countries, municipalities, or households.

The attribute *GDP per capita* (A1) is the basic measure of a country's wealth which shows the average income per capita (Trading Economics, 2025); *housing price relative to income* (A2), metric used to evaluate housing affordability, compares the median home price in a region to the median annual household income (Housing price relative to income, 2025); *average price per square meter of housing* (A3) (Average price, 2025); *average monthly net salary* (after tax) is the lowest rate of remuneration (full-time job, in EURO) (Average monthly net salary, 2025) (A4); *cost of living* (A5) the cost of the so-called basket of basic food products in relation to the minimum remuneration, taking into account six groups of products (bakery products, dairy products, fruit, vegetables, cereals, meat, etc.), satisfying the minimum nutritional requirements of an average adult over one month (Cost of Living Index, 2025); *inflation rate* (A6) takes into account the increase in the overall price level (Inflation Rate, 2025); *unemployment rate* (A7) shows what percentage of citizens who are able to work and actively seeking employment are unemployed (Unemployment rate, 2025); *minimum salary* (A8) (Minimum salary, 2025). The survey results are provided in Fig. 6.

The selection of homogeneous countries for further analyses was based on the attributes that received the highest scores in the survey: *PKB per capita* expressed in USD, according to purchasing power parity (A1), *housing price relative to income* (A2); *average price per square metre of flat* (A3); *average monthly net salary* (A4); and *cost of living* (A5). Table 1 summarises the basic parameters of the analysed data.

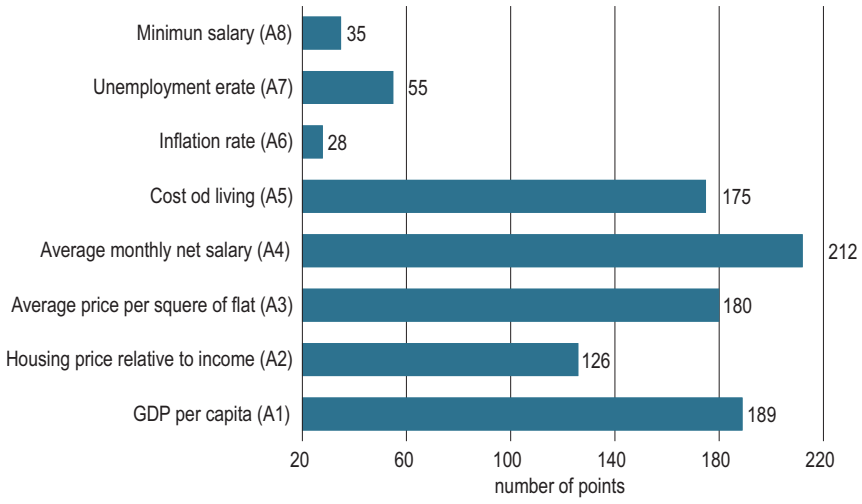


Fig. 6. Results of the survey conducted
Source: own preparation.

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Table 1. Basic parameters of the analysed data in the group of countries under study

Coefficient	Unit	Average	Median	Min	Max	Sdev	CofVar
A1	USD	48,203.7	41,100.0	27,000.0	117,700.0	21,304.1	44.2
A2	Indicator	10.2	10.1	6.5	14.3	2.38	23.3
A3	EURO	281.7	261.8	132.1	712.7	119.2	42.3
A4	EURO	1,920.8	1,500.5	865.2	5,276.2	1,015.3	52.8
A5	Indicator	55.1	51.6	35.2	75.7	11.4	20.7

Source: own elaboration.

Data from 27 European countries (members of the OECD) were analysed. To this end, the agglomeration grouping method, also known as Ward's method, was applied. It uses the minimisation of the sum of squares of deviations within clusters. At each level, the pair, which, because of being combined, yields a cluster with minimal distinction, is selected from the available and combinable pairs of clusters. The measure of cluster diversity in relation to mean values is the error sum of squares (ESS) (Wałęga et al., 2009), described by formula (1).

$$ESS = \sum_{i=1}^{k} (x_i - \bar{x})^2, \quad (1)$$

where:

x_i – value of the variable that is the segmentation criterion for the i-th object;

$\bar{k}$ – number of objects in the cluster.

The Euclidean distance, described by formula (2), was used as the similarity criterion.

$$d(x, y) = \sqrt{\sum_{i=1}^{p} |x_i - y_i|^2} \quad (2)$$

where:

$d(x, y)$ – Euclidean distane;

x_i, y_i – coordinater of the objects under study.

The standardisation of the objects under study was carried out using formula (3) (Pawlak, 2015):

$$z_i = \frac{x_{i-\bar{x}}}{S_x} \quad (3)$$

where:

x_i – mean value of the variable;

S_x – standard deviation of the variable in the sample

The development of RPT rate scenarios for the reference property, based on the methodology applied in a homogeneous country, required certain assumptions to be made. These assumptions are summarised in Table 2.

