

UNDEVELOPED NON-INVESTMENT LAND PROPERTIES VERSUS DESIGNATED FOR SINGLE-FAMILY HOUSING, AS ILLUSTRATED WITH THE EXAMPLE OF THE NIEPOŁOMICIE MUNICIPALITY

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Summary

The Niepołomice municipality is located approx. 25 km from the center of Kraków and directly adjoins the Kraków agglomeration from the south-east. Its natural boundaries are marked by the Vistula River and the Niepołomice Forest. The municipality of Niepołomice is highly attractive to investors, which is due, inter alia, to lower real estate prices compared to the neighboring city of Kraków (the capital of the voivodeship), the presence of an industrial zone that guarantees numerous jobs, good transport connections with Kraków, and a substantial amount of green and recreational areas.

The market of undeveloped land in Niepołomice is dynamic and very diverse, but when the transactions are grouped according to their designated functional purpose in the local spatial development plan, certain trends characteristic of a given group of transactions can be observed. In the present study, we attempt to compare the market of undeveloped non-investment land properties (with intended land use in the local zoning plan defined as agricultural land, green areas, etc.) and those designated for the development of single-family housing, across the entire Niepołomice municipality, on the basis of transactions made in the local real estate market during the 2020–2021 period.

Keywords

real estate market • property prices • Niepołomice Municipality

1. Introduction

The Niepołomice municipality is located in the Wieliczka district (*powiat wielicki*), in the Małopolska Region (*województwo małopolskie*), just beyond the south-eastern borders of the city of Kraków; and it covers an area of 95.1 km², including the city that occupies 27.4 km². The area of the municipality covers the zone of the city as a separate division, plus twelve villages (Chobot, Ochmanów, Podłęże, Słomiróg, Staniątki, Suchoraba, Wola Batorska, Wola Zabierzowska, Zabierzów Bocheński, Zagórze, Zakrzowiec and Zakrzów). The number of inhabitants of the municipal-

ity is approximately 29,700 persons, including over 14,000 people living in the city of Niepołomice (as of December 31, 2021). In the years 2002–2017, the number of inhabitants increased by 54.2%. If we take into account permanently registered residents only, we shall see that the numbers of newcomers amounted to 537 people in 2018; 537 people in 2017; and 568 people in 2016. It follows that there has been a steady, long-term trend of about 2% increase in the number of new residents annually. If this pace continues, up to 40,000 people may live in the Niepołomice municipality by 2050. The average age of the inhabitants is 36.8 years and it is lower than the average age of the inhabitants of the Małopolska region, and much lower than the average age of the entire Polish population. Niepołomice has a positive birth rate. The population density at the end of 2019 was: 296.5 people per square kilometre [<https://www.niepolomice.eu/informator>].

Important communication routes intersect in Niepołomice – the A4 motorway and the national road No. 94 run from the south, the national road No. 75 Kraków-Krynica runs from the north to the south, and the regional road No. 964, which is the main communication axis of the municipality, crosses the municipality from the north to the south. At the same time, the south of the municipality is crossed by the E30 railway line (with stations in Podłęże and Staniątki). The oldest monuments in Niepołomice date back to the mid-fourteenth century and were built on the mandate of King Casimir the Great. The early history of the place is closely related to the royal court and the frequent visits of the Polish monarchs to the castle in Niepołomice. Niepołomice is one of the most dynamically developing municipalities in Poland. Thanks to a favourable location, good infrastructure, and local government activities, it has become a place where over 60 large companies have located their investments. Currently, the Niepołomice Investment Zone covers an area of approximately 500 hectares. In addition, complementing it are smaller zones in Ochmanów and Wola Batorska. However, the economy of Niepołomice is not based solely on large companies. Apart from these, there are more than two thousand business entities operating here: shops, service establishments, banks, as well as small manufacturers. These businesses constitute a significant source of income and create many jobs. Niepołomice is also a place of active recreation not only for its inhabitants, but also for people from neighboring towns. Covering an area of approximately 12,000 hectares, Puszcza Niepołomicka is a forest complex popular among walkers, runners, cyclists, and even horse riders. In addition, a well-developed sports infrastructure attracts swimmers, tennis players, footballers, and martial arts enthusiasts [Godzik and Piechnik 2019, <https://www.niepolomice.eu/informator>].

The research area was designated within the administrative boundaries of the Niepołomice municipality, Wieliczka district, Małopolska region. The subject of the research was the transactions pertaining to undeveloped land properties concluded in the period from 1 January 2020 to 31 December 2021. Transactions pertaining to non-investment land properties, and to land intended for single-family housing development were analyzed separately, in statistical terms.

