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DEVELOPMENT OF THE REAL ESTATE MARKET IN THE CZECH REPUBLIC IN CONNECTION WITH THE COVID-19 PANDEMIC

Abstract:

The paper deals with the analysis of the current situation on the real estate market in the Czech Republic in connection with the COVID-19 pandemic. Selected pricing and technical parameters such as prices of apartments for sale, prices of apartments for rent, technical condition of the apartments and energy performance of the building are analysed. To obtain input data for the analysis was used software EVAL, which the author of the paper has been developing since 2007. The software EVAL collects, analyses and evaluates real estate advertising in the Czech Republic in a monthly period. All real estate advertising is continuously recorded in the software database and is carefully analysed for its credibility. EVAL software provides comprehensive and objective information on the actual development of the real estate market in the Czech Republic. The paper uses basic statistical methods of processing a large data set.

Keywords:

Real estate market, EVAL software, Real estate prices, Statistical methods, Data mining

JEL Classification: C10, R20, R30

1   Introduction

The paper deals with the analysis of the current situation on the housing market in the Czech Republic. In March 2020, COVID-19 was first reported in the Czech Republic. This fact has significantly changed the real estate market, both in the area of apartment sales and apartment rentals [1, 2].

In 2020, a number of experts predicted a fall in residential property prices, which did not happen at all. On the contrary, due to the intervention of central banks and other reasons, there are massive investments in real estate around the world. For many investors, real estate is a safe area for preserving the value of an investment from inflation, and inflation can be expected to rise in the period ahead.

On the other hand, rental apartments were severely affected by the covid-19 pandemic. Especially in large cities, which are dependent on tourism and foreign workers [3, 4, 5, 6]. From the summer of 2021, however, a slow return to normal begins.

Other authors around the world are also collecting data on the development of the real estate market [7, 8, 9, 10]. They usually focus, like the author of this paper, on their home region. There is no universal tool / software that can be easy applied globally to individual countries in the world. It is necessary to approach data collection individually, separately for each country and take into account the local specifics of the real estate market. Even in some developed countries, we still encounter real estate advertising in the print media.

2   Methodology

The data presented in this paper represent the output of the EVAL software, which the author of the paper has been developing since 2007. This software collects, analyses and evaluates real estate offers published on the main real estate servers in the Czech Republic. The software focuses mainly on sales and rentals of apartments, while the scope of the software applies to all municipalities in the Czech Republic. Data collection takes place at regular intervals of one month. Since April 2020, due to turbulent development in the real estate market, the data collection interval has been shortened to every 15 days.

The software makes it possible to trace back any advertisement that has been published since 2007. The software thus makes it possible to analyse the behaviour of sellers and real estate agencies, including non-standard and unethical approaches. For example, there are situations where a property is repeatedly published and withdrawn from advertising and offered at a different price, possibly also with slightly changed technical parameters (modification of the floor area of the apartment, change of the floor of the apartment, photo exchange, etc.).

A normal user of a real estate server is not able to retrospectively identify this behaviour, because there is only shown the current version of the published advertisement. However, EVAL software allows to look at history and analyse this behaviour. All ads are recorded in the offline version. The total volume of recorded data for the whole period since 2007 is in terabytes.

EVAL software exports the data obtained from real estate advertising to data files from which it is possible to make detailed statistical analyses. For example, these parameters are recorded for each property: city, street, apartment category, price, price per m^2, order id, building material,

building condition, type of ownership, building location, floor, usable area, floor area, garden area, terrace, balcony, loggia, cellar, garage, parking, year of reconstruction, water, heating, telecommunications, gas, energy performance of the building, energy performance indicator of the building, accessibility, equipment and elevator. These parameters are recorded both for properties for sale and for properties for rent.

3 Results and discussion

3.1 Prices of apartments for sale

Figure 1 shows the price development of flats intended for sale in the years 2018 to 2021 by region. It turns out that the covid-19 pandemic has accelerated price growth. The rise in prices is mainly due to the following factors:

- *Central bank policy* - Central banks around the world are working to mitigate the effects of the covid-19 pandemic by significantly increasing the money supply. However, the indirect result is investors' fear of a significant rise in inflation. At the same time, there is a significant indebtedness of the economy and state budgets. This situation is unsustainable from a macroeconomic point of view in the long run. Because small and large investors are afraid of devaluing money, they try to place their savings in real estate and stocks. However, this fact significantly increases apartment prices and reduces the availability of owner-occupied housing for the middle class.