The developed RPT rate scenarios for a reference property were based on the assumptions provided in Table 3. The countries selected were those whose rules for calculating recurrent property tax were applicable under Polish conditions. The market value and the ratio of market value to other types of value provide the basis for calculating RPT, as indicated in the literature (Knutovic & Zelniene, 2025; Prajsnar, 2024; Realista, 2023; Radvan & Svobodova, 2023; Sarmite, 2020; Uniform real estate property tax, 2022).

The property adopted as the reference was a residential property with an area of 48–55 m^2, with a market value of PLN 4,400–11,000/m^2, including a share in the parcel of land, with a market value of PLN 104–305/m^2. The variability of parameters of the reference property was determined by the location, as the characteristics and values of the reference property vary across different regions of Poland (Poland is a unitary country divided into 16 regions known as voivodeships). The source of information on the reference property parameters was the data from Statistics Poland (2025). In cases where a homogeneous country had fixed tax rates for a particular type of property, regulated by normative acts or indicated by local/regional/national authorities,

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Table 2. Adopted calculation assumptions in the scenarios

Item	Name of the country	Adopted assumptions
1	Greece	EUR 2.50/m^2 – flats to EUR 500.00/m^2 EUR 16.25/m^2 – flats above EUR 50,000/m^2 Tax rates have been adopted in proportion to the value of a square meter in the region under analysis.
2	Czechia	CZK 5.00 average for m^2 of flat, indicators for zones in relation to the number of inhabitants of the capital of the region.
3	Lithuania	0.5% – when the taxable value of the property is from EUR 150,000 to EUR 300,000; 1% – when the taxable value of the property is from EUR 300,000 to EUR 500,000; 2% – when the taxable value of the property is over EUR 500,000, the average residential property tax is around EUR 500.00 per year.
4	Slovakia	EUR 0.033/m^2 for buildings/apartments and 0.25% of the real estate value of land and taxable units [Average PLN 1.15/m^2 in 2024, where 1 EURO = 4.4 PLN].
5	Poland	Maximum tax rates per m^2, set in line with legislation, depending on the area and the type of use.
6	Malta	Recurrent property tax is not levied on residential property.
7	Croatia	Recurrent property tax is not levied on residential property.
8	Slovenia	Residential property with an area of up to 160 m^2 is exempt from recurrent property tax.
9	Estonia	Recurrent property tax is levied only on land.
10	Portugal	The official value of residential property is approximately 70% of the market value, with an average tax rate of 0.34% of the tax value.
11	Hungary	EUR 3.00/m^2 of flat per annum, and EUR 1.50/m^2 of land (average rates).

Source: own elaboration based on (Kiss & Clamba, 2022; Knutovic & Zelniene, 2025; OECD, 2023; Prajsnar, 2024; Radvan & Svobodova, 2023; Realista, 2023; Sarmite, 2020; Taxation of acquisitions, 2025; Uniform real estate property tax, 2022).

these were transposed according to the current exchange rate [EUR 1.00 = PLN 4.4; CZK 1.00 = PLN 0.17] (NBP, 2025).

Calculations, modelling, and visualisations were performed using the licensed Statistica 13.3 software package, Microsoft Excel, and Bing, all of which are available under the university license.

RESULTS AND DISCUSSION

The attributes under analysis (A1–A5) varied across the 27 OECD countries studied. GDP per capita [in USD] (A1) was the highest in Luxembourg and amounted to USD 117,700; in Bulgaria, it was almost four times lower (USD 27,000). *The indicator of housing price in relation to income/salary* (A2) was the highest in Slovenia (14.26), whereas the lowest, amounting to 6.73, was noted in Belgium. The average price per m^2 of a flat was the highest (A3) in Luxembourg, amounting to EUR 712.7, whereas the lowest price, EUR 132.11, was noted in Bulgaria. The lowest *average monthly net remuneration* (A4) among the OECD countries under analysis was in Romania (EUR 865.24), and the highest (six times higher than the lowest one) in Luxembourg at EUR 5276.2. The cost of a *basket of basic food products* (A5), in relation to the minimum remuneration, is the lowest in Malta (35.2), while being twice as high in Denmark (75.7).

The application of cluster analysis – Ward's method, based on five attributes (A1–A5), enabled the selection of three homogeneous clusters at the cut-off level of 1.55 of the Euclidean distance. Poland was part of the largest cluster, comprising 11 homogeneous countries (see Fig. 7), along with Croatia, Lithuania, Hungary, Greece, Portugal, Slovakia, Czechia, Slovenia, Estonia, and Malta.

