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The impact of the COVID-19 pandemic on the residential real estate market on the example of Szczecin, Poland

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Abstract

The aim of this article is to assess the impact of the socio-economic situation caused by the COVID-19 pandemic on the residential property market. Research in this area has been conducted all over the world. The conclusions of these studies are inconclusive. In different countries and different cities, the changes in the property markets observed from 2020 onwards differ. These differences concern both prices and the number of transactions. In this situation, it is important to conduct research in as many markets as possible. Summaries of such research will allow certain patterns to be identified, which will provide a global perspective on how the COVID-19 pandemic has affected the property market. The paper describes the short-term changes that have occurred in the formation of residential property prices and the number of transactions concluded. Separate analyses were conducted for property sales and rental transactions. The research was carried out on the data of over 5000 transactions in one of the biggest Polish cities - Szczecin. The city is divided administratively into four districts, which was also taken into account in the study. This made it possible to assess whether, just as the impact of the pandemic varied between cities and countries, it also varied at district level within one city. Confirming the diversity of impact will allow conclusions to be drawn as to whether the pandemic affects each market equally or whether different property markets are affected differently by restrictions and changes in the decisions of property market participants.

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1. Introduction

The SARS-COV-2 virus pandemic that erupted in late 2019 was, and continues to be, a serious threat to individual countries' economies. At the outbreak of the pandemic, lockdowns were gradually implemented by individual governments to contain the spread of the disease and to save health systems from collapse. Decisions to restrict movement and work as normal led to major economic turmoil in many areas. This resulted in significant falls in GDP in all countries of the world. Increased uncertainty in global markets has led to various investment projects being put on hold or abandoned [1]. The real estate market was also affected by the restrictions introduced during the pandemic. The main result of these restrictions on the property market was an increase in empty office space, closed shopping malls, restaurants and bars [2]. At present, the pandemic is still ongoing and it is difficult to clearly assess the total impact of the pandemic on economies, including the real estate market. Nevertheless, analyses and studies are being conducted to identify and measure the impact of social and economic constraints on the evolution of various factors that describe the health of real estate markets. The COVID-19 pandemic affects both demand and supply in the real estate market. Demand constraints related to reduced bank activity in the area of mortgage lending. Investors themselves, due to increased uncertainty about the future state of the economy, are postponing decisions on property purchases. In turn, developers have encountered difficulties due to reduced access to labour. Real estate markets are characterised by the fact that they are often (apart from global trends) local. They form a kind of micro-worlds, which are partly governed by their own laws. Therefore, it is necessary to observe global trends at the level of individual real estate markets. Only an analysis of a larger number of cities and countries will give a full picture of the impact of the pandemic on the property market. The aim of this article is to assess the impact of the socio-economic situation caused by the COVID-19 pandemic on the residential real estate market in Szczecin, one of the largest cities in Poland. The article describes the short-term changes that occurred in the formation of residential real estate prices and the number of transactions concluded. Separate analyses were carried out for property sales and rental transactions. The city is administratively divided into four districts, which was also taken into account in the study. This made it possible to assess whether, just as the impact of the pandemic varied between cities and countries, it also varied at the neighbourhood level of one city. Confirming the diversity of impact will allow conclusions to be drawn as to whether the pandemic affects each market equally or whether different property markets are affected differently by restrictions and changes in the decisions of property market participants.

2. Literature review

In late 2019, an outbreak of a new virus began in China. In the following months, the virus spread around the world - the virus reached Poland in early March 2020. On 11 March, the World Health Organization (WHO) declared a pandemic. Since its outbreak, researchers from all over the world have been studying its course. Apart from the obvious research into the virus itself, its genome, mutations, the nature of the course of the pandemic and work on vaccines, the subject of COVID-19 and its impact on various areas of human life in 2020-2021 has been the subject of many scientific papers. The number of such papers is constantly increasing, as evidenced by, among others, the article [3]. The study consisted in meticulous monitoring of the Web of Science website. This monitoring revealed a significant increase in publications on COVID-19. The interests of researchers in this area evolved - in 2020, the most frequent articles were on mental health, communication, misinformation and related risks. In 2021, vaccinations, social distance and telemedicine, among others, were the most keywords. Attempts were made to capture the impact of the pandemic on various areas of life including education, social life, trust in science or the change in air quality caused by lockdown. A pilot study of sampling two self-isolated individuals in a single dwelling was conducted in 2022 [4]. It also sought to predict the number of people fully vaccinated against COVID-19 [5] and to test future vaccination rates for herd immunity. In the area of education, an example of pandemic-related research is a study to assess the impact of a pandemic on education, social life and mental health [6]. In the current time of much misinformation, not least about COVID-19, research has also addressed the issue of public confidence in science [7]. The conclusion of this study is that confidence in science increased significantly after the start of the pandemic and decreased slightly a few months later. The impact of the pandemic on people's lives is very diverse and manifests itself in different spheres of life. Restrictions on movement resulted in a significant decrease

