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CHANGES IN THE AFFORDABILITY OF HOUSING FOR SALE IN REGIONAL CAPITALS IN POLAND

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ABSTRACT: This article discusses the issue of the affordability of housing intended for ownership. The main objective of the paper is to assess changes in the value of the composite indicator of the affordability of housing for sale. The research covered the period from 2010 to 2023, which was dictated by the availability of data; at the time of creating the database, complete data for the year 2024 was still not available, while alternative sources of information significantly differed in the manner of data processing and considerably misrepresented research results. The spatial scope of the study covered 18 cities that are regional capitals (in the Polish nomenclature, these are so-called voivodeship cities).
The paper is structured as follows: the first part briefly discusses the housing situation in Poland, then the study presents a literature review on the methodology of research on housing affordability, and, in the final part, the results of the conducted research are shown and discussed. The paper also points to selected factors and determinants that have had a significant impact on changes in housing affordability. Significant limitations of the employed methodology were

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also addressed, most notably the nature of the data used in the calculations. It was pointed out, among other things, that state interventionism in the field of housing policy – in particular programmes supporting households and aimed at improving creditworthiness – result in an excessive stimulation of demand for housing, which, in conditions of rigid housing supplies, causes a rapid increase in housing prices. Given the lower rate of changes in wages and the rising cost of living for households, housing affordability is deteriorating.

KEYWORDS: housing market, housing affordability

ZMIANY CENOWEJ DOSTĘPNOŚCI MIESZKAŃ W MIASTACH WOJEWÓDZKICH W POLSCE

ZARYS TREŚCI: W artykule omówiono kwestię dostępności mieszkań przeznaczonych na własność. Głównym celem artykułu jest ocena zmian wartości złożonego wskaźnika dostępności mieszkań. Badaniem objęto okres od 2010 do 2023 roku, co było podyktowane dostępnością danych źródłowych – w momencie tworzenia bazy kompletne dane za rok 2024 nie były jeszcze dostępne, zaś alternatywne źródła informacji znacząco różniły się sposobem przetwarzania danych i istotnie zaburzały wyniki badań. Zakres przestrzenny badania obejmował 18 miast – stolic regionów (miast wojewódzkich).
Struktura artykułu jest następująca: w pierwszej części zwięźle przedstawiono sytuację mieszkaniową w Polsce, następnie dokonano przeglądu literatury dotyczącej metodyki badań nad dostępnością mieszkań, a w ostatniej części przedstawiono i omówiono wyniki przeprowadzonych badań. W opracowaniu wskazano również na wybrane czynniki i determinanty, które miały istotny wpływ na zmiany dostępności mieszkaniowej. Odniesiono się także do istotnych ograniczeń zastosowanego podejścia, w tym przede wszystkim charakteru danych wykorzystanych w obliczeniach. Zwrócono m.in. uwagę, że interwencjonizm państwa w zakresie polityki mieszkaniowej, w szczególności programy wspierające gospodarstwa domowe i mające na celu poprawę zdolności kredytowej, skutkują nadmierną stymulacją popytu na mieszkania, co w warunkach sztywnej podaży mieszkań skutkuje szybkim wzrostem ich cen. Biorąc pod uwagę niższe tempo zmian wynagrodzeń i rosnące koszty utrzymania gospodarstw domowych, przystępność cenowa mieszkań pogarsza się.

SŁOWA KLUCZOWE: rynek mieszkaniowy, dostępność mieszkaniowa

1.1. Introduction

Housing falls within the category of necessities for everyday functioning, since it meets both higher-order demands and the needs for safety and shelter (Strączkowski 2021: 5; Wilczek 2014). Furthermore, inability to meet housing demands can result in housing deprivation, often known as housing poverty, as well as adverse outcomes, such as a variety of dysfunctions (Fernandez-Sikora 2018). Supporting the populace in this area is essential given the significance

of housing and the disparities in household capacities to address housing needs. Improving housing affordability should be one of the main goals of housing policy. The goal of housing policy is seen to be to make it possible for citizens to purchase or rent housing stock in order to satisfy their demands in a resource of sufficient quality (Strączkowski, Koszel 2021: 147). In the terms of Cyran, the purpose of housing policy is "to create conditions for meeting housing needs in accordance with the preferences, aspirations and economic opportunities of the population" (Cyran 2013: 217). Therefore, an important aspect of housing policy is housing affordability, and a specific goal should be to improve it.

The dynamic price increases on the housing market in recent years, combined with the high cost of mortgage loans (NBP 2024), make it much more difficult to meet the housing needs of Polish households. The housing problem is definitely more complex, given the multitude of factors and conditions that determine the ability of households to meet their housing needs. It is a particularly significant problem for households with the lowest income and those in the so-called rent trap.

