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## Scenarios of Development of Metropolitan City Housing Market Based on the Example of Cracow

**Abstract:** The aim of the article is to identify future trends in the housing market of a developing metropolitan city. The recognition of these tendencies is crucial for the course of economic development processes in the country. Housing plays an important role in social, economic and spatial development. In empirical studies, three scenarios have been adopted for the development of the housing market. As an example, the City of Cracow, which is the second largest city in Poland with a dynamically developing economy, was chosen. Among the important conclusions is the conclusion that the pro-supply housing activity of the national government can have a lesser impact on the development of the metropolitan housing market than the losses caused by governmental activity in areas outside the building sector (e.g.: the reform of higher education) which reduces demand for housing. Extrapolation methods were used in the conducted analyses and CSO as well as external reports served as data sources.

**Keywords:** development scenarios, housing market, metropolises, suburbanisation, economy

**JEL:** R31, R32

## 1. Introduction

The issue of housing in the economy plays an important role in spatial, social and economic spheres. It is worth paying close attention to its three consequences, which are particularly visible in a metropolis. First of all, housing is accompanied by spatial and structural changes in land use caused by the development of housing areas both in the city and its suburbs. Secondly, the state and development of housing stock determine social development, and not only family life – but also professional life. Thirdly, the housing stock determines the possibilities of accepting new employees of the growing business sector of a given city. These aspects therefore largely determine the broadly understood development of any metropolis, and presently play a key role in global development processes.

Thus, assuming the noticeable role of the housing market in the economy, the purpose of the article is to identify future trends in the housing market of a developing metropolitan city. As an example for empirical scenarios, the City of Cracow was adopted as a socially and economically growing metropolitan city which is broadly interconnected with the surrounding municipalities, and around which strong suburbanisation processes are observed. The research problem thus is to determine the impact of potential shocks resulting in changes in the current trends of the metropolitan residential market.

## 2. Literature review

In anticipation of problematic considerations, there is a need for reflection concerning the scope of defining the term “the development of the housing market”. The housing market is a complex category which, according to I. Foryś (2011: 40), can be systemically or processually determined. On a systemic basis, the housing market is distinguished by four subsystems: apartment trading, housing management, housing finance, and housing investments. On a processual basis, it is seen as “the process of transferring the rights and obligations related to the management of housing, to meet the housing needs or to obtain the financial benefits of the entities demanding housing at a price that is the result of the expectations of entities generating housing supply on the market and accepted by the entities reporting demand for housing”. I. Foryś also points out (2011: 45) that the category of housing market development is associated with quantitative and qualitative growth. Qualitative changes involve the formation of new, more complex structures, and quantitative ones are those related to a greater abundance or range of influence. Moreover, the housing market develops unevenly, i.e. some subsystems tend to grow quantitatively and others combine qualitative and quantitative transformations. At this point, it should be clearly stated that in this article the devel-

opment of the housing market will relate only to a quantitative approach, i.e. the number of homes/housing.

The development of the housing market plays a very important role in the socio-economic and spatial development of a city, especially in metropolitan cities. In a social context, it meets the basic needs of human safety, which is an inherent condition for the development of: professional, family, social ties, etc. (Żelazkowski, 2017: 8–19). In the development of metropolitan cities that grow on the basis of migrants (e.g.: students and college graduates, incoming corporate employees, or low-skilled workers finding employment in a metropolitan city), accommodation (housing) is the largest expense, often a barrier for newcomers to stay and develop in a given city. In economic terms, the housing market is an important sector of the economy that collects labour resources and surplus labour, often low-qualified resources (Nykiel, 2007: 9–10). At the same time, the metropolitan housing market strongly correlates with the regional labour market (also national), which allows the flow of labour from areas with high unemployment rates. In spatial terms, housing represents the transformation of the city's spatial structure, including its morphology. It also influences the functioning and development of technical and social infrastructure, generates widely understood flows in the city, and broadens the functional and administrative boundaries of the city. Thus, the role of housing, both in the economic and social spheres, points to the significant impact of the development of the housing market on urban development (spatial, social and economic).