2. Studied object and research methodology

In order to conduct research, data were obtained from the County Office in Wieliczka, from the records of real estate prices and values, pertaining to market transactions of purchase and sale of undeveloped land from the entire municipality of Niepołomice during the period between 1 January 2020 and 31 December 2021. Then, a selection of the obtained data was made – namely, undeveloped land properties designated in the local spatial development plan for single-family housing and for non-investment purposes (agricultural land, developed and undeveloped greenery, etc.) have been selected. In the absence of information in the records on the functional designation of the given property, it was supplemented on the basis of the local spatial development plan for the city and the municipality of Niepołomice, available on-line at <https://niepolomice.e-mpzp.pl/>. Furthermore, the type of land use of the plots was verified by means of an orthophotomap.

Transactions pertaining to built-up land and real estate interests were rejected from the data set. Only real estate ownership-based transactions, concluded in the conditions of the free market, were taken into account – whereas tender procedures, non-tender procedures, public sale transactions, discounted sale transactions, as well as transactions without a given sale price were rejected from the study. The minimum area of the plot for further analysis was assumed at 300 square meters, as there is a high probability that smaller plots were sold in order to improve the development conditions of the neighboring land properties. Therefore, their price could largely depend on the added value of the plot thus enlarged, and not on the individual characteristics of the property itself, and not even on its functional designation in the local spatial development plan. It was assumed that a plot with a minimum area of 3 acres could be independently developed in a rational manner.

During data selection, particular attention was paid to outliers due to the risk of errors in the records of real estate property prices and values [Bacior and Wróbel 2017].

3. Results

Analyses of local real estate markets are of interest to many scientists – and numerous studies have been developed to address that [Wei-Xing and Sornetteb 2007, Karanikolas et al. 2011, Golob et al. 2012, Kauškalea and Geipele 2017, De Paola et al. 2018]. Real estate prices are influenced by many factors. As examined, in relation to agricultural real estate properties, these factors may include, for example, the shape and size of the plot or its distance from the city center or the seat of the municipality [Bitner et al. 2014, Leń and Mika 2016]. For building plots the factors may include, for example, the availability of a technical infrastructure network or the distance from the main road [Gawroński and Prus 2005]. The present study does not focus on the features that differentiate the prices of a given type of real estate. Instead, only the general characteristics were provided, and comparison was made of two types of real estate properties (non-investment land and land intended for the development of single-family housing)

from the same research area, based on transactions concluded during the same period of time. Nevertheless, different individual trends were observed for both types of properties, as described below.

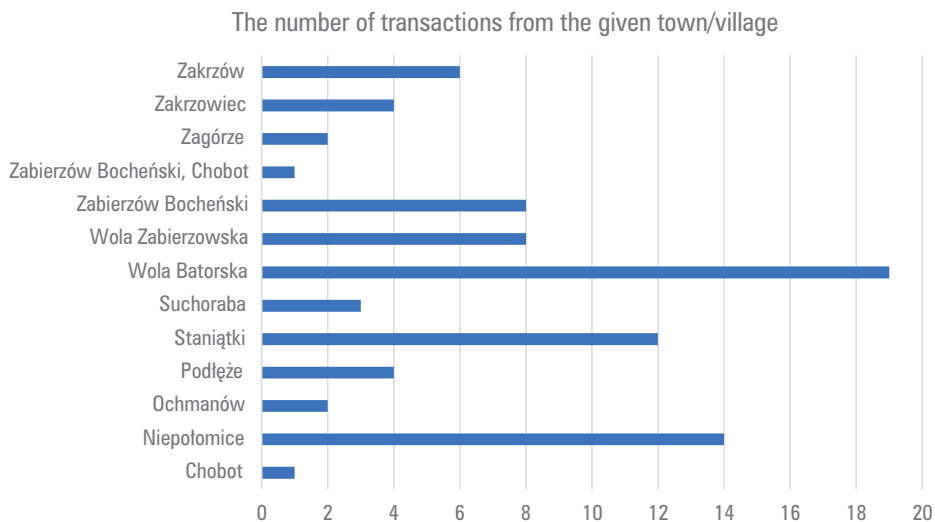
Table 1. Descriptive statistics for undeveloped land properties in the Niepołomice municipality in period 2020–2021