- *Raising interest rates* - currently central banks are implementing a very loose monetary policy. Central bank base interest rates can be expected to increase in a very short period of time as central banks seek to curb inflation. However, this fact will cause an increase in mortgage payments, so people are trying to buy real estate as quickly as possible even when interest rates on mortgages are low. For the same reason, mortgages are being transferred from one bank to another at the same time, depending on which bank offers more favourable loan terms.

- *Tightening mortgages* - Central banks have released their recommendations to commercial banks on the conditions under which they can provide mortgages. At present, even people who, due to their income or indebtedness, would not have a chance to get a mortgage without the covid-19 pandemic, could achieve a mortgage. As the vaccination of the population proceeds, it can be expected that central banks will tighten their conditions again. Therefore, with the onset of the covid-19 pandemic, people in high-risk sectors (gastronomy, hotels, tourism, etc.) in particular tried to take out a mortgage quickly, fearing that banks would later reject them as high-risk clients.

- *Big savings of households* - Due to the covid-19 pandemic, many households had no way to spend their money. Travel, sports and shopping opportunities have been limited. A certain group of the population, whose income was not directly affected by the covid-19 pandemic, thus created record savings in the bank account during the pandemic. At the same time, interest rates on deposit accounts are at a very low level, so these people are looking for adequate use for these savings. And as a suitable production offers the acquisition of real estate for investment.

- *Unresolved pension reform* - This is a specific issue in the Czech Republic, however, other developed countries have analogous problems. In the Czech Republic, there is no possibility of quality retirement savings. The state has not yet implemented an adequate pension

reform, and every year of inactivity, the problem deepens. Real estate thus replaces a dysfunctional pension reform.

- *Escape from city centres to nature* - Due to the fact that many people had to stay in confined spaces in apartments during the covid-19 pandemic, the demand for the acquisition of real estate in nature is growing. There is a growing interest especially in cottages, cottages in gardening colonies and building plots.