in car, sea and air traffic. This had a significant impact on, among other things, air quality [8]. The study looked at changes in air quality during the lockdown caused by COVID-19. In 2020, compared to 2017, there was an improvement in urban air quality.

The COVID-19 pandemic also had a very large impact on the real estate market. The office real estate market was very strongly affected by the pandemic [2]. Many people previously working in offices switched to remote working, which led to a decrease in interest in renting offices. The closure of shopping malls also had an impact on this sector of the real estate market. [9]. Researchers have conducted many studies related to different areas of real estate. In Canada, researchers conducted a study on the impact of COVID-19 on the inflow, diversion and reuse of municipal waste on the example of multi-residential buildings [10]. Based on the analysis of interviews conducted by the authors of this study, 5 areas were identified as affected by COVID-19: (1) changes in the flow of rubbish, recycling, and curbside waste, (2) new health and safety concerns, (3) changes in reuse and reduction practices, (4) changes in special waste and deposit-back bottle collections, and (5) changes in diversion and reduction education. In contrast, the paper [11] addresses the topic of renewable energy sources, in this case photovoltaic installations. The paper presents an economic evaluation of a 3kW installation in the light of several policy scenarios. The results of the study show that consumers have great potential to counteract climate change while gaining economic benefits at the same time. The issue of electricity demand in residential buildings during a pandemic is addressed in the paper [12]. It was observed that in the US, electricity demand decreased in 2020 as the public sector was closed or partially closed during lockdown, but demand increased by as much as 30% over the entire lockdown period for the residential sector. A number of energy efficiency and renewable energy solutions are presented to cost-effectively mitigate the increase in energy demand resulting from prolonged lockdown. The COVID-19 pandemic has also had an impact on prices and the number of transactions taking place in the housing markets. It was originally feared that the economic collapse caused by the pandemic would lead to a significant fall in prices. However, a number of studies show that, contrary to widespread expectations, house prices have not declined, and in fact some markets have seen significant increases. In Northern Ireland, researchers have focused on the impact of COVID-19 on house prices [13]. It was shown that autocorrelation in house prices increased after the outbreak of the pandemic, revealing price pressures driven by behavioural changes. It is noted that price divergence is evident in rural areas and in neighbourhoods with higher socio-economic levels, making them more resilient to the impact of COVID-19. It is important to recognise the finding that epidemics of this type affect housing markets heterogeneously in the short term, clearly favouring larger houses in healthier (rural) and wealthier locations, which may contribute to reinforcing inequalities in the housing market. In the UK [14] researchers have attempted, from data available on the internet, to calculate detailed indicators in real time to track the evolution of the property market. From the sellers' perspective, an approach was proposed to calculate innovative indicators of the housing market, such as the number of new listings published and how the price changes over the life of the listing. Matching sales prices from the collection with transaction prices from the notary database using machine learning allowed to measure the negotiation margin of buyers. It was observed that during the COVID-19 crisis, the indicators are indicative of a market freeze and of sellers' 'wait and see' behaviour. In Italy, a study was also attempted using real-time data but from a different market. [15] They developed a methodology to track in real time the impact of shocks (such as natural disasters, financial crises or pandemics) on gross domestic product (GDP) by analysing high frequency data from the electricity market. They examined the loss of GDP caused by COVID-19 in twelve European countries during the first wave of the pandemic. The researchers' results are almost indistinguishable from official statistics from the first two quarters of 2020. (the correlation coefficient is 0.98) and have been verified in several resistance tests. The results show that the pursuit of "herd immunity" did not protect against the harmful economic effects of the first wave of the pandemic. The results suggest that international policy coordination is fundamental to minimise the spillover effects of non-pharmaceutical interventions between countries. Also in Italy, a study was conducted on the real estate market response to the COVID-19 crisis and the outlook for the Naples metropolitan area [16]. The aim of the study was to analyse trends in the housing market in Italy, particularly in the Naples area. For the study, real estate market trends between 2009 and 2020 were analysed and a survey was conducted among the local community as well as real estate agents, the results of which showed structural changes in the demand for residential real estate. In Vietnam, a study was conducted on the factors affecting property prices during the COVID-19 pandemic [17]. The prevailing virus directly disrupted the supply of raw materials and human resources which had