Poland had 420 flats per 1,000 people on average in 2023, which was among the lowest numbers for EU member states, according to Eurostat data (http://www.ec.europa.eu). It should be noted that this indicator includes substandard and unoccupied dwellings in its development. About 3.7 million of Poland's homes are thought to be subpar, making up almost 25% of the country's total housing stock. These are units inadequately equipped with installations. Positively, the number of people living in this type of housing is declining – in 2011, there were 5.4 million people (14.1% of the population); according to the results of the 2021 National Census, there were less than 2.9 million people (7.6% of the population) (CSO 2023, https://stat.gov.pl). According to data collected for the Long-Term Building Renovation Strategy (2022: 20–23), a significant portion of housing in Poland is highly energy-inefficient, which translates into high operating costs and poor living comfort. Eurostat data (http://www.ec.europa.eu) shows that the percentage of overcrowded housing in Poland in 2023 was 35.8%, with the average of EU countries at 16.8%. Higher values were recorded only in Bulgaria (36.2%), Romania (40.5%), and Latvia (41.7%). The size of households in Poland is one of the highest in the EU (an average of 2.99 persons per household in 2022), which, with the total number of housing units, translates into 1.15 rooms per person (http://www.ec.europa.eu). This, again, places Poland among the countries with the worst housing conditions. Despite the high dynamics of housing construction effects in Poland in recent years, which exceeded 200,000 housing units completed annually in the years 2019–2023 – with the record year being 2022, in which 238,490 units were completed – the number of housing units per 1,000 people in Poland is still below the EU average (NBP 2024a: 23–25). It is estimated that at the current pace of the housing sector, the average value of the number of housing units per 1,000 people in Poland will equal the EU average in 2030.

The availability of a mortgage, which is a derivative of base interest rates, is a major determinant of one's capacity to purchase real estate. Poland had the highest average mortgage interest rate in the European Union in August 2024, i.e. at 7.91%, according to data from the European Central Bank (the average for Eurozone countries was 3.69%, while the average for all EU countries was 4.35%) (http://www.europa.eu/data.ecb). It is important to note that around 41% of all flats in Poland are financed by mortgages, according to data from the National Bank of Poland (data for Q2 2024: NBP 2024a: 1). High mortgage interest rates drastically lower a household's creditworthiness, which frequently results in the rent gap or the so-called middle-income trap (Cyran 2017: 17). However, mortgage availability has been the target of government intervention programmes in recent years (Housing for the Young, Family on Their Own, Safe Credit 2%). The last implemented house loan programme, namely Safe Credit 2%, contributed to the 350–400% annual increase in loan demand in Q3 2023 (https://media.bik.pl). Some households' creditworthiness has increased as a result of demand-side measures, enabling the borrowing of money and the purchase of homes. It should be noted, however, that direct assistance to the demand side, which increases the amount of demand, actually results in higher housing prices. An analysis of the housing price situation in Poland for the last months of 2023 and the first half of 2024 confirms this. According to Eurostat data, the average increase in housing prices in Poland in 2024 was 17.2% year-on-year – again the highest among EU countries (http://www.ec.europa.ue). Considering the situation in individual cities in Poland, the highest increases were recorded in Warsaw, Kraków, and Gdańsk. Another interesting observation concerns the levels of margins of residential developers as reported in the NBP's surveys. This was the case throughout 2023 and at the beginning of 2024, where a clear increase in margins in the construction price per metre of usable floor area of an apartment can be seen (NBP 2024a: 22–23).

1.2. Literature review

It is worth starting the methodological considerations with a definition of the key concept of housing affordability. The approach to defining housing affordability has changed over the years. Considering the scopes of meaning, it is important to point to the economic, social, and environmental determinants of housing affordability (Gan, Hill 2009; Ezzenia, Hoskara 2019; Mazáček 2024). The term 'housing affordability' has an ambiguous meaning, as it is used to describe several elements of the housing need, such as housing conditions, housing costs, housing quality, household income, and overcrowding (Ezzenia, Hoskara 2019: 4). Therefore, housing affordability is a multi-dimensional issue, yet it is typically

defined and assessed quite narrowly in terms of financial criteria (Mulliner, Maliene 2015: 248).

An analysis of the definitions of housing affordability (Table 1) reveals the dominance of the economic approach, which focuses on the relationship between household income and housing costs. More recent approaches also take into account socioeconomic and environmental aspects, emphasising the need to balance housing expenditure with other life needs. The common denominator of all the approaches is the recognition of affordability as the ability of households to meet housing costs without an excessive financial burden, with differences in the considered range of criteria and the perspective of assessment.