Exploring the specificity of the housing market of metropolitan cities, it should be noted that it is possible to divide the market into the internal and external one. The internal market is the traditionally understood housing market, which is the domain of urbanised areas with high density of housing, determined by the administrative boundaries of the city. The currently changing spatial structures of metropolitan cities, mainly related to suburbanisation processes, cause the housing markets of such cities to extend beyond the administrative boundaries of the city. The so-defined external market is delimited not so much by urban areas but by functional links, thus reaching rural areas (urban sprawl). Emphasising the possible division of the metropolitan housing market into the internal and external one is important for determining the territorial scope of the research and for the need to take account of the flow of people (who are still in the metropolitan housing market) between the internal and external market. These flows are connected with suburbanisation processes, already recognised in Poland, which are a consequence of subjecting housing to free market mechanisms (Hołuj, 2015: 28). The ownership changes post 1989 and structural changes of Polish cities are observed in the centres of cities, from which the housing function disappears (Luchter, 2016: 69–104) in favour of commercial functions (offices, shops, hotels, restaurants). These processes are the first phase of suburbanisation, pushing people out of the city, at the

same time triggering a dynamic increase in land and property prices. Consequently, developers, seeking quick maximisation of profit, offer housing within the budgetary boundaries of households. From an economic point of view, this is justified, but from a social one, this is no longer so obvious. An apartment of approximately 50 m<sup>2</sup> (*Krakowski Rynek Nieruchomości 2015*, 2016: 34) significantly restricts the possibility of family growth and induces the search for a larger dwelling within the household's budget, found solely outside the city (Hołuj, 2012: 385–390; Neuman, 2005: 11; Gordon, Richardson, 1997: 96–106).

Polish empirical studies provide explanations that generally describe internal housing markets. A. Gdakowicz and J. Hozer (2012: 123–132), analysing the development of housing markets of regional capital cities, indicate great diversity and difficulties in trying to group cities in terms of the level and trends of housing market development. The authors point out that the development of urban housing markets is in each case different and dependent on the socio-economic situation of a particular city. There are also territorially broader economic and demographic conditions, i.e. the socio-economic conditions of the functional area of the city, as well as metropolitan and even regional conditions. That is why K. Żelazkowski, analysing the regional differentiation of real estate markets (Żelazkowski, 2011: 98–106), also agrees with the above-presented statements. The author makes use of econometric modelling and concludes that the housing market is significantly differentiated and that among its determinants one may indicate economic and demographic factors. These examples of quantitative empirical research confirm that the development of the housing market is determined by many factors that vary in different cities and regions. Thus, it can be assumed that R. Wolski and M. Załączna (2007: 106) claim that the housing market is primarily local, its economic situation varying in different regions and cities, as it depends mainly on regional and local economic conditions and housing stock.

In the context of the research objective and response to the research problem, attention should be also paid to the determinants of the real estate market and its behaviour while experiencing shocks. When it comes to the said determinants, both Polish and national literature provide similar categorisation (De Bruyne, Van Hove, 2013: 1673–1689; Bryx, 2006: 88; Foryś, 2011: 68–82):

- 1) economic – factors influencing demand and supply for housing, i.e. the level of household incomes, the condition of the labour market, rent rates, availability of sources of financing the purchase of housing; investment attractiveness of the city, costs of construction activity, availability and price of land for housing, and the number of new properties put into service;
- 2) political – concerning legal and administrative aspects at national and local levels, e.g.: housing programmes, legislation in other sectors affecting the size of demand or supply of housing, and efficiency of local spatial policies;

- 3) social – expressed in the number and age structure of the population, level of migration, level of cultural development and value system;
- 4) historical – concerning the existing housing stock, its age and quality, the spatial structure and ownership in the city.

With respect to the real estate market's reaction to shocks, it is important to pay attention to supply and demand shocks. According to P. Lis (2011: 14–19), while analysing foreign research (DiPasquale, Wheaton, 1996: 252), it can be seen that both supply and demand shocks entail a change in the housing market stock that occurs with some delay. In the case of a positive shock, this is an increase in the housing market stock, while a negative shock results in a reduction in demand for housing and a decline in supply. After the shock, the housing market moves on to a new so-called partial balance. Depending on the direction of the shock, the reaction of the real estate market in the next periods will be reversed. In the case of a positive demand shock, in the next period housing stock growth may continue and can be considered as a constant trend, resulting in an extraordinary increase in housing investment over long-term equilibrium. In the later period, there is a reversal of the trend and a reduction in demand until the moment in which the housing stock is below the state of long-term equilibrium.

### 3. Scenario method

#### 3.1. Basic assumptions

Among the most important assumptions is the assumption that the scenario of development of the metropolitan city housing market should take into account individual local housing market conditions. This means that the scenario will involve one city. At the same time, it was assumed that the scenarios would relate to the internal metropolitan city housing market with perceptions of external processes. Cracow was chosen for the scenarios of development of the metropolitan city housing market due to its dynamic internal and external development.

Taking into account the above, the discussion of the methodology used in the selection of scenario techniques will be preceded by an analysis of the housing market conditions in Cracow. The analysis of the determinants of this market is important for proposing variants of scenarios and proper inference.