an impact on the real estate market, which together accounts for about 6% of the country's GDP. In Poland, the impact of COVID-19 on the real estate market was also analysed in great depth. The article [18] presents and evaluates changes in real residential prices in Poland during the COVID-19 pandemic. Transaction prices of residential units on the primary and secondary market in 16 provincial cities were analysed, which were derived from quarterly data collected by the National Bank of Poland and data on quarterly consumer price indices from the Central Statistical Office. The study with its period covered 2018-2021, distinguishing between: COVID-19 and pre-COVID-19 periods. It was shown that the dynamics of real housing prices in the pandemic sub-period is lower than in the corresponding pre-COVID-19 period. Additionally, the existence of regional price convergence in the housing market in the analysed cities, both in the primary and secondary markets, was revealed. However, no common convergence of prices was observed, but only a group of cities where housing prices tend to converge during the COVID-19 sub-period. In contrast [19] noted that the assumed negative impact of the COVID-19 pandemic on the housing market, among others, was not so noticeable at all. The study found that the selected Polish cities did not experience the market recession that was initially predicted. The paper examines the dynamics and forecasting of residential prices in Polish cities during the COVID-19 pandemic and uses the TRAMO/SEATS and ARIMA models. It is noted that the Polish housing market, represented by selected local housing markets, still shows an upward trend despite the COVID-19 pandemic in 2020. The author concludes that the housing market may slow down in 2021, but no significant decline in property prices in Poland is forecast in the near future. The research also looked at the work of real estate professionals. The article [20] describes the detailed results of the research and focuses on aspects such as cooperation with clients, work mode and remote working during the pandemic. The mentioned issue is also described in [21]. In this case, the topic of the study was the impact of COVID-19 on the work of market professionals who had difficult access to materials necessary in the process of estimating property values. A survey of valuers was conducted and the results clearly show that respondents experienced difficulties related to the pandemic and reported a negative impact on their business performance. The most important issue raised by those surveyed related to limited access to public institutions supporting the valuation process, including data on property transactions.

The rental market is a non-transparent market. In Poland, there is no organized system of collecting information on concluded lease agreements, as it is, for example, in the case of property sale prices. Access to data is difficult and only market practitioners, i.e. agents, appraisers, managers are privy to the content of lease agreements they come across in their work. Nonetheless, the residential rental market is growing rapidly throughout the country and, as with other markets, the impact of COVID-19 has been noted. At the beginning of the COVID-19 pandemic [22] they saw decreases in rents in non-white neighborhoods and increases in white neighborhoods. The COVID-19 pandemic changed the strategies of many landlords, who shifted from short-term rentals to long-term [23]. And [24] noted that the pandemic caused a loss of income for homeowners who used the Airbnb platform. In turn [25] they examined the level of grief among consumers, including landlords and tenants.

The literature review shows that the impact of the pandemic on the real estate market has been and continues to be studied worldwide. Unfortunately, the COVID-19 pandemic is not yet over (spring 2022) and its impact on various spheres of life, including the functioning of the real estate market, is still ongoing. Some forecasts pointed to larger price corrections in 2021. The presented study continues the work related to the residential real estate market during the pandemic period. It extends the study period into the following months and proposes to look at the market in a large city by its districts. The aim of this approach is to assess whether the impact of the pandemic on the real estate market is the same throughout the city or whether individual parts of the city, due to the diverse nature of residential properties and their location, have been differently affected by the virus on the behaviour of real estate market participants.