Table 1. Selected key definitions of housing affordability

Author(s) & Year	Focus	Definition
Howenstine 1983	Economic	Households ability to acquire decent accommodation by the payment of a reasonable amount of its income on shelter.
MacLennan, Williams 1990	Economic	Affordability is about securing some prescribed housing standard (or different standards) at a cost (rent or price) which exerts no unreasonable burden on household incomes, according to any third party (mostly the government).
Bramley 1994	Economic	The ability households to occupy housing that meets socially acceptable standards of adequacy, considering household composition (size and type) at a net cost which allows them sufficient income for survival without plunging them below some poverty standard.
Whitehead 1991	Economic	Focuses on the housing expenditure-household income relationship, and thus seek to design, a measure that can establish what amount of rent spent on the housing that is considered affordable.
Hancook 1993	Economic	Affordability is about the concept of opportunity cost of housing, what is forgone in order to secure housing and if that which is forgone is unreasonable or moderate in some sense.
Leishman, Rowley 2012	Economic	Households are experiencing affordability burden, if the cost of housing displaces excessively other expenses.
Burke, Ralston 2004	Socioeconomic	Affordability describes the ability of households to meet the costs of housing, while there is the possibility of maintaining other basic expenses.

Author(s) & Year	Focus	Definition
Stone 2006	Socioeconomic	Housing affordability is the articulation of the challenges that confront households in balancing the actual or potential housing cost, as well as the non-housing expenses, within the limits of their income.
Leishman, Rowley 2012	Socioeconomic	Affordability is a broad concept that is concerned with housing appropriateness and standards, as well as social and neighbourhood issues, in addition to economic participation.
Mulliner, Malys, Maliene 2016	Social, Economic and Environmental	Affordability is comprised of some broader and more sustainable perceptions of wide ranging criteria such as economic, environmental and social aspects that affect households.
Minchenko, Nozdrina 2017	Social, Economic and Environmental	The housing affordability concept should receive both social and economic content, in addition to the ecological content.

Source: Ezzenia, Hoskara 2019: 5.

Numerous studies have been conducted on the topic of measuring housing affordability. Studies by the World Bank (World Bank 2014; World Bank 2015; Lynch et al. 2023) and by the Organisation for Economic Cooperation and Development (OECD 2024; Alshubiri, Al Ani 2024) are particularly noteworthy. The approach recommended by the World Bank for measuring housing affordability is to use the composite housing affordability index, which expresses the ratio of residual income to housing transaction prices. Its widespread use is reflected in the economic strand of research on the problem of housing affordability, which led the way particularly in the 1990s and 2000s. Studies conducted by Stone (2006) seek to increase the awareness of and support for the residual income approach to housing affordability indicators and standards. Mulliner, Smallbone, and Maliene (2013) consider the application of a methodology that can assess the affordability of different housing locations in a sustainable manner, taking into account a range of economic, environmental, and social criteria. Unlike in the leading economic research stream on housing affordability, these authors' research shows that considering a range of social and environmental criteria can greatly affect the calculation of an area's affordability, in comparison to focusing solely on financial attributes. A structured literature review by Nwuba and Kalu (2018) found a lack of consensus on the most appropriate approach for measuring housing affordability. Their findings show two main streams, with some researchers advocating the replacement of the ratio approach with a residual income approach, while others

advocate for the continued use of the ratio approach. Another direction of research on measuring housing affordability focuses on the use of modified measures that address the shortcomings of the two main measures.

Methods of measuring housing affordability (HAMA), as used in housing research, can be broadly divided into three approaches according to the frequency of their use and directions of development: 1) the conventional approach, 2) the scarcely used approach, and 3) the emerging innovative approach (Ezzenia, Hoskara 2019: 10–20). Each of these approaches, while different, is based on assumptions about acceptable housing expenditures, the relationship between income and housing costs, and the ability to repay a mortgage. However, assessing affordability based on meeting credit requirements is sometimes unreliable due to liberal lending criteria. Contemporary researchers indicate that housing affordability should be assessed solely in relation to income, although in practice only rental or purchase prices are often taken into account, leaving out the income aspect. Under the conventional approach, the most commonly used methods include the residual-income-based method, the income-ratio-based method, and methods using composite indicators. Taking into account the historically dominant direction of research in the economic stream and the widespread use in public statistics of methods based on the income ratio, the following specific indicators describing housing availability can be identified:

- housing price to income ratio;
- rent to income ratio;
- housing expenditure to income ratio;
- housing loan repayment to income;
- debt to income ratio;
- mortgage to income ratio.