### 3.2. Determinants of the Cracow housing market

Three sources of information were used to describe the determinants:

1. A report of the National Bank of Poland on the situation of residential and commercial real estate markets in Poland in 2015 (*Raport...*, 2016).
2. A publication of the Cracow City Hall concerning the local real estate market (CREM 2015) (*Krakowski Rynek Nieruchomości 2015*, 2016).
3. An expert opinion within the project of the Development Strategy of Cracow 2030 (Jakóbiak, Kudłacz, Lityński, 2016).

According to the NBP Report, factors shaping the situation and housing market in Cracow in the historical perspective (2009–2015) can be considered as favourable: the migration balance has increased; the unemployment rate and the share of young people are falling; the average wage has increased, also the volume of new housing loans is growing. Despite this positive diagnosis, the Report also identifies current and prospective threats to the development of the housing market, i.e.: unfavourable changes in the age structure of the population, despite an increase in the volume of loans granted, their numbers are slightly lower, and after 2020 the decline of the population in Cracow may intensify. With regard to the housing stock, its annual growth is indicated at on average 1.8%. Bearing in mind the primary housing market, there is an increase in both bid and offer prices. The dwellings available in the framework of the government housing programme (MDM Programme) account for about 16%. The NBP Report also signals that in 2015 developers started the construction of 10 thous. apartments (an increase of 24%), and additionally about 2.4 thous. apartments were put into use. In counties of Cracow and Wieliczka (adjacent to Cracow), the number of building permits is growing (by 24% in 2015), of which more than half are individual buildings. The data confirm the phenomenon of suburbanisation already recognised in the Cracow area.

In the analysed document, the dynamic development of commercial real estate, especially office space, is also described. It is indicated that Cracow had the total office space stock amounting to 769 thous. m<sup>2</sup> at the end of 2015, with 201 thous. m<sup>2</sup> in 21 buildings under construction. It is important to note that the increase in office space is indicative of an increase in the number of jobs in the city, which effects the housing market through the need to secure housing for the newly employed.

The CREM 2015 publication, apart from its statistical data, provides explanations about the shape of demand and supply of the real estate market in the Cracow area. Among the Polish metropolitan cities, Cracow has the largest office space in terms of the total office space area, but the demand for new office space is still very high. This is a consequence of a strong development of the BPO/SSC sector, causing Cracow to be the leader in its field in Poland and in Europe. In Cracow, over 100 outsourcing companies employ 40 thous. people. It is pointed out that the

reason for the high position of Cracow is that the city has access to highly qualified staff, due to a large number of universities. More than 50 thous. graduates leave universities in Cracow every year, and a significant proportion of these graduates join the local labour force.

The described mechanism of the labour market development affects the housing market. The CREM 2015 estimates that the current period is superior for the new housing market. Large supply of housing offers is balanced by high demand. Such a market balance causes prices to remain stable. In addition, this demand is stimulated by low interest rates, which increases the availability of loans and also partly the MDM Programme. A significant percentage of apartments was also bought as an investment, as an alternative to low-interest bank cash deposits. The document also indicates the conditions for renting apartments where the largest group of tenants are students.

The expert opinion within the project of the Development Strategy of Cracow 2030 (Jakóbiak, Kudłacz, Lityński, 2016) forecasts the number and structure of people working in Cracow in the 2030 perspective. Information about the labour market situation is important in the context of spatial development of the city, particularly the real estate market. Among the most important observations of the expert opinion are the following:

1. The average annual increase in the number of working people will be about 1.5%, and after taking into account the number of micro-entrepreneurs, the dynamics may exceed 1.7%. Thus, in 2030, the number of working people will reach nearly 374 thous. and the self-employed market will reach 561 thous. people.
2. Out-of-town commuters will make up nearly 50% of the total workforce.
3. The projected increase in the number of employees by more than 34% means that the need for the infrastructure development and the growth of housing and commercial space will be at similar levels. The contemporary economy of the city is primarily a sector of services related to outsourcing, modern technologies, as well as scientific and technical activities which are projected to be significantly increasing (2030 = 135 thous. workers, 36% of those not self-employed).
4. The specific element of the labour market of Cracow is that it is connected with great involvement of young people, students of Cracow universities, and thus valuable human capital which is highly mobile and migrant. In addition, foreign students, especially those of the Ukrainian origin, gain more and more participation among employed students.