3. Material and Methods

The study carried out is based on the analysis of trends in property prices and the number of transactions between 2016 and 2021. In order to interpret the observed trends, the period analysed was divided into 2016-2019 - defined in the study as the period before the COVID-19 pandemic - and 2020-2021 as the pandemic period.

The study uses a database of sales transactions and concluded lease agreements in the residential market in the Polish city of Szczecin. The city is divided into four districts, for which changes in trends on the sales and rental market before and after the start of the COVID-19 pandemic were analysed separately. Figure 1 presents the location of the analysed market and the division of the city into districts.

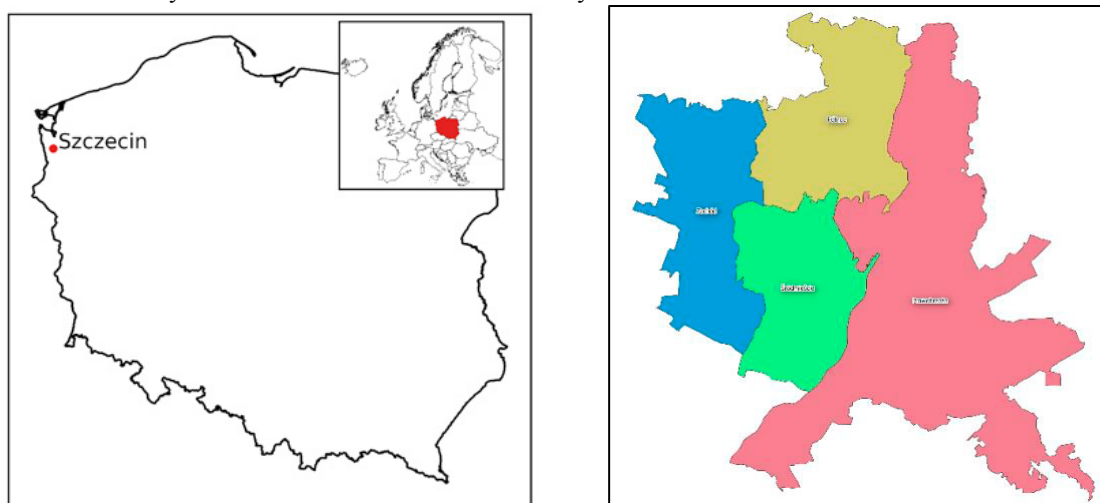


Fig. 1. Location of the city of Szczecin within Poland and the division of the city into districts.

The dataset analysed comprised a total of 5327 observations, consisting of 3885 sales transactions and 1442 leases recorded between 2016 and 2021. For each transaction, two attributes were described: the date of the transaction and the price per square metre. Data was used that came from the author's own database and data collected from real estate agents, which unfortunately did not cover the entire market. It should be added that due to the lack of an official register of rental contracts in Poland, analysis of this market is very difficult.

The paper uses only simple statistical measures such as average relative growth and absolute growth. This is for several reasons. First, this study is the first stage of research on the impact of the COVID-19 pandemic on the local real estate market studied. The second reason is the desire to reach the widest possible audience of real estate market participants with the results of the study. Subsequent studies will employ more advanced methods to investigate the dynamics of property prices and the number of transactions.

4. Empirical results

The study was conducted as follows. The analysed dataset was divided into two parts. The first part contains data on residential property sales. The second about the rental market of the same type of real estate. Both market spheres have been described from the perspective of the entire city. Both prices and number of transactions have been analysed. At a further stage, analogous statements were made by city districts. Figure 2 presents (on a quarterly basis) the average transaction prices per 1 square metre in 2016-2021. It can be observed that the entire analysed period was characterised by an increasing trend in residential property prices. This applies both to the pre-pandemic period, i.e. in the case of this study 2016-2019, and 2020-2021, i.e. the time when the first two waves of the disease occurred in Poland (autumn 2020, spring 2021). During the analysed period of the COVID-19 pandemic, average prices of dwellings increased by 16.14% (2021Q4/2020Q1). In the two-year period leading up to the pandemic (2019Q4/2018Q1), the increase in average prices was 36.75%. It was therefore more than twice as large. This means that even though the pandemic did not cause a fall in residential property prices it was certainly possible to see a fall in the rate of price growth. It is, of course, open to debate as to how much of this lower price increase was due to the economic impact of the pandemic, and to what extent it represents an approach to price levels that the market no longer accepts. From the literature review, it is known that a "wait and see" strategy has been observed in the real estate market during the pandemic. This manifests itself in the fact that property sellers are not willing to lower prices. They prefer to postpone the sale, observe the market and only when there are signs of a major market collapse, accept a lower price. The survey of the real estate market in Szczecin brings similar conclusions. This is