Among the emerging novel approaches, there are three main methods based on:

- the Multi-Criteria Decision-Making (MCMD) method;
- the Gini coefficient;
- the Mobility Probability Plot (MPP).

The approach scarcely used in housing affordability research includes two main categories of research methods: behavioural methods and subjective methods. Behavioural methods focus on analysing households' housing decisions. That is, this approach focuses on typical housing decisions, adjusting for what households with certain incomes and composition in the face of certain prices choose to pay for housing (Bramley 1994; Wood et al. 2009; Grinstein-Weiss et al. 2010). This is a potentially promising but difficult method to apply on a large scale. The behavioural approach deals with understanding households' choices regarding the location, type, and form of ownership as well as the size of housing. Subjective methods, on the other hand, are based on households' subjective assessment of their housing situation (Chasco, Gallo 2013). Subjective methods can complement objective measures, but are prone

to perceptual errors. Subjective methods summarise the assessment of households' perceptions of their housing needs in relation to the quality and condition of housing, the affordability dilemma, and overcrowding.

The approach of Polish authors studying the issue of housing affordability takes into account the specifics of the housing market, housing preferences declared by Polish households, as well as public statistics, including, above all, the issue of the availability of data on the basis of which it is possible to assess the affordability of housing for purchase. As in the case of international studies, the dominant stream of research on housing affordability is the conventional approach, based on the income ratio method – housing price to income ratio. The National Bank of Poland (NBP) and the AMRON-SARFIN agency, among others, research housing affordability for the periodic publications on the state of the housing market. The following authors and members of the Polish scientific community have published works concerning the issue of housing affordability in recent years: Dittmann (2012), Trojanek (2014), Strączkowski and Mazurczak (2015), Matel and Marcinkiewicz (2017), Strączkowski (2021), Bryx (2021), Gorzeń-Mitka (2022), as well as Marona and Tomasik (2023).

The cyclical (quarterly and annual) reports of the NBP use a simple housing affordability index, which expresses the ratio of the average gross wage to the average transaction price of a square metre of an apartment in a given local housing market (an analysis of the housing market situation in the largest cities in Poland – Gdańsk, Kraków, Łódź, Poznań, Warsaw, Wrocław). Such an indicator denotes the number of square metres of an apartment that can be purchased for the average wage in the business sector. It is worth noting that the NBP calculates the transaction price as the sum of the ⅓ of the transaction price from the primary market and the ⅔ of the transaction price from the secondary market (Bryx 2021: 143). The NBP's use of weights is meant to reflect the structure of transactions made in the primary and secondary markets. Dittmann (2012: 71–72) used a purchasing power index to assess housing affordability, but did not elaborate on the methodology and formula of the index used. Trojanek (2014) as well as Mazurczak and Strączkowski (2015) used the composite housing affordability index recommended by the World Bank (World Bank 1989: 23) to assess housing affordability. This index shows the relationship between median housing transaction prices and median annual pre-tax household income (Trojanek 2014: 6). The interpretation of the index value is as follows:

- below 3.0 – affordable housing;
- 3.1–4.0 – moderately unaffordable housing;
- 4.1–5.0 – severely unaffordable housing;
- 5.1–8.9 – severely unaffordable housing;
- above 9.0 – housing impossibly unaffordable (Cox 2024: 1).

Trojanek (2014: 6) also modifies the index by calculating the quotient of household income to housing price (E/P). Strączkowski and Mazurczak (2015: 20)

use a modified composite housing affordability index in their study, where they use average values instead of median housing transaction prices and median pre-tax wages. In his calculation of the simple housing affordability index, Bryx (2021: 144) uses the net values of the average wage in the business sector, which was set at 70.82% of gross wages. The same study also points to the possibility of assessing housing affordability based on a comparison of household creditworthiness and income. An example of the application of this indicator can be found, among others, in a publication prepared for the Warsaw Banking Institute (Bryx et al., 2021). The study by Marona and Tomasik (2023: 29–39) used, among other things, the M-3 housing affordability index (IDM M-3), developed by AMRON-SARFIN, which illustrates quarterly changes in the housing affordability of a sample household consisting of two adults and an older child. The index takes into account transaction prices, lending rates, and the cost of living in its dwelling. The authors also refer to a simple affordability index for ownership housing. For the purposes of further research, the formula for calculating the index evolves (Koszel et al., 2024) and takes a form that takes into account the real income of household budgets, which more closely reflects disposable income.