### 3.3. Proposed variants of scenarios and projection techniques

It was assumed that scenarios would be prepared as quantitative forecasts, baseline variants and two alternative variants. The basic option sanctions current trends in the analysed process. The alternatives will be simulations that can be defined as unexpected in their decrease and growth in the primary internal housing market. Therefore, two methodological questions arise: (1) what is the appropriate method for forecasting the basic variant? (2) for the simulation of alternative variants, what is the degree of change in the structural parameters of the basic model?

With respect to the projection techniques applicable to the basic projection, it is important to note that the development of the housing market is a process of many deterministic factors (labour market, commercial real estate market, migration and suburbanisation, higher education, etc.). Therefore, in order to achieve the goal of the article, a decision was made to use extrapolation methods. An important feature of extrapolation methods is the ability to predict the tendency of phenomena – even complex ones.

The answer to the second question, related to determining the degree of change in the structural parameters of the model, should be connected with the anticipation of stimuli and shocks which affect the housing market. This is an attempt to identify shocks, their direction of impact on the analysed phenomenon (increase vs. decrease) and the degree of impact. In addition, the time interval for the occurrence of the shock should be considered, i.e. when it occurs and whether it will have an immediate effect or the effect will be spread over time (Markowska, Sobczak, 2006: 280–281). The scenarios include:

1. The shock leading to the decrease of the housing market – e.g.: such as the reform of higher education.
2. The shock leading to the growth of housing market – e.g.: the launching of the government programme to build new housing.

## 4. Results of analysis

### 4.1. Baseline scenario of the housing market

The construction of the baseline scenario, i.e. covering the current trend, started with the elaboration of extrapolation forecasts on the number of built housing units. However, it has been shown that very low data matching coefficients for the trend function ( $R^2$ ) prevent inference from such an approach (Table 1).

It was therefore assumed that the baseline scenario for the primary housing market was based on the forecast of the overall housing stock in Cracow. Only differences between successive years indicating the rise in the number of dwellings will be the scenarios for the primary market. Figure 1 shows the extrapola-

tion forecasts for the total housing stock in Cracow, from which the function for the baseline scenario will be selected.

Table 1. Results of extrapolation for the number of housing units built in Cracow

Function	$R^2$	$S_y$
Linear: $y = 5645 + 124t$	0.06	1707
Parabolic: $y = 4808 + 510t - 32t^2$	0.09	1678
Exponential: $y = 5408 \cdot 1.02^t$	0.11	0.11
Power: $y = 5116t^{0.2}$	0.15	0.11
Hyperbolic:	0.13	1642
Logarithmic: $y = 5268 + 1621\ln t$	0.10	1672
Where: $R^2$ – data matching coefficient $S_y$ – forecast error $t$ – time		

Source: own elaboration

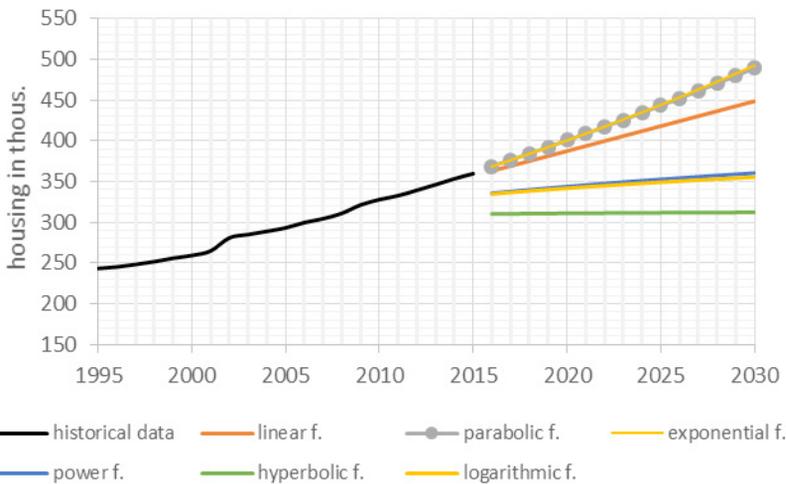


Figure 1. Number of housing units in Cracow – extrapolation forecasts

Source: own elaboration

The selection of functions (acceptable: linear, parabolic, exponential) as the baseline scenario in the presented case was hindered by a statistically similar  $R^2$  ratio. Thus, according to the literature on the subject (Zeliaś, 1997: 81), the decision to choose the form of a trend function which should be based not only on the statistical analysis of the phenomenon but also on the visual assessment of the dynamics of the forecast and empirical data, taking into account the mechanism of the substantive development of the phenomenon over time, was made.