In a homogeneous group of countries, tax calculation is most often based on property value or on fixed rates set/imposed at the national, regional or municipal level. The value used by economies is most often referred to as a cadastral/tax/mass/average market/cost/ income/lowest market/administrative value. In most countries, this value is either derived

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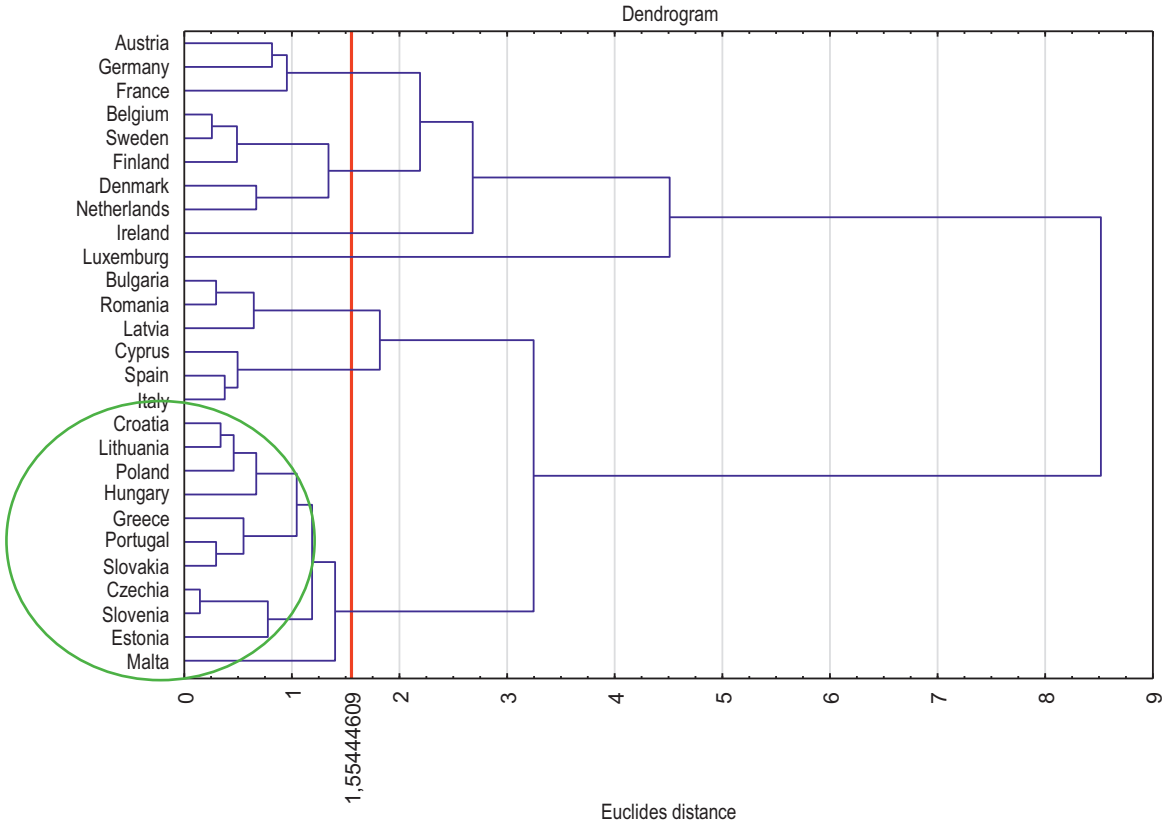


Fig. 7. Dendrogram showing groups of countries similar in terms of the A1–A5 attributes under analysis
Source: own elaboration.

from the current market value or closely linked to it. According to many literature sources (Jankava et al., 2016; Knutovic & Zelniene, 2025; Prajsnar, 2024) the relation of a current market value to the value providing the basis for calculating the recurrent property tax (RPT) may even be 1:10. Table 3 summarises the most important guidelines for calculating recurrent property tax in selected countries.

Municipal/local governments, which are most often RPT beneficiaries, have introduced financial tools to support the poorest members of society in the form of tax exemptions, tax rebates, or threshold values below which taxpayers are not required to pay tax. For example, in Denmark, RPT is not payable on properties with a value of up to EUR 400,000; in Slovenia, residential properties with an area of up to 160 m^2 are exempt from RPT; and in Estonia, only land tax is levied (land designated or used for residential development is usually untaxed). In countries such as Croatia and Malta, recurrent property tax is not levied on residential property. There are also reverse tools that impose higher RPT on citizens who either own high-value properties or multiple properties (e.g., in Portugal) (Property Tax Portugal, 2025; Vartasova & Cervena, 2022). In European countries, there are also systems based on the income value (e.g., France), the cost of producing part of the property (e.g., Poland – tax on buildings used for economic/business purposes), or based on the amount of the minimum official salary (e.g., Ukraine). Taxation systems/models are not uniform and usually tend to be based on cultural and economic conditions.