Gorzeń-Mitka (2022) as well as Matel and Marcinkiewicz (2017) employed a more thorough method of evaluating housing affordability. In their research, housing affordability is seen more broadly as a function of numerous variables. Overall housing availability is determined by a number of factors, including housing affordability. The TOPSIS method (Technique for Order Preference by Similarity to Ideal Solution), which uses linear ordering to determine the hierarchy of multidimensional objects defined due to a set of adopted variables, was used to analyse the first of the above-mentioned studies, which sought to order cities according to the degree of housing availability. These variables include: unemployment rate, the availability of housing for an average monthly salary on the primary and secondary markets, the availability of gold credit at an average monthly salary, housing units put into use per 1,000 residents, and the number of marriages per 1,000 residents. The selection of variables was arbitrary and variables that did not meet the criteria specified in the research procedure were eliminated. Gorzeń-Mitka (2022) used the MULTIMOORA multi-criteria decision-making method procedure, developed by Brauers and Zavadskas (2010), to assess changes in the availability and quality of the housing stock of urban municipalities in the Wielkopolska region (Poland).

Simple and sophisticated indicators that illustrate the relationship between housing transaction prices and households income, as well as more intricate synthetic indicators that consider a greater number of factors, can be used to evaluate housing affordability. In the light of the popularising value, it can be said that price-income indicators are better suited to show shifts in the supply of homes available for purchase in the cities under study. The development of such a conclusion is accompanied by insight into the shortcomings and restrictions of the chosen approach, several

variations of which have been and are being employed to carry out current market research and scientific studies pertaining to the housing market. It is worth mentioning at this point the important limitations of simplifying the construction of the housing affordability index. For instance, Ezennia and Hoskara (2019) emphasise that the optimal measurement of housing affordability is difficult, despite the intensive development of research in this field. Their study identifies the shortcomings of conventional methods, such as over-reliance on the economic dimension and failure to take sustainability into account. The said paper discusses new, more complex methodologies which, although more accurate, are less transparent and more difficult to apply. It concludes with the need to reconsider conventional methods in housing policymaking and to seek better ways of conceptualising and measuring housing affordability.

1.3. Methodology

In the light of the conducted literature review and current challenges related to the assessment of housing affordability in Poland, the choice of the composite housing affordability index seems the most justified from both theoretical and practical perspectives. This is because it takes into account the fundamental relationship between household income and the cost of acquiring a dwelling, which corresponds to the dominant – economic – current approach of research in this issue (Howenstine 1983; Whitehead 1991; Bramley 1994).

The use of a composite index, recommended by international institutions, including the World Bank (World Bank 2014; 2015), makes it possible to include two key parameters in a single measure: average (mean) housing transaction prices and average household disposable income. This method, unlike simple indicators based solely on rent-income or credit instalment-income relationships, allows a more comprehensive and spatially- and temporally-comparable assessment of the housing market situation, which is of particular value in the context of long-term trend analysis.

In the study analysed here, it was decided to use an indicator based on the ratio of the average annual net income of two people working in the business sector to the average transaction price of a flat with a floor area of 50 sqm in selected regional capitals. Such an assumption is in line with the findings of Trojanek (2014), Strączkowski and Mazurczak (2015), as well as Bryx (2021), who also used composite indices, adapting them to the specifics of the Polish market and the availability of statistical data. The choice of a flat area of 50 sqm results from the averaged purchase preferences of two-person households and the structure of newly implemented property development projects in the largest cities.

In addition, the inclusion of net income – calculated as 71.47% of the average gross remuneration in the business sector – allows for a better representation of the real purchasing power of households than using nominal gross values would provide. This approach, although not without its drawbacks (including the non-inclusion of income from other sources and the lack of distinction between types of households), maintains high data comparability and consistency with data published by the Central Statistical Office (CSO) and AMRON-SARFIN, which is an additional methodological advantage.

The choice of this approach is also justified by the limitations of other methods. For example, modern methods based on multi-criteria decision-making analysis (MCDM) – such as TOPSIS or MULTIMOORA – although more comprehensive and taking into account social and environmental factors (Mulliner et al. 2013; Gorzeń-Mitka 2022), are more difficult to implement in a nationwide analysis due to limited data availability and a greater complexity of the research procedure. Behavioural and subjective methods, on the other hand, although theoretically promising, face difficulties related to the representativeness and comparability of the results (Chasco, Gallo 2013).