evidenced by the data presented in Figure 3, which shows the number of residential property sales transactions. In the pre-pandemic period, the number of concluded transactions did not show a clear tendency. There were about 180 transactions per quarter. The outbreak of the SARS/COV-2 virus pandemic changed this situation very significantly. In the first quarter of 2020, 131 transactions were recorded. In the following two quarters, 89 and 90 respectively. This represents a 50% drop to typical quarters in 2016-2019. In subsequent quarters, the number of transactions began to increase, but at no point did it reach the levels recorded before the outbreak of the global epidemic.

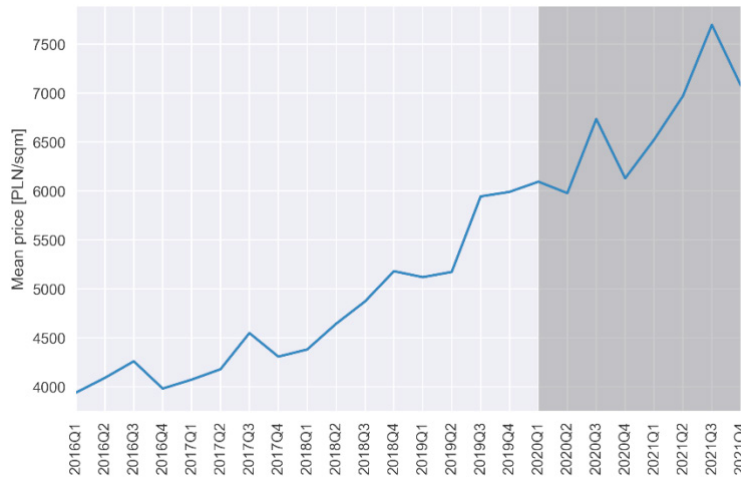


Fig. 2. Average transaction prices per 1 sq m of residential units in Szczecin in 2016-2021.

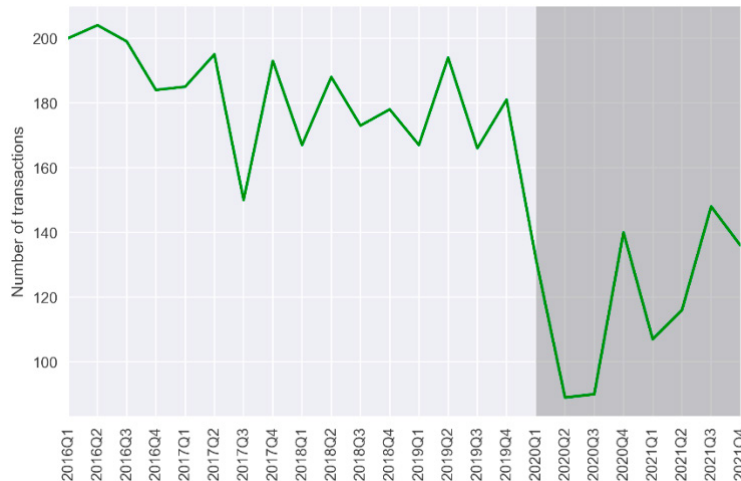


Fig. 3. Number of residential sales transactions in Szczecin in 2016-2021.