- *Moving to a larger apartment*s - Many people move from smaller apartments to larger apartments to have privacy and space from other members of the household. There is also a demand for apartments in which a separate room can be used, which can serve as an office in the case of a home office. The price of an apartment that has a separate balcony or terrace has also increased.
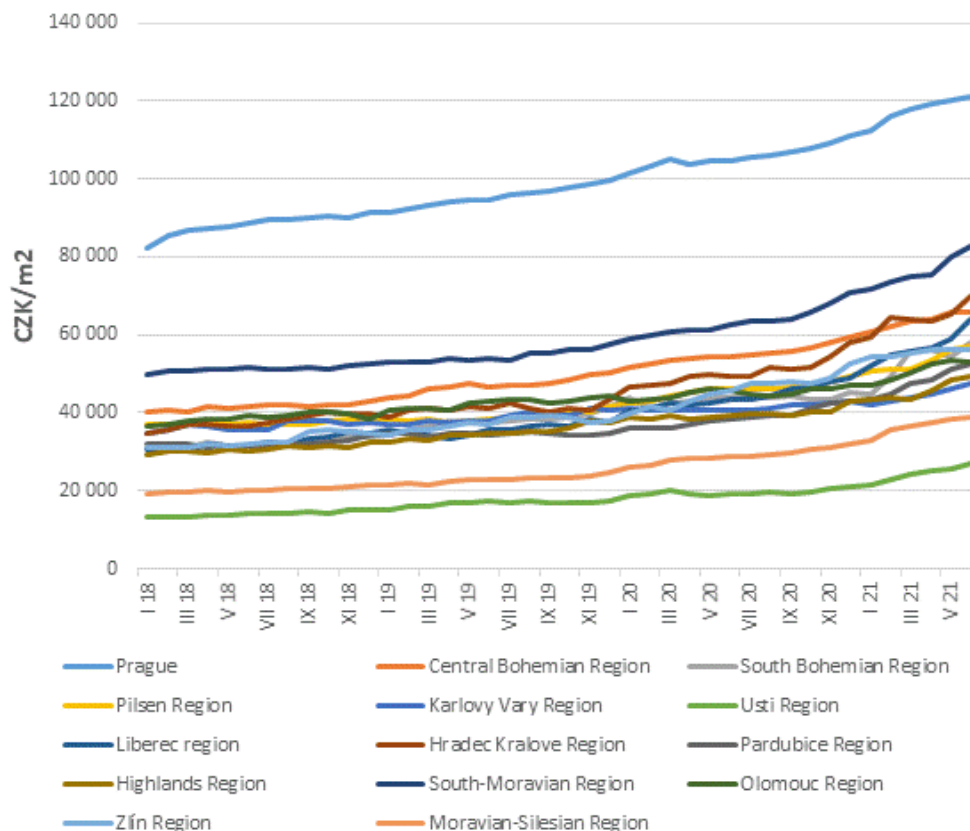
Figure 1 Development of the average offer price for sale of an apartment per 1 square meter of floor space (regions, time period January 2018 to June 2021)
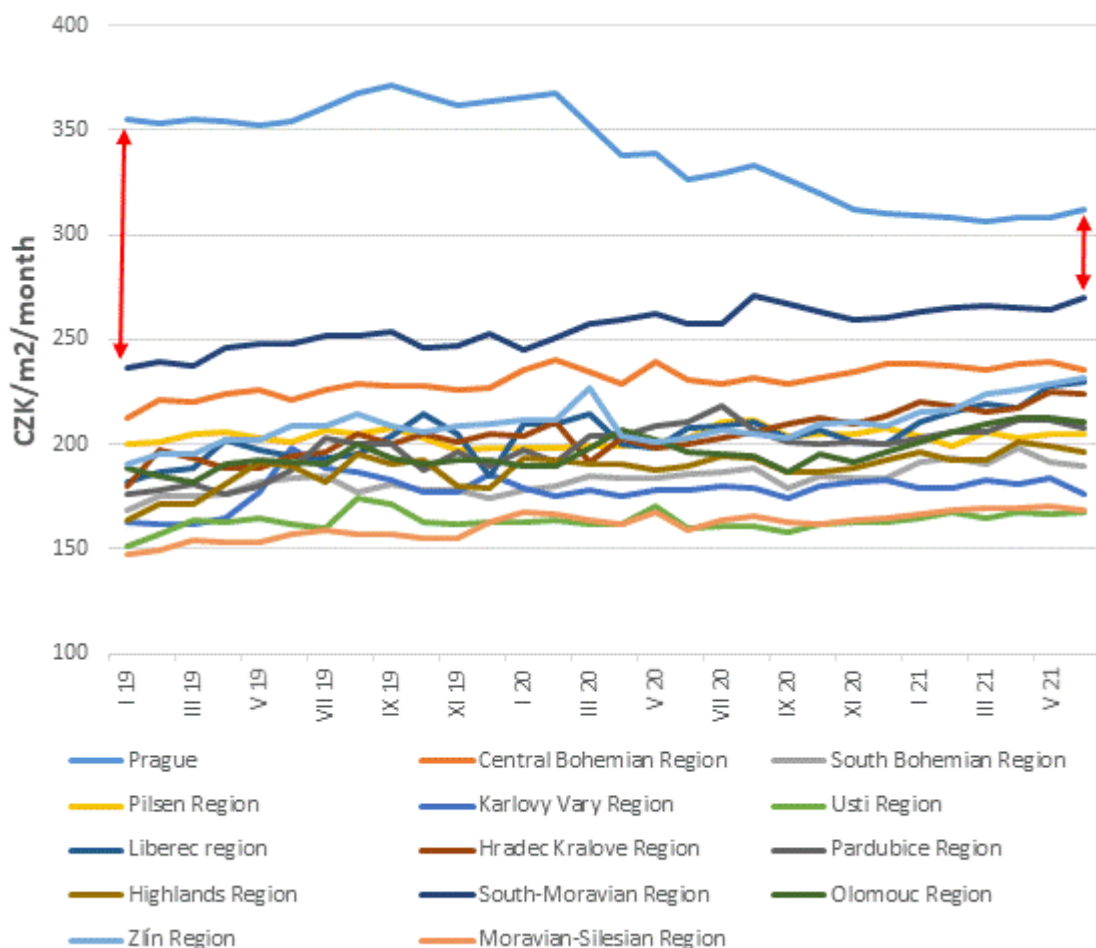*Source: Software EVAL*

3.2 Prices of apartments for rent

Figure 2 shows development of rental prices in individual regions of the Czech Republic. General it can be stated that rents during the pandemic covid-19 stagnated or increased, with the exception of Prague and other tourist destinations. In Prague, the largest declines in rents occurred in tourist-exposed areas such as Prague 1, where rents fell by as much as 30%. Many

tenants have used this situation to move to either cheaper apartments or for the same price to larger apartments or better locations.