In this context, the composite housing affordability index maintains a balance between precision and analytical usefulness. The high readability of the results, compliance with the methodology of national institutions (NBP, GUS, AMRON-SARFIN), and the possibility of tracking long-term changes at the local level are arguments in favour of its legitimacy. Owing to this, it was possible not only to capture the average level of housing affordability in particular regional capitals, but also to determine the directions of changes and the spatial diversification of the analysed phenomenon in the years 2010–2023.

1.4. Results

This part of the study presents detailed results of calculations of the housing affordability index in eighteen regional capitals in Poland in 2010–2023. The analysis covered both the values of the index in annual terms for each of the cities and synthetic summaries showing average levels of affordability and their variability in time. Directions of changes and their pace were also indicated, making it possible to identify nationwide trends as well as the spatial differentiation of the phenomenon. Particular attention was paid to distinguishing groups of cities in which the affordability of housing remained at a relatively favourable level and those where the economic and structural conditions of the housing market resulted in a permanent or deepening barrier to access to dwellings. The results of the analysis can serve as a starting point for further consideration of the impact of macroeconomic factors, housing policy, and local market conditions on the development of the affordability of housing for ownership. Table 2 displays the comprehensive outcomes of the calculations.

Table 2. Housing affordability of 50-sqm dwellings in regional capitals in Poland in the period of 2010–2023

City	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Białystok	3.96	3.89	3.64	3.48	3.38	3.32	3.21	3.15	3.13	3.21	3.28	3.24	3.11	3.05
Bydgoszcz	3.31	3.40	3.20	3.04	2.96	2.90	2.95	2.91	2.98	2.92	3.12	3.02	3.02	2.74
Gdańsk	3.87	3.87	3.84	3.51	3.32	3.21	3.32	3.60	3.55	3.58	3.77	3.85	3.68	3.28
Gorzów Wielkopolski	2.86	2.84	2.71	2.52	2.49	2.45	2.52	2.37	2.38	2.50	2.64	2.65	2.67	2.64
Katowice	2.23	2.02	1.97	1.75	1.87	1.87	1.88	1.96	2.08	2.18	2.38	2.48	2.36	2.39
Kielce	3.84	3.71	3.79	3.56	3.38	3.17	3.06	2.85	2.84	2.81	2.93	3.02	3.19	2.97
Kraków	5.37	5.12	4.76	4.52	4.45	4.27	4.04	3.81	3.64	3.60	3.72	3.66	3.73	3.41
Lublin	3.81	3.86	3.66	3.44	3.44	3.41	3.47	3.32	3.25	3.26	3.41	3.43	3.51	3.26
Łódź	3.89	3.44	3.22	3.10	2.87	2.69	2.62	2.68	2.72	2.78	2.92	2.93	2.97	2.67
Olsztyn	3.91	3.87	3.48	3.18	3.26	3.12	2.95	2.93	2.94	3.02	3.02	3.08	3.18	2.89
Opole	3.27	3.19	3.06	2.88	2.89	2.76	2.65	2.60	2.73	2.79	2.82	2.78	2.90	2.69
Poznań	4.38	4.21	3.82	3.72	3.72	3.56	3.42	3.35	3.35	3.26	3.26	3.35	3.31	2.98
Rzeszów	3.56	3.60	3.30	3.10	3.03	3.14	2.96	2.94	2.87	2.95	2.92	3.03	2.97	2.90
Szczecin	3.71	3.42	3.21	3.03	2.86	2.77	2.75	2.75	2.82	2.81	2.79	2.95	3.01	2.84
Toruń	3.74	3.52	3.30	3.12	2.97	2.76	2.79	2.92	2.97	3.06	3.29	3.31	3.22	2.69
Warsaw	5.23	4.87	4.61	4.14	4.16	4.00	3.95	3.95	3.97	3.89	4.04	4.20	4.21	3.78
Wrocław	4.39	4.26	3.91	3.87	3.55	3.36	3.30	3.19	3.20	3.19	3.39	3.52	3.58	3.39
Zielona Góra	3.04	2.95	2.79	2.79	2.64	2.49	2.52	2.43	2.50	2.43	2.53	2.53	2.65	2.72
Mean	3.80	3.67	3.46	3.26	3.18	3.07	3.02	2.98	3.00	3.01	3.12	3.17	3.18	2.96

Source: own elaboration based on own calculations.