A detailed analysis of the rules for calculating recurrent property tax (RPT) in a group of homogeneous countries enabled the selection of seven countries

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Table 3. List of the names of property taxes levied annually, and the tax basis

Country	Tax name	Tax base
Denmark	Property value tax	Assessed value exceeding EUR 409,000
Germany	Property tax	Historical property value is lower than the market value
Netherlands	Property tax varies by municipality	Assessed property market value
Spain	Impuesto sobre Bienes Inmuebles (IBI)	Cadastral value 0.3–1.1%
Norway	Local property tax	Local assessment market/property value
Estonia	Land tax	Value of the land due to mass appraisal
Bulgaria	Annual property tax	Assessed tax value by the local authority
Lithuania	Immovable property tax	Average market value (once for 5 years), for land 50% of the market value (0.2–3% of the cadastral value)
Latvia	Real estate tax	Cadastral value for urban properties, special value for non-urban properties (0.2–0.6%)
Slovenia	Tax on buildings, and compensation for the use of building land	The number of points for a particular plot resulting from the score, with rates imposed by the authorities
Czechia	Local property tax	Assessed value CZK 2.00 to 10.00/m^2 for buildings
Moldova	Recurrent real estate tax and land tax	Estimated property value for the cadaster
Slovakia	Apartment tax, building tax, land tax	EUR 0.033/m^2, land tax 0.25% of land p-value
Romania	Tax on building unimproved land	Taxable value as legislated in the table
Ukraine	Property tax, land tax	Normative land value: tax rate is based on the minimum official salary
Greece	Unified real estate property tax (ENFIA)	EUR 2.00–16.00/m^2 cadastral value, if the cadastral value exceeds EUR 200,000, an additional tax of 0.1% to 1.15% of the cadastral value; cadastral value up to EUR 500.00/m^2 – a tax of EUR 2.5/m^2; cadastral value above EUR 5,000/m^2 – a tax of EUR 16.25/m^2
Hungary	Local building and land tax	The choice of taxation method depends on the municipality. Most municipalities have opted for an area-based model over a value-based model. Recurrent property tax varies depending on location. The average annual cost is HUF 1,100/m^2 (approximately EUR 3.00/m^2) per annum for residential property (max. EUR 6.00), or a maximum of 3% of the value. Land tax is HUF 500.00 per m^2, or max. 3% of the market value
Poland	Property tax, agricultural tax and forestry tax	Maximum tax rates are specified in the Act, and depend on the type of property, location, area or the value of its components. Municipality may change the tax rate, but only up to the maximum amounts specified in the Act
Finland	Municipal land tax Municipal property tax	Value assessed for undeveloped land, taxable value or appraisal value
Portugal	Imposto Municipal sobre Imóveis	Recurrent property tax is calculated based on the official value, which is approximately 70% of the market value, with the tax rate ranging from 0.3% to 0.5% of the official value

Source: own elaboration based on (Jankava et al., 2016; Kiss & Clamba, 2022; Knutovic & Zelniene, 2025; OECD, 2023; Prajsnar, 2024; Property Tax Portugal, 2025; Radvan & Svobodova, 2023; Realista, 2023; Ruzha et al., 2014; Sarmite, 2020; Uniform real estate property tax, 2022; Vartasova & Cervena, 2022).

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in which the method for calculating the tax is sufficiently clear to allow the authors to develop scenarios for the reference property located in Poland, based on the methodology used in a homogeneous country. Fig. 8 summarises the individual scenarios of the recurrent property tax rates for seven homogeneous countries (according to attributes A1–A5) based on the assumptions made for the reference property, i.e. for Poland, Lithuania, Greece, Czechia, Hungary, Portugal and Slovakia.

The scenarios indicate that the lowest RPT levels, based on assumptions made for the reference property, are observed in Slovakia, Czechia, and Poland. These countries border one another and share a similar history and economic conditions. In this group of countries, RPT is calculated based on fixed rates per m^2 of residential area, set by the government or local authorities. Despite the introduction of indicators increasing the tax rate (e.g. in Czechia), the RPT level in relation to the remaining countries under analysis is very low. Only in these three European countries belonging to the OECD has the RPT taxation model remained unchanged since the end of the communist era. Such models, which are fixed, most often depend on the use of the property and its area. The value of the capital is irrelevant, which means that properties with a very high value, located in the capital city, and properties located in areas suffering from poor transportation and requiring complete renovation, are subject to RPT at a similar level. Since the analyses in the article concern residential property, the models adopted only apply to RPT for this type of property. The situation is completely different for property used for business or agricultural purposes. For example, in Poland, taxation of agricultural property is linked to the profitability and suitability of land for agricultural purposes, whereas Slovakia and Czechia use value multipliers for agricultural land, or coefficients that bring the taxation system closer to the value-based approach, and help mitigate certain inequalities (Pal, 2025).

In Hungary, the RPT level is higher than in Poland, Slovakia and Czechia. The method for calculating RPT in Hungary may be based on the market value (set by the municipality) or calculated using a fixed rate per usable area (Szalai & Tassonyi, 2004). The municipal authorities decide how the tax will be calculated. In recent years, the model based