In the spring of 2020, thousands of flats offered for medium- and long-term rent suddenly appeared on the rental market in Prague. These are apartments that were previously used for Airbnb or Booking services. Before the covid-19 pandemic, the management of the city of Prague planned to introduce some regulation of Airbnb, because the operation of Airbnb flats significantly burdened the environment with noise, criminal activity and other negative activities associated with tourism. Due to the fact that the Airbnb phenomenon after the covid-19 pandemic has been significantly reduced, the public is currently not actively addressing this issue.

In other cities, in which Airbnb and Booking were not as widespread as in Prague, the development of rental prices represents stagnation or slight growth. Figure 2 shows a significant difference in rental prices between January 2019 and June 2021 in the Prague and South Moravian regions. This difference is indicated by red arrows. However, a gradual return to the original state can be expected as the covid-19 pandemic will decline.

Figure 2 Development of the average offer price for rent of an apartment per 1 square meter of floor space per month (regions, time period January 2019 to June 2021)
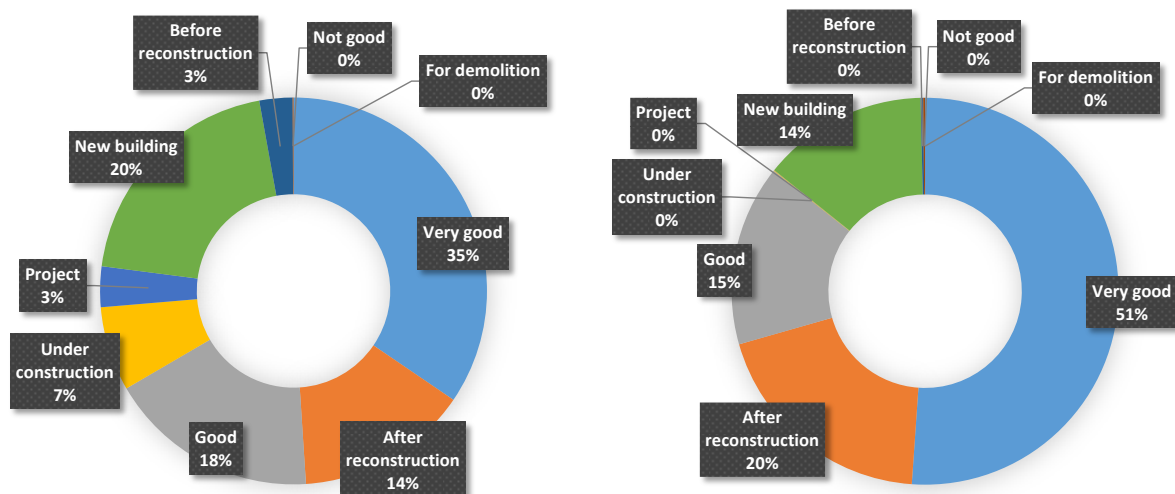*Source: Software EVAL*

3.3 Comparison of the technical condition of the apartments

Figure 3 compares the technical condition of apartments offered for sale and rent. A total of 9 categories of technical condition of the apartment were examined: very good, after reconstruction, good, under construction, project, new building, before reconstruction, not good and for demolition.

It was found that apartments are sold in all the above categories. The most represented are apartments in very good condition and new buildings. Advertisers prefer to state the category of the apartment before reconstruction instead of stating the poor technical condition of the apartment, because from a psychological point of view it looks better for the buyer. Often in the advertisement is added a sentence for this category of apartment, which is presented as an advantage that the buyer can be customized to their own ideas.

When renting an apartment, the category of technical condition significantly exceeds the very good apartment. However, this is not true in all cases. Those interested in renting will find out the actual condition of the apartment only during a physical inspection. Some real estate agencies and owners try to cover neglected maintenance, for example, in a suitable way of composing photos, not supplying a sufficient number of photos and only minor modifications to the apartment (painting, carpet, furniture installation).