The situation on the residential rental market in Szczecin was slightly different. Similarly to sales, a clear upward trend in rental prices was recorded in 2016-2019. In the entire four-year period, the average rental price for 1 square metre of a residential unit increased from PLN 25 to over PLN 37, i.e. by 48%. The last two years before the outbreak of the pandemic saw average rental prices rise by nearly 20%. However, after the outbreak of the pandemic, the rental market behaved differently than the sales market. Initially, rental prices did not fall either. However, the second wave of the disease at the beginning of 2021 caused a significant drop in prices. The reason for this may have been the introduction of restrictions on short-term rentals. This increased the supply of units offered terms longer than a few days. This increased supply led to a fall in prices, which was however quite short-lived. The last two quarters analysed were again characterised by significantly higher price levels. In the case of the number of concluded rental contracts, the development of which is presented in Figure 5, it can be noted that the analysed real estate market is characterised by high volatility. The number of concluded agreements varies from slightly over 30

to over 100 per quarter. It can be said that there is a certain seasonality characterized by an increase in the number of agreements concluded in the third quarters, which is related to the beginning of the academic year and an increased interest in flats by students of various Szczecin universities. The outbreak of the pandemic did not cause any major collapse in the residential rental market. This was different from the sales market, where the number of transactions fell.

It should be noted that interest rates in Poland reached a record low in the second quarter of 2020. Tightening of monetary policy took place only from the third quarter of 2021, when interest rates started to be raised. Certainly, a fact worth noting was the level of inflation, which began to rise gradually from 2018. The above-mentioned factors resulted in the fact that some potential buyers in the real estate market could not afford to buy property. Some customers, instead of buying flats, decided to rent, which may have been dictated by the above factors.

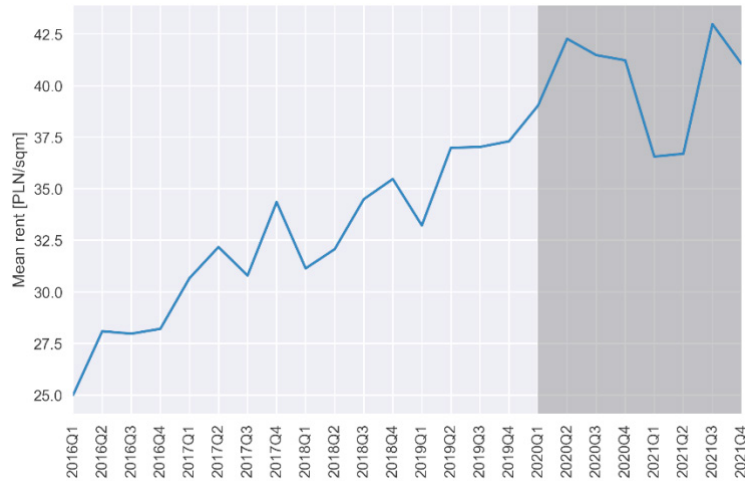


Fig. 4. Average rental prices of 1 sq m of residential units in Szczecin in 2016-2021.

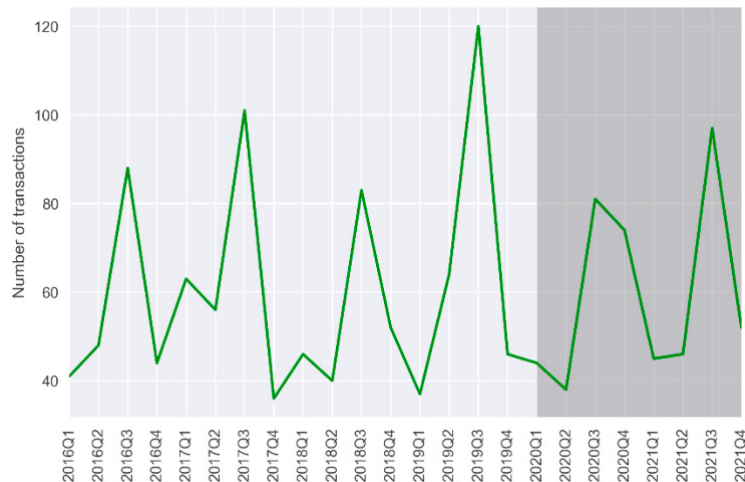


Fig. 5. Number of residential tenancy agreements concluded in Szczecin in 2016-2021.

Szczecin is divided into 4 districts with 37 administrative districts. The settlements differ in various attributes e.g. area, predominant type of development, amount of greenery or areas under water, which makes them unique in the city and the district.

Prawobrzeże district is located on the right side of the Oder river, while the other 3 districts are located on its left side. The city centre is located on the left bank, which naturally means that average prices in Śródmieście, Zachód, Północna are higher than in Prawobrzeże. Not without significance is the historical buildings with architectural values present in a significant part of the districts of Śródmieście and Zachód, which can be observed in the prices of real estate achieved in these areas.