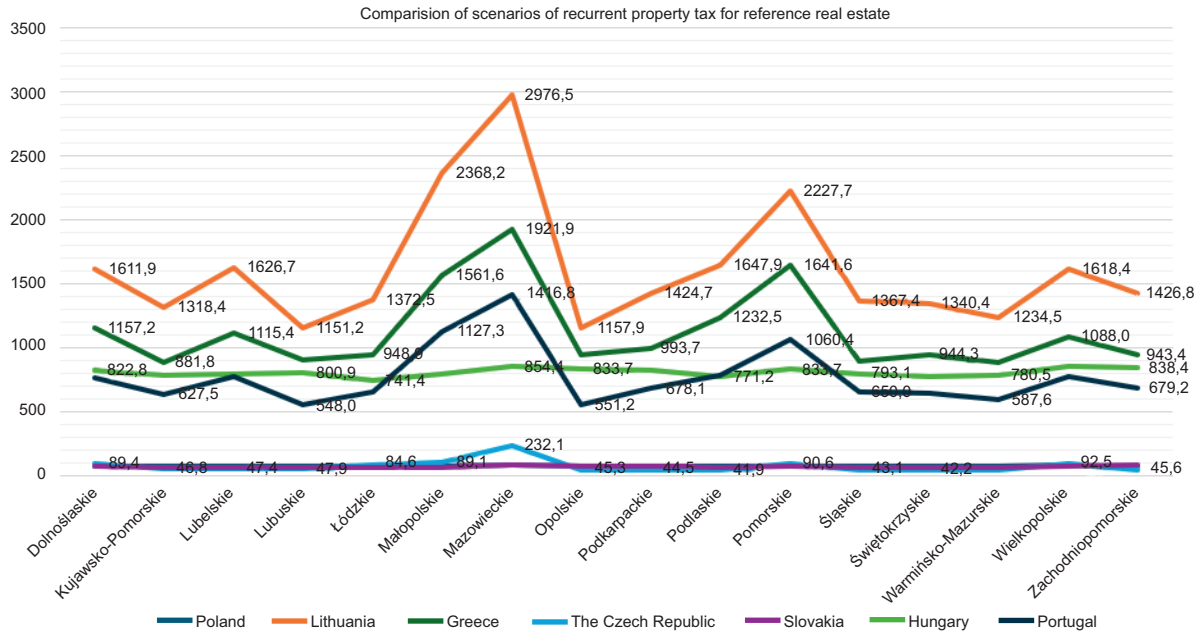


Fig. 8. Summary of RPT rate scenarios for the reference property using the methodologies used in a homogeneous country
Source: own elaboration.

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on fixed rates has been most applied in this country, and, therefore, the dynamics of tax rates are low.

In Lithuania, Greece and Portugal, the method for calculating the RPT rate is based on the cadastral/tax value, which is derived from the market value. There is, therefore, a noticeable variation in the RPT rate across different regions. The higher the property value, the higher the RTP rate for the reference property. These trends are evident in Fig. 8. The disparity in RPT between the highest level in Slovakia/Czechia/Poland, and the highest level in Lithuania, is very large, i.e., several, or even several dozen (up to 38) higher.

Diagram 8 also shows the dynamics of changes in RPT. For the fixed rates imposed at the national/regional level, the dynamics of changes in the tax rate in the individual regions under analysis are at a low level, which applies, e.g., to Poland, Czechia, Slovakia and Hungary. The differences in the tax rate result from the size-related parameters adopted for the reference property, as tax rates are not particularly sensitive to the property's value or location. As for RPT, based on the mass/cadastral/tax values linked to the market value of the property, the dynamics of changes in RPT are more rapid. Not only does this method for calculating RPT consider the type of property, but also its regionally differentiated value.

In Mazowskie Voivodeship, the reference property is the largest (54.6 m^2), and the property value is the highest. Due to these two parameters, based on the methodologies used in homogeneous countries, the highest RPT level is achieved, regardless of how it is set.

The method for calculating *ad valorem* RPT highlights wealthy regions. Using the methodologies employed in Greece, Lithuania, and Portugal as examples, it is possible to precisely identify the regions where property values are the highest. In the analysed scenarios based on the methodologies used in homogeneous countries, these are Mazowieckie, Małopolskie and Pomorskie Voivodeships. In contrast, using methodologies for calculating RPT, based on fixed indicators for the selected type of property (Czechia, Slovakia, Poland and Hungary), the differences in the RPT rate are flattened, evenly burdening taxpayers and not considering the so-called "social justice" factor.

Revenue from property ownership taxes plays a varied role in the functioning of the state. Revenues are usually a key item in the budgeting process for regional and local communities' own tasks. Decision-makers most often regard this revenue as a source of funding for public services. Recurrent property tax affects the citizens' household budgets and represents an uneven burden on the incomes of Europeans.

Each of the recurrent property tax (RPT) systems examined exerts a distinct influence on the functioning of the real estate market and, consequently, on local development processes. *Ad-valorem* RPT levels (Lithuania, Greece, Portugal) act as an instrument limiting speculative behavior in the housing sector, discouraging the maintenance of vacant residential units and increasing pressure on the rental market, where the tax burden is partially transferred to tenants. Conversely, low RPT levels (Slovakia, Hungary) create favorable conditions for investment in real estate yet may contribute to a higher prevalence of vacant dwellings due to insufficient rental demand. At the same time, they significantly constrain the fiscal capacity of local governments, reducing their ability to finance public tasks.