	Undeveloped land properties of non-investment character	Undeveloped land properties designated for single-family housing development
Number of transactions n [units]	80	335
Mean \hat{C} [PLN/m ²]	12.55	128.49
Standard deviation σ_n [PLN/m ²]	13.03	79.00
Coefficient of variation $V [V = \sigma_n / \hat{C}]$	103.84 %	61.49 %
Median Me [PLN/m ²]	8.22	111.01
Maximum unit price C_{max} [PLN/m ²]	59.47	482.60
Minimum unit price C_{min} [PLN/m ²]	0.61	18.26

When comparing the data in Table 1, it is apparent that in the same period of time, over four times more transactions were made concerning real estate intended for single-family housing development, and the average unit price was over 10 times higher than for non-investment real estate. Unit prices of non-investment properties range from 0.61 to 59.47 PLN/m² and they are highly diversified (the coefficient of variation is as much as 103.84%). In turn, for real estate intended for the development of single-family housing, unit prices of land oscillate between 18.26 and 464.34 PLN/m² and are less varied than in the case of non-investment land (the coefficient of variation is 61.49%).

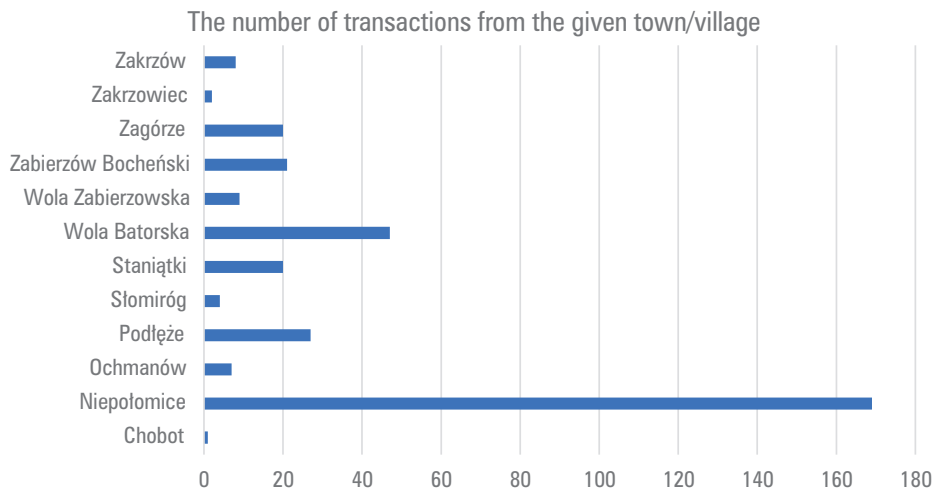
As is apparent in the below histogram (Fig. 1), most transactions concerning undeveloped non-investment land were made in the area of Wola Batorska, which is the largest village within the municipality, covering an area of 2,272 ha (19 transactions). The city of Niepołomice, occupying the area of 27.4 km² (with 14 transactions), ranked second, and the small town of Staniątki, occupying an area of 529 ha (with 12 transactions), ranked third in this respect. The smallest number – one transaction each – was recorded in Chobot (with an area of 207 ha), and at the border between Chobot and Zabierzów Bocheński.

The histogram presented in Figure 2 shows that the largest number of transactions pertaining to undeveloped land intended for single-family housing was made in the



Source: Author's own study

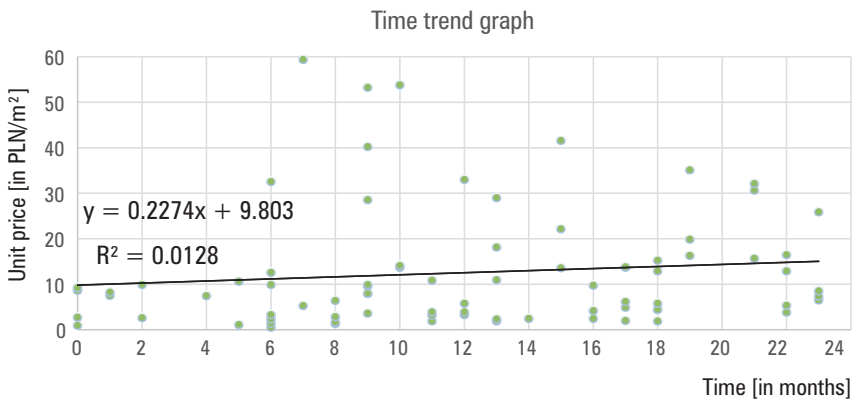
Fig. 1. The number of completed transactions pertaining to non-investment properties, subdivided according to particular towns/villages



Source: Author's own study

Fig. 2. The number of completed transactions pertaining to properties designated for single-family housing development, subdivided according to particular towns/villages

seat of the municipality – that is, in the city of Niepołomice (with 169 transactions), whereas the largest village in the municipality – Wola Batorska – ranked second with over three times less (47) transactions, whereas the village of Podłęże ranked third with 27 transactions. The latter is a small village (covering an area of 570 ha), but currently one of the most attractive in the municipality, due to the fact that on 22 June 2020, it was in Podłęże that the first A4 motorway exit in the Niepołomice municipality was opened. The smallest number of transactions was recorded in the towns and villages with the smallest areas, located in the peripheral zones of the municipality (Chobot – with one transaction, and Zakrzowiec – with two transactions).