Table 2. Results of extrapolation for the total number of housing units in Cracow

Function	$R^2$	$S_y$
Linear: $y = 228\,702 + 6113t$	0.99	3670
Parabolic: $y = 234\,527 + 4594t - 69t^2$	0.99	2800
<b>Exponential: <math>y = 233\,686 \cdot 1.02t</math></b>	<b>0.99</b>	<b>0.004</b>
Power: $y = 214\,918t^{0.14}$	0.84	0.023
Hyperbolic:	0.42	29809
Logarithmic: $y = 205\,394 + 96\,492\ln t$	0.81	17101

Source: own elaboration

Taking into account the above, an attempt was made to estimate the demand for housing, considering the determinants described in the earlier part of the study. To estimate housing demand, the basic assumption is that the number of new dwellings depends on the increase in the number of people working in the city who will purchase an apartment. Complementary to the above, it is assumed that about 40% of the employed in Cracow are commuters and a significant proportion of the apartments are purchased as an investment, and these apartments are rented to students (CREM 2015, 2016). The following solution was therefore adopted: the employment forecast for Cracow (Jakóbiak, Kudłacz, Lityński, 2016) was used and the employed number was reduced by 40% (commuters). The increase in employment between the years 2015–2025 was adjusted by the average number of people in a home (the forecast was based on the working-age and post-production age, the power function,  $R^2 = 0.99$ ), which should reflect the demand of the inhabitants of Cracow for a new apartment. On the other hand, the demand for housing as an investment was forecasted by estimating the number of apartments to be rented to students. For this purpose, the forecast of the number of students (power function,  $R^2 = 0.94$ ) was multiplied by 60% (the heuristic estimate of the author based on interviews with 300 students), since about 40% live in academic homes or with parents. This 60% of the projected student population is divided into 3 (one student housing is shared by an average of 3 students), which should reflect the number of investment units. As a result, in the period up to 2030 the volume of demand for new apartments should fluctuate within 143 thous. Thus, the baseline scenario was based on forecasting using the exponential function (133 thous. homes) due to the slightest difference between the estimate of demand and the extrapolation.

Table 3. The increase in the number of housing units in Cracow between 2015 and 2030 depending on the assumed function of the trend

Function	Linear	Parabolic	Exponential
Number of new housing units in thous.	88.8	129.5	132.9

Source: own elaboration

Figure 2 illustrates the baseline scenario broken down by the total number of homes in Cracow and the number of new homes (primary market). The exponential function was used to prepare the baseline scenario of the number of apartments in Cracow.

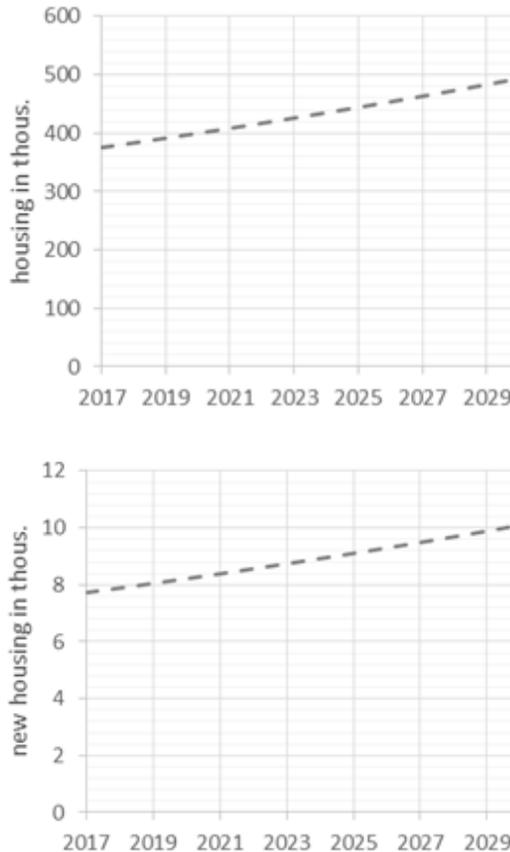


Figure 2. Baseline scenario for the housing market up to 2030 in Cracow

Source: own elaboration

The future trend in the housing market development presented in the above model indicates a constant, annual increase in the number of homes. At the same time, every year the number of newly delivered homes/real estate will be growing year by year and on average may fluctuate from 8 thous. annually up to 10 thous. This forecast is confirmed by the housing market trends described above which signal the development of both housing and workplaces – thus increasing supply and demand in the housing market.

## 4.2. Decrease scenario

The decrease scenario in the housing market was treated as a shock due to the reform of higher education resulting in a reduced enrolment of students, causing a decrease in the number of graduates remaining in Cracow.