Area-based RPT burdens (Poland, Czechia) do not substantially affect investment decisions, nor do they curb speculative practices or influence the scale of residential vacancy. These systems also fail to reflect the actual value of property assets, do not generate pronounced regional disparities, and remain socially acceptable due to their stability and predictability. The symbolic RPT model applied in Slovakia and Hungary performs a function that is predominantly administrative rather than fiscal. From a policy perspective, such a model is attractive to property owners; however, it results in very low revenue streams for local governments and provides no effective instruments for regulating the vacancy market.

The imposition of property tax as a relation to the value of private capital reflects the burden of this tax in the economy of a particular country. Recurrent

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property tax is part of the total taxation of property. From a global perspective, property tax also includes (depending on the country's economy): corporate income tax, private income tax, land tax, value added tax, transfer tax, liability tax, local tax, retail sales tax, inheritance tax, etc. Therefore, the recurrent property tax is only a fragmentary part of the total taxation of property.

According to the analysis by Tax Foundation Europe (2023), a nonprofit think tank specialising in tax policy analysis, the property tax burden (in relation to the capital value), among homogeneous countries, is the highest in Greece (1.13%), Poland (0.95%) and Portugal (0.41%), and the lowest in Czechia (0.10%), Lithuania (0.28%), Hungary (0.25%) and Slovakia (0.28%) (see Fig. 9).

The study presented in the article focused on the recurrent property tax, i.e. only part of the property-related taxation. Considering all property taxation methods in Poland in relation to the value of capital, Poland has one of the highest levels of taxation among the homogeneous countries analysed (see Fig. 10).

When examining the RPT ratio and the overall property taxation (see Fig. 11), Poland has an average level of taxes among the homogeneous countries under analysis. The highest level was noted in Greece.

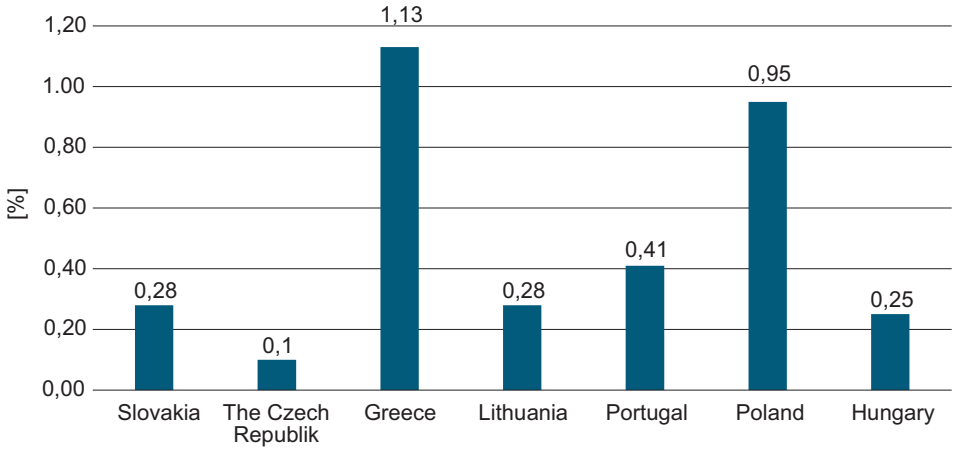


Fig. 9. Property tax as a share of private capital stock
Source: own elaboration based on Tax Foundation Europe (2023; 2025).

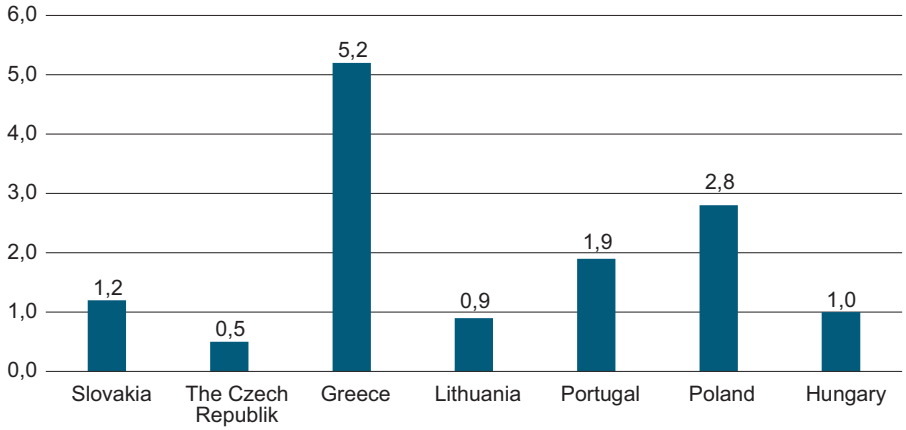


Fig. 10. Taxes on property as % of total taxation
Source: own elaboration based on Tax Foundation Europe (2023; 2025).