In the residential rental market, we can observe that there is a similar situation in terms of prices per district as in the case of average transaction prices. Average rental prices in the Prawobrzeże district reach the lowest values, while in the Śródmieście district they are the highest.

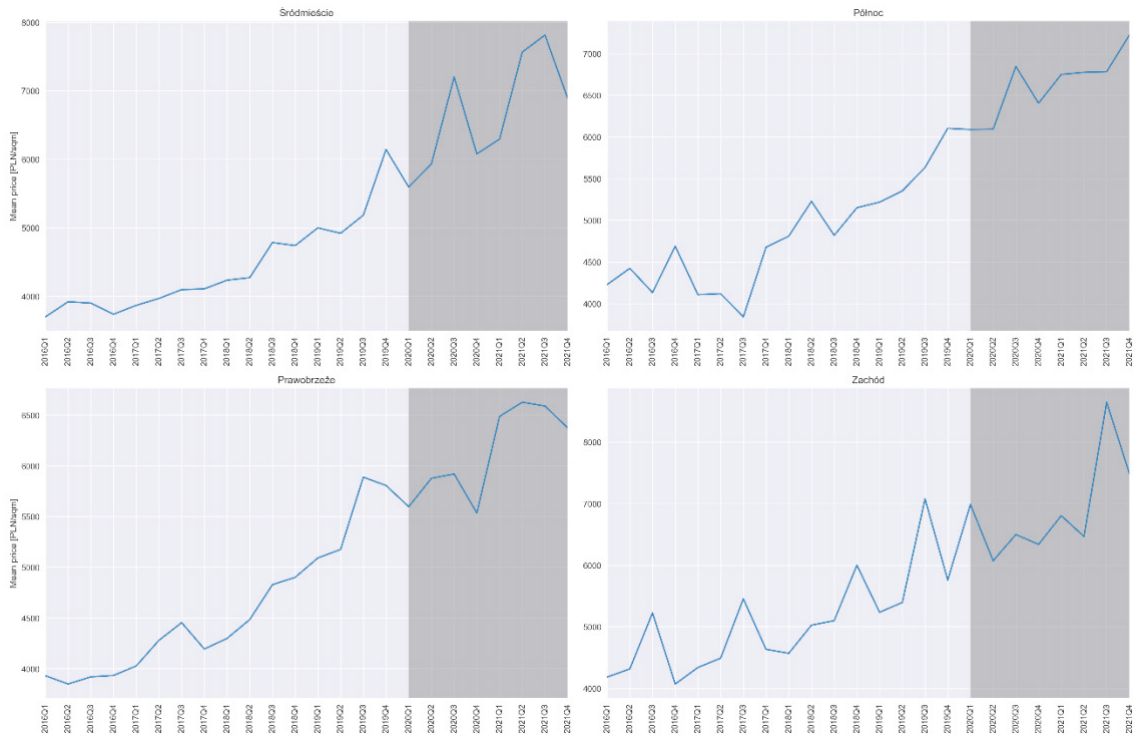


Fig. 6. Average transaction prices for 1 sq m of residential units in the districts of Szczecin in 2016–2021.