In the case of renting an apartment, from the logic of things, there are no advertisements of apartments intended for demolition, project, under construction and that the apartment is currently undergoing reconstruction.

Figure 3 Comparison of the technical condition of the apartments (time period January 2018 to June 2021), left graph - apartments for sale, right graph - apartments for rent
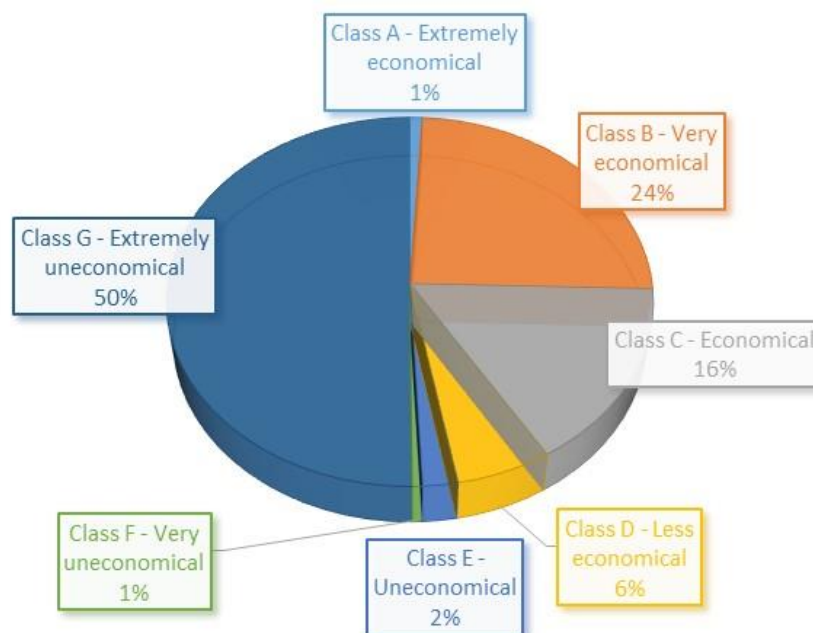*Source: Software EVAL*

3.4 Energy performance of the building

Decree No. 78/2013 Coll. on the energy performance of buildings distinguishes a total of 7 classification classes of energy performance of buildings: Class A - Extremely economical, Class

B - Very economical, Class C - Economical, Class D - Less economical, Class E - Uneconomical, Class F - Very uneconomical and Class G - Extremely uneconomical.

According to this decree, for the purposes of indicating the energy performance of a building in information and advertising materials, the sale or lease of a building or its integral part shall use a simplified form containing only the classification class of the current state of total energy supplied and its specific value relative to the energy reference area.

Figure 4 shows the structure of housing units offered for sale depending on the energy performance classification class of the building. If no category has been indicated, the classification can be assumed in most cases: Class G - Extremely uneconomical. Many sellers and real estate agents are simplifying this decree, and instead of examining the actual energy performance of the building, they will only give a classification: Class G - Extremely uneconomical. Therefore, Class G is also listed for 50% of records.

Figure 4 Energy performance of the building (time period January 2018 to June 2021), apartments for sale

Source: Software EVAL

4   Conclusion

During the covid-19 pandemic, standard economic processes in the real estate market were disrupted. For some time, the real estate services were even suspended and the people themselves have significantly reduced their activities in the real estate market.

There are many articles in the popular media that present lay opinions and are based on irrelevant data or even no data, thus leading to erroneous conclusions about predicting future development in the real estate market. If a potential investor follows these subjective opinions, he can very easily make wrong strategic decisions in terms of acquiring a wrong investment (inadequate type and size of real estate, a bad purchase price, a wrong time period for purchase and an unsuitable location). This decision can then be very risky and can cost a lot of money in

the long term. Real estate is not bought according to the current situation on the real estate market, but it is necessary to take into account long-term development.

The statistical analysis of the real estate market, which is presented in this paper, is based on long-term and continuous data of the EVAL software. Input data is adjusted for errors that commonly occur in real estate advertising. Outputs from the author's work allow professionals and researchers to form an objective opinion on current changes in the real estate market in the Czech Republic. The outputs of the work can also be used by small and large investors in their investment activities.

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