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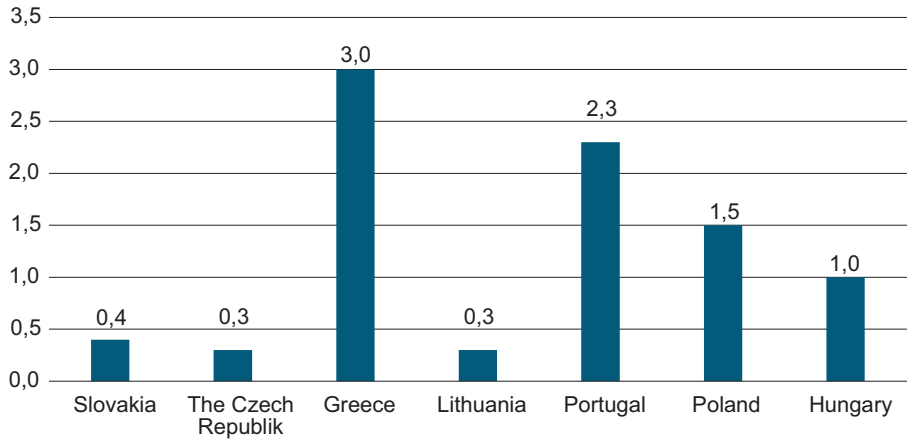


Fig. 11. Taxes on property as % of GDP (2022) in a homogeneous country
Source: own elaboration based on Tax Foundation Europe (2023; 2025).

This level is higher than in Lithuania or Portugal, where RPT is based on a value derived from market value.

A comparison of taxation rates in relation to the GDP shows similarity. It is the highest in Greece and the lowest in Czechia. Poland is at an average level of 1.5%. Is it therefore reasonable for the authorities to strive to change the way the property is taxed in Poland due to the low RPT level, given that the overall property taxation in Europe is at an average level?

The European Commission data reveal a gradual decline in the property tax revenue in relation to the GDP in EU countries (see Fig. 12). This trend persists in most Member States despite the predominance

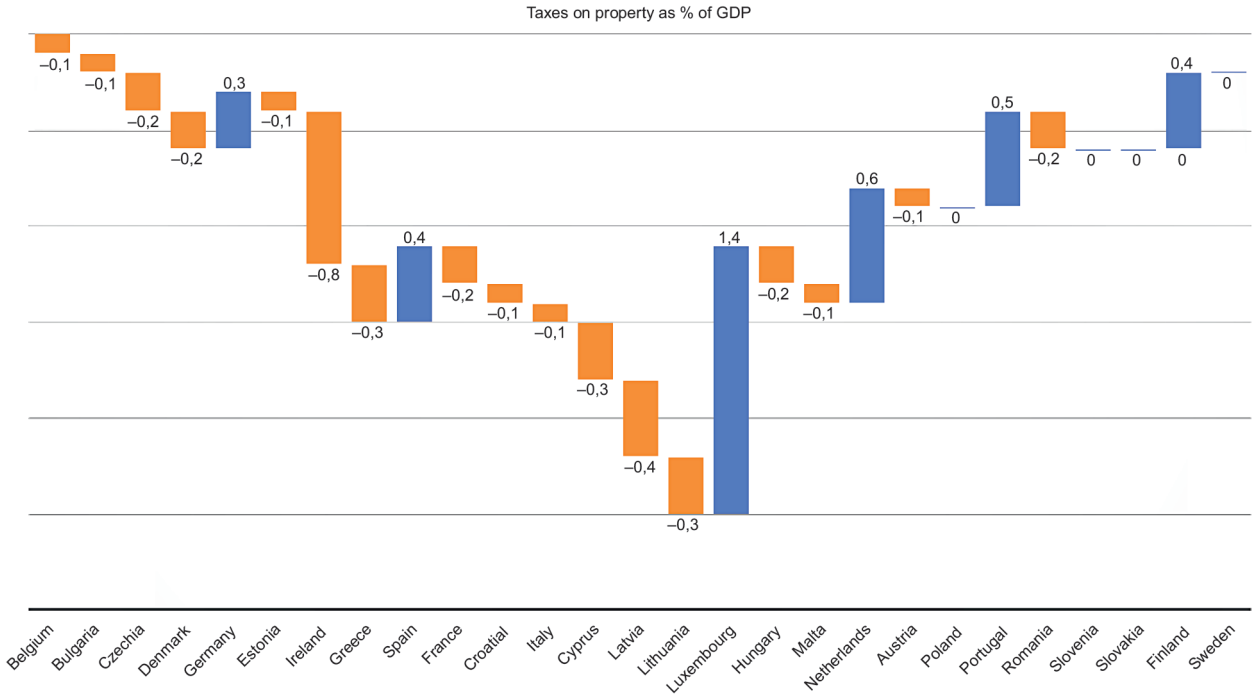


Fig. 12. Taxes on property as % of GDP (2022) in OECD countries
Source: own elaboration based on Tax Foundation Europe (2024; 2025).

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of calculation methods based on the tax/market/cadastral value. The OECD results also suggest that value-based systems find it difficult to keep pace with property prices. Between 1995 and 2020, property prices increased almost threefold, compared to property tax revenues (OECD, 2022a; OECD, 2023).