In the first assumption, it is assumed that over the four years starting from 2018 Cracow universities will gradually reduce the admission number, altogether by 20%. Estimates of the effect of this shock on the housing market are as follows:

- a. The previously presented extrapolation forecast for the number of students was reduced by 20% between 2018 and 2021, and between 2022 and 2030, the extrapolation forecast concerning the number of students was adjusted annually by 20%. This way, it encompasses the expected number of students.
- b. Based on (a) the number of homes occupied by students is estimated. For this purpose, 60% of (a) is divided by 3 (the number of people in an apartment).

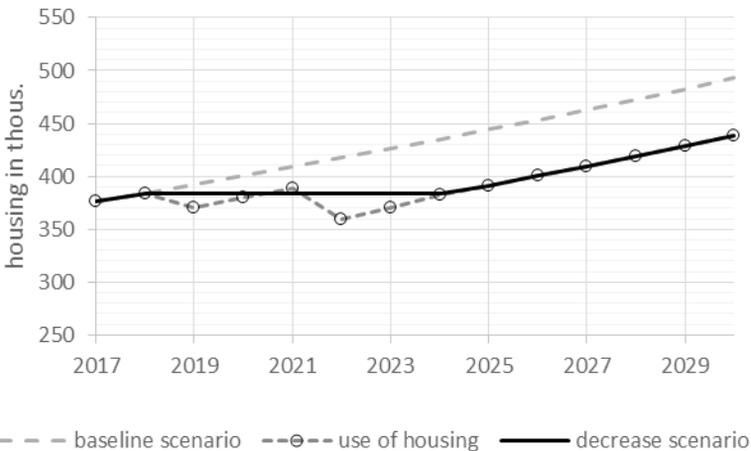


Figure 3. Number of housing units in Cracow in the decrease scenario [thous.]

Source: own elaboration

The second assumption presumes that the forecast of the number of people employed in Cracow will decrease as a result of the gradually reduced influx of graduates starting in 2022, which will in turn reduce the demand for real estate. The impact of this shock was estimated on the basis of the following:

- a. For the period 2022–2025, the number of employed was decreased by 20%, i.e. the number of graduates entering the labour market was decreased by 5% annually. It was assumed that between 2026 and 2030 the labour market would cover 80% of the forecasted graduates.

The ratio of the projected number of employees (a) to the number of employees calculated in the original forecast (Jakóbiak, Kudłacz, Lityński, 2016) was an indicator correcting the forecast given in (1).

Figure 3 shows the number of housing units in the decrease situation. It includes the baseline scenario and the decrease scenario. As the total number of housing units is not decreasing, “use of housing” cannot be a scenario or a projection of housing market development. Therefore, the “decrease scenario” reflects the projection of the number of housing units assuming as a constant the highest number of housing units until the year in which it is exceeded.

Figure 4 shows the demand scenario for new housing given the above forecast. In the period 2019–2024, the number of new housing units will be negative considering “use of housing”, hence the assumption of a zero value indicating the lack of demand for new housing.

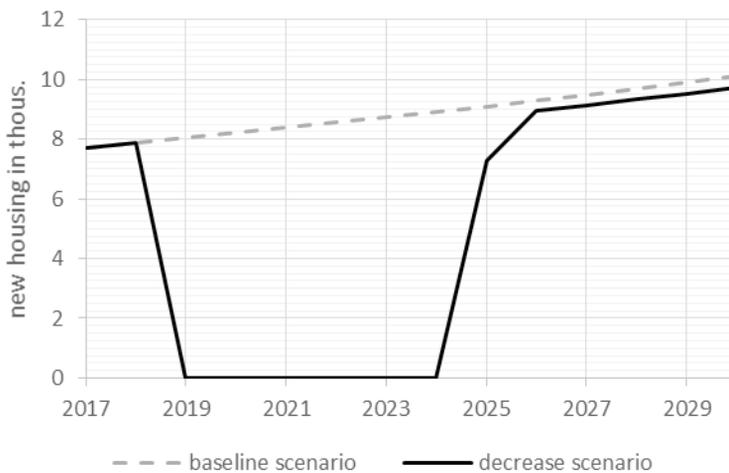


Figure 4. Demand scenario for new housing in the decrease situation [thous. housing units]