According to the adopted interpretive ranges of the affordability index, in most cases of the surveyed regional capitals, housing was unaffordable – the value of the affordability index was above 3.0 points. It should be pointed out that an increase in the value of the index indicates a deterioration of the situation, while its decrease – an improvement (an increase in the affordability of housing). The results of the conducted analyses make it possible to distinguish two distinct groups of regional capitals in Poland, characterised by different levels of housing affordability in the years 2010–2023. The first group includes cities where the affordability remained at a relatively favourable level, which means that the value of the index for most of the examined years did not exceed the threshold of 3.0 points, considered to be the borderline of affordability. In particular Katowice and Gorzów Wielkopolski stand out here, as the lowest values of the index were recorded there throughout the whole analysed period, often remaining below the level of 2.5, which testifies to an exceptionally good relationship between income and housing prices. This group also includes Zielona Góra, Opole, Rzeszów, Toruń, Szczecin, and Bydgoszcz, where a stable price level was observed with a moderate growth rate of prices, which made it possible to maintain the availability of flats at a level corresponding to the financial possibilities of average households.

A different situation was recorded in the largest urban centres, which form the second group, characterised by a limited price affordability of housing and deteriorating ratios over time. The most unfavourable situation was in Warsaw and Kraków, where at the beginning of the period under study, i.e. 2010, the value of the index exceeded 5.0, indicating an extremely low affordability. Despite a temporary improvement between 2017 and 2020, the indicator in these cities continued to remain above the affordability threshold, with subsequent years seeing it rise again. Similar trends were observed in Wrocław, Poznań, and Gdańsk, where the dynamic development of the housing market, high demand pressure, and limited supply led to a systematic increase in property prices, exceeding the rate of income growth. As a consequence, the inhabitants of these cities face permanent economic barriers in access to housing resources, which may result in the intensification of phenomena such as the outflow of population to the periphery or growing housing deprivation among households with lower incomes.

In the initial period, covering the years 2010–2017, the average value of the housing affordability index was falling, which meant that the situation was improving (see Figure 1). Only in two cities, namely Kraków and Warsaw, in 2010, apartments were extremely unaffordable – the value of the index exceeded the level of 5.0 points back then. Subsequent years, i.e. the period from 2018 to 2022, were characterised by positive dynamics in the formation of the index and signified a deterioration in the affordability of housing in the analysed cities. A detailed analysis of changes in this regard allowed us to conclude that housing affordability deteriorated most rapidly in the largest cities with a population of

more than 500,000 (Kraków, Łódź, Poznań, Warsaw, Wrocław) – apartments there were moderately unaffordable and severely unaffordable. By far the greatest affordability in the study group was in medium-sized cities (Białystok, Katowice) as well as the smallest ones (Opole, Szczecin, Toruń, Zielona Góra). In 2023, there was a marked improvement in housing affordability (a 6.9% decrease in the average value of the index for the surveyed cities).

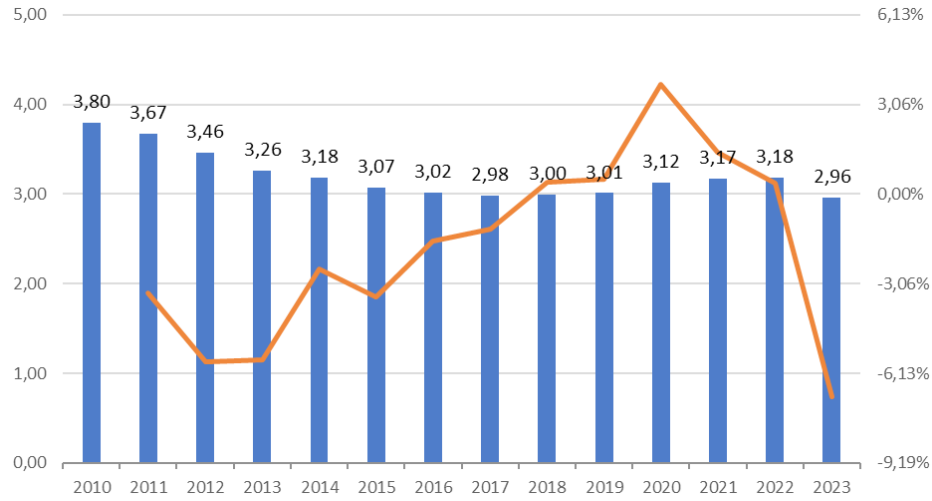

Figure 1. Changes in average housing affordability of 50-sqm dwellings in regional capitals in Poland in the period of 2010–2023

Source: own elaboration based on own calculations.

The situation in the housing market in Poland over the year 2023 was largely conditioned by the impact of housing support programmes (completed and announced), a high level of base interest rates – including the reference rate affecting WIBOR (Warsaw Interbank Offered Rate that determines the cost of the borrowed capital, i.e. mortgages) – and, consequently, the cost of a mortgage, which is the highest among the European Union countries. Key in this aspect is the dynamics of the average price level in the economy – inflation, which, after a period of rapid declines, has been again slipping beyond the inflation target, forcing the Monetary Policy Council to maintain relatively high levels of interest rates, including the reference rate. As of September 2024, the fate of the bill that implements another housing loan programme is still unknown, adversely affecting the confidence and expectations of real estate market stakeholders.