Source: Author's own study

Fig. 3. Time trend graph for undeveloped non-investment land properties

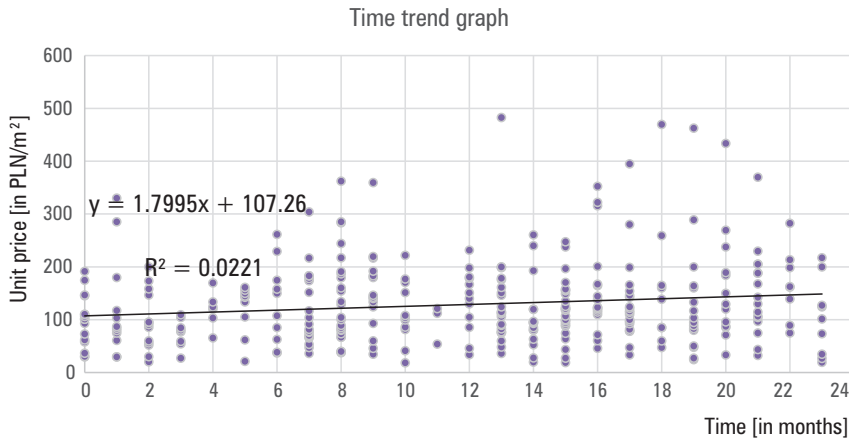
In order to determine the impact of time on the volatility of unit transaction prices, a graph was developed, where each transaction from the database is represented by two variables: time (the number of months that have elapsed since the earliest transaction in the database), and the unit transaction price. For undeveloped non-investment land properties, the trend line equation takes the following form: $y = 0.2274x + 9.803$, with $R^2 = 0.0128$.

For undeveloped land intended for single-family housing, the trend line equation takes the form of: $y = 1.7995x + 107.26$, and $R^2 = 0.0221$

Over the same period of time, in the same research area, the prices of undeveloped land intended for single-family housing grew more than 1.7 times faster than the prices of undeveloped non-investment properties.

4. Conclusions

The market of undeveloped plots of land of a residential character, compared to the market of non-investment properties, is much more dynamic, both in terms of the number of transactions made within the market, and in terms of the trend of price



Source: Author's own study

Fig. 4. Time trend graph for undeveloped land properties designated for single-family housing

increases. We should mention that the city of Niepołomice is the undisputed leader when it comes to the number of transactions in land designated for single-family housing development in the Niepołomice municipality: land properties located in the city of Niepołomice amounted to more than half of all the concluded transactions (exactly 50.45% of the total number of transactions, with 169 transactions in Niepołomice, and 166 transactions in all the other towns and villages within the municipality). It is also worth noting that the directional coefficients of the trend lines for both types of real estate are positive (meaning that unit prices increase with time), however, for undeveloped properties intended for single-family housing development, the correlation between the unit price and time is stronger.

The non-investment real estate market is highly diversified (the coefficient of variation exceeds 100%) and this is a typical feature for this type of market. This means that in the case of non-investment real estate in the market under study, but also in other comparable local markets, it is possible to encounter many transactions with a unit price as low as a few PLN, but also as high as several dozen PLN. This may be due to the very diverse suitability of such land – for agricultural crops, for grazing livestock, as buffer greenery, e.g. around industrial areas, but also used or planned to be used for parks or playgrounds. Another reason for such a large variability of prices may be the speculative purpose of purchasing some land – for example, the purchase of agricultural land in the immediate vicinity of dense residential areas with the hope of future changes to the provisions of the local spatial development plan.

Understanding the differences in the specific characteristics of the markets for these two types of real estate can be helpful, for example, when selecting comparative properties in the real estate appraisal process.

Financial resources for the implementation of research for doctoral candidates studying at the Doctoral School of the Hugo Kołłątaj University of Agriculture in Krakow (Annex 1 to the Rector's Ordinance 147/2020 of August 20, 2020)

Granted financing number – AD-01.

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