Source: own elaboration

In Cracow, where a significant proportion of the inhabitants is comprised of students who rent accommodation, and after graduating generally remain in the city boosting its labour market, and then buy housing units, the shock caused by the decrease in the number of students may have a significant impact on the housing market. First of all, it can result in a 5–6 year crisis in the housing market, manifesting in the lack of full use of the current housing stock. In addition, a 5–6 year old housing market crisis is likely due to the lack of demand for such housing reported by students and graduates, which will also affect the perception of housing as an investment by those wishing to invest their own funds. At the same time, it should be noted that after the crisis (since 2026) the primary housing market will return to the pre-crisis level, but the housing market, interpreted as the already anticipated total (secondary and primary) market, will be permanently precluded from the trend of high levels of housing. The trend of the level of housing will be lower by an average of 9% annually (the relationship of the base scenario to the decrease sce-

nario). This scenario is parallel to the findings in the Polish and foreign literature (Lis, 2011: 14–28; DiPasquale, Wheaton, 1996: 252), indicating the consequences of negative housing shocks. Both from the literature and these scenarios, it is clear that the shock is delayed and leads to a reduction in demand for housing and a fall in supply, and in subsequent periods results in the formation of a new state of equilibrium at a different level than before the shock.

### 4.3. Growth scenario

The growth scenario, a boom in the housing market, is based on the shock caused by the implementation of the new housing programme. To estimate the impact of this shock on the housing market, the following assumptions were made:

- 1) current trends in the implementation of the MDM Programme represent 16% of the primary market, so the baseline scenario already includes the impact of this state intervention;
- 2) it was assumed that the MDM Programme would be replaced by another, 10% larger, budget and would impact the primary market. Thus, for the estimation of the growth scenario, the growth rate of housing increases by 10%;
- 3) it was also assumed that the new programme would be implemented in 2017, but its effects would be delayed by 2–3 years (building process). Thus, the effects of launching the new programme should take into account this delay. At the same time, the new programme was adopted for 4 years.

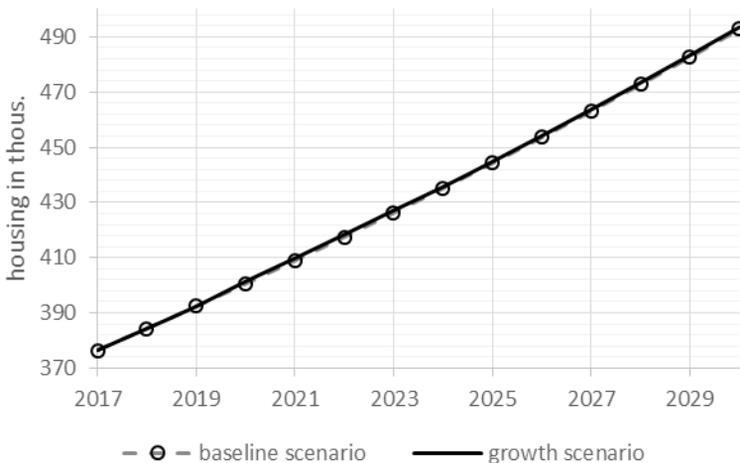


Figure 5. Growth scenario in the housing market of Cracow [thous. housing units]

Source: own elaboration

Figure 5 shows the number of housing units in the growth scenario. It includes also the baseline scenario. Figure 6 is the setting of the number of new housing units on the primary market taking into account the above forecast.

Simulations of the implementation of the housing programme have a low impact on the housing market of the city. The total housing stock is slightly larger than the baseline scenario. As for the primary market, over the years 2020–2023, the average annual growth of about 850 apartments – in principle – is not significant. In addition, in 2024, according to the assumptions of the forecasting model (f.exp.,  $R^2 = 0.99$ ), the number of housing units is lower than in the baseline scenario. The justification for the decline may be cautious investor behaviour at the end of the implementation of the housing programme and expectations for natural tendencies in the housing market. In the years after 2025, the growth scenario of the housing market coincides with the baseline scenario, although a separate approach was used for calculating both (base – exponential with 1995–2015 data, growth – exponential with 1995–2023 data). In this period, the full market presents only slightly higher values – an average of 35 homes per year – which is difficult to observe in Figure 6.

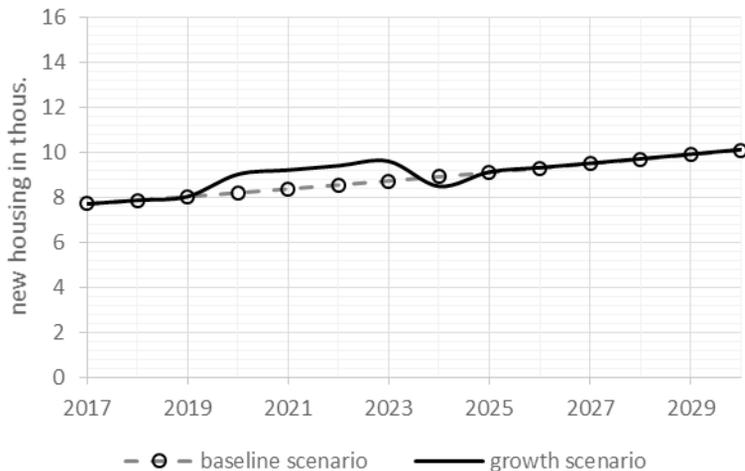


Figure 6. Growth scenario in the primary housing market of Cracow [thous. housing units]