The introduction of RPT based on property value in Poland may considerably raise its level in relation to the current level. However, a reform of RPT should not only concern this part of property taxation but the entire property taxation system in Poland, as well as the system of taxation of agricultural activity (under the current system, taxation of agricultural property is linked to its profitability).

In Poland, several strategic approaches may be adopted. The first strategy involves a transition to an ad valorem RPT model (as applied in Lithuania). This approach offers benefits such as greater equity in the taxation of wealth, increased revenue for local governments, and the introduction of an instrument for addressing residential vacancy. The political risks associated with this strategy include a potential rise in public dissatisfaction due to higher tax burdens in large urban centers, as well as the need to establish a comprehensive property valuation system.

The second strategy consists of maintaining the existing area-based model while introducing targeted adjustments. Such adjustments could include higher RPT rates for second and subsequent dwellings, for vacant properties, and tax relief for low-income households. This approach carries relatively low political risk and preserves the stability of the current system.

A third option is a mixed-model RPT system, combining the area-based approach with a value-based component. This strategy generates moderate tax burdens for citizens while ensuring greater fairness in relation to the value of property assets.

At the current stage of the public debate, it is essential to articulate the fundamental objective of the recurrent property tax (RPT) policy. A clear determination is required as to whether the policy should primarily pursue greater equity in the taxation of wealth, emphasize social fairness, or prioritize stability and broad societal acceptance. Alternatively, the principal aim may be to strengthen the fiscal capacity of local governments by increasing their revenue base. The formulation of this objective constitutes a critical point of departure for any subsequent reform of the RPT system, as it defines both the normative framework and the operational direction of the proposed changes.

Stability and social acceptance constitute the strongest arguments in the debate on RPT reform. Social stability represents a critical point in the implementation of any systemic change. Property taxation concerns assets rather than income, is characterized by regularity, and is intrinsically linked to one's place of residence, thereby touching upon a deeply personal relationship between citizens and the space they inhabit. For this reason, society expects the tax to be predictable, consistent over time, easy to understand, and free from sudden increases. The current model operating in Poland meets these expectations and generates a sense of fiscal security.

Social acceptance stems from the fact that RPT does not significantly affect household budgets, does not alter decisions regarding the purchase or sale of property, and its method of assessment does not raise concerns about arbitrariness. The introduction of a new RPT system may, however, prove socially challenging, as it heightens fears of increased financial burdens, including for dwellings purchased many years ago. It may disproportionately affect low-income households residing in high-value locations. Public resistance is also fueled by concerns that excessively high RPT values may be assigned by the administration.

The implementation of reforms should proceed gradually, for example through a phased introduction of the new system (e.g., 20% of the new model per year) or by imposing a cap on the maximum annual increase in the tax burden (e.g., a percentage limit). The new, higher rules may apply only to newly purchased properties. Additional measures may include income-based reliefs (e.g., the tax may not exceed a specified share of household income), protections for seniors and low-income households, freezing the tax above a certain age threshold, the

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possibility of deferring payment until the property is sold, and special reliefs for people with disabilities (Philips, 2025). Another important element is distinguishing between a "primary residence" and "investment property," with lower rates applied to the first, owner-occupied dwelling and higher rates imposed on additional properties, vacant units, and investment-oriented housing.

Is it possible to accomplish such a difficult task under the current political climate? The latest tax reform in Poland, implemented in 2022 (Polski Ład 2.0, 2025), encountered numerous complications during its implementation, resulting in controversy and negative reviews. Is Polish society ready for more changes?

This study has several limitations that should be considered when interpreting the findings. First, the analysis relies on heterogeneous international data, which may reduce cross-country comparability. Second, the examined property tax systems differ structurally across countries, limiting the precision of direct comparisons. Third, the use of a reference property, although analytically useful, simplifies the complexity of national housing markets. Fourth, cluster analysis is sensitive to variable selection and methodological choices, which may influence the resulting groupings. Fifth, survey data collected through the CAWI method may be affected by response bias and limited representativeness. Sixth, the study is based on a static dataset and does not capture future changes in tax systems or housing markets. Seventh, socio-political factors influencing tax reform feasibility are only partially addressed. Finally, indicators such as purchasing power and housing affordability are approximations and may not fully reflect intra-country disparities.

CONCLUSIONS

The aim of the study was to develop scenarios for recurrent property tax (RPT) rates for a reference property in Poland and to compare these rates with the burdens observed in countries with similar socio-economic conditions, considering the methodologies applied in those jurisdictions. Poland belongs to the group of post-socialist states characterized by some of the lowest RPT levels in Europe, although total revenue from property taxation remains close to the European average.

The planned RPT reform should clearly define its overarching objective, including the way the principle of social justice is to be implemented within the tax system. The analyzed scenarios indicate that in countries with comparable socio-economic contexts, the level of this tax is several, sometimes more than a dozen times, higher than in Poland. Introducing abrupt increases in RPT could provoke significant public opposition, particularly among households with limited financial capacity. For this reason, the choice of an appropriate model for implementing the reform is crucial, as it must ensure a gradual transition, protect vulnerable groups, and maintain social stability and acceptance.

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