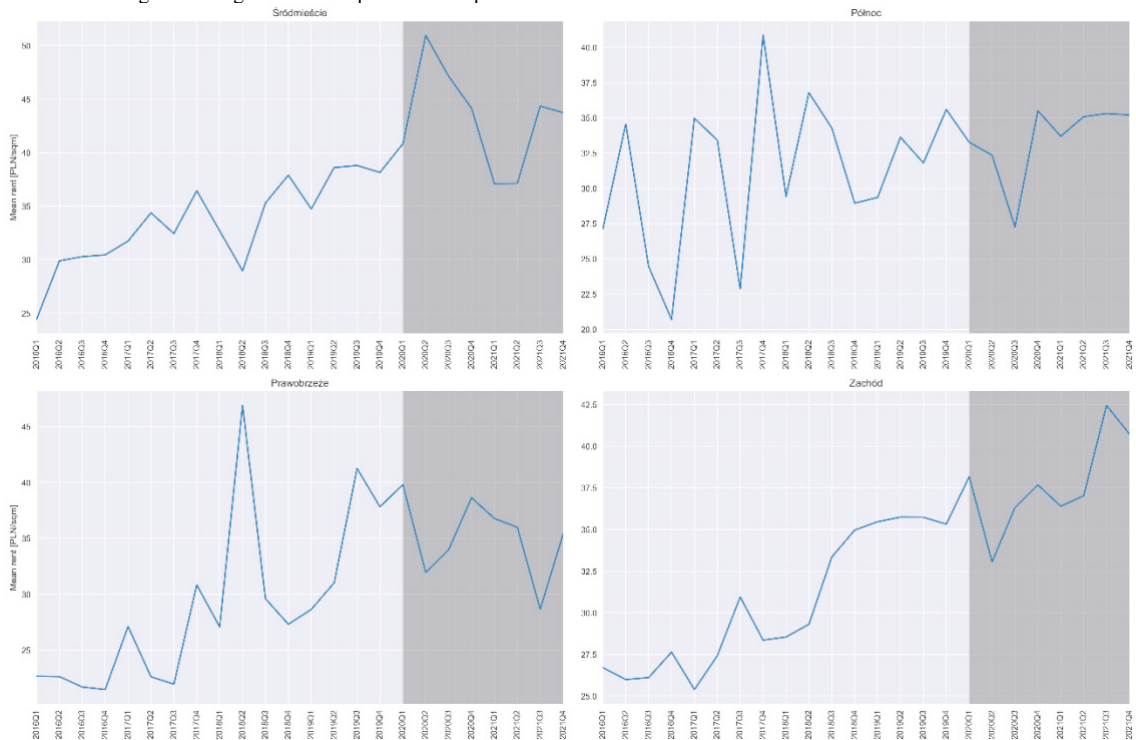


Fig. 7. Average rental prices of 1 sq. m. of residential units in the districts of Szczecin in 2016-2021.

5. Conclusions

The study looks at how the housing market evolved in the face of the COVID-19 pandemic. Property markets are strongly determined by their local character. In order to illustrate the impact of pandemic-induced economic change, many markets need to be studied and only a meta-analysis of a large set of markets will fully capture how the property market responded to a pandemic that had not been recorded for over 100 years. Szczecin is an example of such a market and its analysis is a contribution to the assessment of the impact of COVID-19 on the real estate world. The study confirmed that, as in other property markets, there was no decline in residential property prices in 2020. Moreover, an upward trend in transaction prices could still be observed. However, it must be acknowledged that the rate of price increase has slowed down. This decrease in the rate of price growth can be described as the strongest market reaction from a price perspective. The situation was different from the perspective of the activity of market participants. There was a significant decrease in the number of transactions between 2020 and 2021. Sellers were not willing to lower their price expectations and many buyers were not accepting in an environment of high pandemic uncertainty such prices. This resulted in the only transactions taking place at unchanged or even higher prices than before the pandemic. Because the uncertainty was accepted by a smaller group of potential buyers, this led to significantly fewer transactions. The decrease in the number of transactions may also have been caused by the greater reticence of banks to grant mortgage loans. From a price perspective, also in the residential rental market, apart from the short period of the first half of 2021, no price decline was recorded. There were also no significant changes in the number of rental contracts concluded in the period before and during the pandemic.

The main conclusion of the survey is that the residential property market has somehow decided to wait out the pandemic period. Property prices did not fall. The activity of market participants has been reduced. Planned further research includes further observation of the residential market. This is due to the fact that the pandemic is still ongoing and continues to affect not only the health of the population, but also other areas of life, including the property market. The research will also look at the market for commercial premises such as offices and shops. Remote working and the rise of online shopping have left a stigma on the commercial property market. This stigma can vary from country to country and city to city. The impact of the pandemic on this sector of the Polish real estate market is also worth analysing.

In all likelihood, further development of decision support systems and their systematic implementation in various segments of the real estate market would be conducive to, among other things, monitoring of the real estate market, which would help in making prudent decisions especially in situations such as the COVID-19 pandemic. Certainly, the creation of a unified system for collecting information on rental contracts in Poland would improve the quality of research in the real estate market and would provide tax authorities with a great deal of useful information.

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