Source: own elaboration

The results of this scenario coincide with the theoretical approaches to real estate market's reactions to positive shocks. This is an increase in the housing market stock that occurs with some delay. After the shock, the housing market is moving to a new so-called partial balance (2020–2023). In the later period, there is a reversal of the trend and demand reduction until the moment in which the housing stock is below the state of long-term equilibrium (2023–2025).

## 5. Conclusions

The housing market plays a dynamic role in the socio-economic and spatial development of a metropolitan city. It satisfies the housing needs of the population, and in the case of a developing metropolis, meets migrants' needs. Housing, being an obvious condition of family development, is also becoming a prerequisite for the professional development. In metropolitan cities, where the employment structure is constantly evolving and professions are often associated, unfortunately, with home-based occupational responsibilities, professional development also depends on and requires appropriate housing.

In light of the analysis, it is expected that the trend of the housing market development will be maintained. This will be connected with an increase in the number of housing units with a generally small or medium size living area. Large homes or single family houses will be the domain of external markets, whose development will be accompanied by progressive suburbanisation processes. Housing in the internal markets will be addressed primarily to the young generation. However, buyers will often identify a given home as an investment. The current low interest rates, resulting in "cheap" credit but also a low return on a bank investment, favour the investment character of a dwelling in a metropolitan city.

Considering the presented scenarios, one may also draw conclusions on the impact of public authorities on the housing market – mostly governmental authorities. First of all, actions of the central government, which actively influence the purchase of a home, may to a lesser extent lead to the development of the metropolitan city housing market than their indirect effects on housing demand. Such potential activities in non-housing sectors, and directly related to housing demand (e.g.: the university system reform resulting in a reduction in the number of students), may, however, undermine the housing and construction markets and further undermine development processes of metropolitan cities. Presently, there is still a need for coherent policies, particularly in relation to: demand-side policies vs. supply-side vs. other sectoral policies. Secondly, the development of housing markets also requires reflection on the diversification of government policies for different cities, which means a varied and individual approach to each metropolitan city market. For example, in cities with high housing demand and high demand elasticity, financing the purchase of housing will noticeably increase its supply by developing the housing market. On the other hand, in cities with low elasticity of demand, subsidising the purchase of an apartment may, in effect, influence the growth of housing prices without a significant change in demand. Therefore, in the foreign literature (O'Sullivan, 2012: 398), it is pointed out that governmental policies concerning housing should primarily support local self-government action, giving local authorities the flexibility to implement instruments aimed at providing support for housing. For these reasons, in order to maintain the upward trend in residential markets of met-

ropolitan cities in Poland, a housing policy is needed, with objectives that are coherent with other sectoral policies and – at the same time – diversified in terms of instruments for achieving the adopted goals. The Polish scientific literature provides relevant recommendations in this area (e.g.: Lis, 2005: 1–58).

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### Scenariusze rozwoju rynku mieszkaniowego miasta metropolitalnego na przykładzie Krakowa

**Streszczenie:** Celem artykułu jest rozpoznanie przyszłych tendencji kształtowania się rynku mieszkaniowego rozwijającego się miasta metropolitalnego. Owe tendencje mają znaczenie dla przebiegu procesów rozwoju gospodarczego kraju. Mieszkalnictwo odgrywa bowiem ważną rolę w rozwoju społecznym, gospodarczym i przestrzennym. W badaniach empirycznych założono trzy scenariusze rozwoju rynku mieszkaniowego. Jako przykład wybrano Kraków – drugie co do wielkości miasto w Polsce, z dynamicznie rozwijającą się gospodarką. Jeden z wniosków artykułu brzmi: propodażowa aktywność państwa w zakresie mieszkań w mniejszym stopniu może oddziaływać na rozwój rynku mieszkaniowego miasta metropolitalnego niż straty wywołane aktywnością państwa w sektorach pozabudowlanych (np. reformą szkolnictwa wyższego), które ograniczają popyt mieszkaniowy. W analizach wykorzystano metody ekstrapolacyjne, a źródła danych to GUS oraz zewnętrzne opracowania eksperckie.

**Słowa kluczowe:** scenariusz rozwoju, rynek mieszkaniowy, metropolie, suburbanizacja, gospodarka

**JEL:** R31, R32

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