1.5. Conclusion

An indicator that describes the state of the housing market is the composite housing affordability index, which takes into consideration two fundamental factors: the disposable income of households and housing transaction prices. The World Bank recommends this approach, which is popular for evaluating households' financial standing in relation to purchasing housing for themselves. Using publicly available data, this indicator can effectively be applied to undertake basic research analysing housing affordability, despite its simplified nature, which comes with a number of disadvantages and restrictions. Although the results are simple to understand and allow for a swift evaluation, methodological variations in how this indicator has been applied by various authors should be considered.

However, the limitations of the adopted methodology and, in particular, the way in which the housing affordability index is calculated must also be taken into consideration. First of all, attention should be paid to the specificity of the source data. Data on transaction prices in the primary residential market comes from final notarial deeds, concluded even several months after the moment of establishing the purchase price, i.e. when the preliminary agreement is concluded. This means that the data made available in public statistics lags behind the period for which reporting takes place (Hill et al. 2023: 1). An important limitation also applies to data on average gross wage levels, which only comes from a business sector with at least ten employees. This has important consequences for the evaluation of the obtained results, which do not fully reflect the real market situation. It should also be noted that Polish publications on housing availability, as well as public statistics, including housing market reports, use assumptions regarding the area of a representative apartment that are different from those used for statistics conducted by international agencies. For the purposes of calculations, assumptions regarding the area of apartments were made that are intended to reflect the specificity of this market, including purchasing preferences.

An analysis of housing for sale affordability in Poland's regional capitals reveals a dilemma about households' low capacity to purchase their own homes. This mostly pertains to the moderately and extremely costly houses found in the biggest cities. During the period under consideration, smaller regional capitals saw higher housing affordability. Affordability is the greatest for two-person households and the lowest for one- and five-person households when the number of persons living in a household and the matching usable size of housing are both taken into consideration. The research methodology can be made more practical; it might entail using a different method to calculate a household's disposable income while accounting for surveys of household spending and budgets. This method also draws attention to the issue of housing ownership availability among the largest households, i.e. those with four or five people. The differentiation

of transaction prices based on the usable area of dwelling criterion can also be considered from the standpoint of research methodology. From the viewpoint of individual households – and once more, the larger ones – this emphasises the issue of home affordability even more.

In addition to the features of each real estate market, fundamental factors – a byproduct of the intricate socioeconomic situation – are the cause of shifts in housing affordability in the cities under study. It is first and foremost required to consider the recent increase in the cost of construction projects, particularly the salary component. Although the improvement in Poland's household economic status contributed to housing affordability, the dynamics of housing prices in the cities under analysis were even higher, offsetting the wage increases. More and more people view housing as an investment good and a way to protect their cash from depreciation. The structure of financing purchases in the housing market reflects this drive. Based on statistics by the National Bank of Poland, equity (cash) purchases predominate, which may be seen as an expression of the investment motive's realisation. Last but not least, it is important to acknowledge the impact that housing policy – and specifically its particular programmes – has had in determining the affordability level. Undoubtedly, the second half of the year 2023 saw a rapid growth in interest in the Safe Credit 2% programme, which increased housing demand and some households' capacity to meet their housing needs. The final months of the year 2023 saw historically high transaction prices as a result of the inflexible and constrained housing supply. Apartments are now even more expensive as a result. It is still unclear if the goal of utilising this specific tool to increase home affordability will be achieved. There is no compelling reason to give demand-side initiatives of this kind a favourable evaluation and recommendation going forward, even when considering the larger interests of the society.

It is also worth tracing the possible non-economic consequences of low housing affordability in Poland, which are revealed at many levels – spatial, demographic, and social. Firstly, the limited affordability of housing in city centres intensifies the phenomenon of suburbanisation. Households, unable to afford to live in central areas, migrate to the periphery, which leads to sprawl, increased infrastructure costs, environmental degradation, and the intensification of traffic. Secondly, high housing costs negatively affect procreation decisions, delaying the independence of young adults and limiting the possibility of starting a family. In this context, housing policy can perform a family-friendly function by promoting demographic stability. Thirdly, low affordability fosters the phenomenon of housing deprivation, forcing the poorest social groups to live in overcrowded or degraded housing, often in isolation from public services and the labour market, exacerbating social exclusion and perpetuating structural poverty.

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