

UNIVERSITY OF ECONOMICS - VARNA

FACULTY OF ECONOMICS

DEPARTMENT OF "BUSINESS, INVESTMENTS, REAL ESTATE"

ALEKSANDAR DEYANOV YORDANOV

**DEVELOPMENT OF THE RESIDENTIAL REAL
ESTATE MARKET IN THE CONDITIONS OF A GLOBAL
PANDEMIC**

ABSTRACT

**of dissertation for acquiring an educational and scientific degree
"doctor" in professional direction 3.8. "Economy", Doctorate
program "Economics and Management (Construction and Real
Estate)"**

Varna

2024

The dissertation consists of 223 pages, of which:

- Introduction – 4 pages;
- Main text (three chapters) – 178 pages;
- Conclusion – 5 pages;
- List of literature sources – 140 titles;
- List of electronic sources (websites) – 29 websites;
- Applications – 15 pages
- Tables – 15 pieces;
- Figures – 33 pieces.

The defense of the dissertation will take place on2024 from
..... in the hall of the University of Economics - Varna at a meeting of the
Scientific Jury, appointed by Order
of the Rector of the University of Economics - Varna. The materials on the defense
are available to those interested in the University of Economics - Varna, [www.ue-
varna.bg](http://www.ue-varna.bg).

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Varna

2024

The dissertation work was discussed at an extended meeting and referred for defense by the Department of "Business, Investments, Real Estate" at the University of Economics - Varna.

The author is a part-time doctoral candidate at the Department of "Business, Investments, Real Estate" at the University of Economics - Varna. Researches and development were carried out at the same university.

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I. GENERAL CHARACTERISTICS OF THE DISSERTATION PAPER

1. Relevance of the topic

The matter of the real estate market is complex and is determined by a number of external and internal factors. It is also important for the proper functioning and development of the national economy and its sectors. Due to the nature and specifics of this market, the process of identifying certain trends regarding its development is a challenge.

In this dissertation work, the contributions of a number of Bulgarian and international researchers are taken into account, with a view to enriching the theoretical foundations on which the problem rests.

The dissertation "Development of the residential real estate market in the conditions of a global pandemic" highlights the trends of the housing market in Bulgaria. Emphasis is placed on the impact of the COVID-19 pandemic on key indicators specific to the market under consideration.

The residential real estate market can be viewed on a micro and a macro level, on the one hand in view of the constantly growing, but also dynamically changing consumer needs. On the other hand, the influence of other external factors that inevitably determine its direction of development should be taken into account. On the basis of the relatively stable period in the development of real estate during the middle of the past decade, a deeper look at the changes that occurred in the period from 2020-2021 is justified.

2. Object and subject of research

The research object of the dissertation work is the residential real estate market in the Republic of Bulgaria.

The subject of research are the processes that determine trends in the residential real estate market, taking into account the specifics of functioning in the conditions of a global pandemic.

3. Purpose and tasks of the study

The main purpose of the dissertation is: on the basis of a complex study of the residential real estate market in a theoretical and practical-applied aspect, to indicate the possibilities for development in the conditions of a global pandemic (for example, COVID-19 and in a post-pandemic environment). The main goal formulated in this way implies solving the following scientific tasks:

1. To examine and analyze the theoretical foundations of the residential real estate market by examining the interrelationships between the subjects in it and the factors influencing its development;
2. To examine the impact of COVID-19 on the residential real estate market and to indicate correlations with selected macroeconomic indicators;
3. To present an integrated model for determining the development opportunities of the residential real estate market;
4. To develop specific guidelines and recommendations for the development of the residential real estate market in a post-pandemic environment.

4. Dissertation research thesis

The dissertation defends the thesis that the global pandemic of COVID-19 has an impact on the residential real estate market with a short-term impact on its specifics and dynamics, without a particular impact on the established development trend in the researched period. The following working hypotheses are formulated for the thesis:

- There is a correlation between specific macroeconomic aggregates and factors characterizing the development of the housing market, including in conditions of a global pandemic;
- The nature of the health crisis is a prerequisite for its significant impact on changes in the dynamics of intra-sectoral relationships;
- There are significant differences in substance between the health crisis caused by COVID-19 and the financial crisis of 2008 and their consequences for the residential real estate market.

5. Research methodology

The methodological basis of the research in the dissertation work is the systematic approach, requiring consideration of the residential real estate market in its overall complexity as a key sector for the country's economy. Through the application of the analysis method, emphasis is placed on the macroeconomic indicators that influence the market and are influenced by its development. A statistical-mathematical method is used in the processing and systematization of the statistical data. In the dissertation, a number of conclusions are drawn using the methods of induction and deduction. The regulatory framework regulating the residential real estate market in Bulgaria is reflected, and conclusions and recommendations are made based on it, depending on the possible regulatory actions that the state could take in the relevant situations under consideration, the regulatory approach being also applied.

The analysis covers the period 2012 - 2022, with an emphasis on the last three years of it, which marked the onset of the global pandemic of COVID-19, as well as the effects of the post-pandemic period.

6. Limitations of the study

The dissertation was developed under the following limitations:

- Data concerning the market of residential real estate in the largest cities of the country is studied in order to determine the trends in the development of the market with a view to the representative sample;
- The territorial scope of the international comparisons includes a group of countries whose legal regulations have some similarities with the specifics of the Bulgarian legislation;
- Due to the unavailability of data for the "average market house prices" indicator for the period after 2016, projected values linked to the chain change of the "house price index" indicator are used.

7. Approbation

The dissertation was discussed at meetings of the "Business, Investments, Real Estate" department. Parts of it are included in 4 publications (1 article and 3 reports) in specialized scientific publications.

8. Content of the dissertation

INTRODUCTION

Chapter One

THEORETICAL BASICS OF THE RESIDENTIAL REAL ESTATE MARKET

1.1. Nature and specifics of the residential real estate market in the conditions of a global pandemic

1.2. Relationships and interactions between entities in the residential real estate market

1.3. Factors affecting the residential real estate market in the context of a global pandemic

Chapter Two

ANALYSIS OF THE RESIDENTIAL REAL ESTATE MARKET IN THE CONDITIONS OF A GLOBAL PANDEMIC

- 2.1. Regulatory framework of the residential real estate market
- 2.2. Impact of the COVID-19 pandemic on selected macroeconomic indicators and the residential real estate market
- 2.3. Correlation dependencies of the residential real estate market with selected macroeconomic aggregates

Chapter Three

OPPORTUNITIES FOR THE DEVELOPMENT OF THE RESIDENTIAL REAL ESTATE MARKET IN A POST-PANDEMIC ENVIRONMENT

- 3.1. Adaptation of leading global practices for assessing the state of the residential real estate market in the post-pandemic period
- 3.2. An integrated model for determining the development opportunities of the residential real estate market
- 3.3. Possible normative regulatory actions on the residential real estate market

Conclusion

References

Appendix

II. SUMMARY OF THE DISSERTATION

Introduction

The relevance of the topic is justified in the introduction. The object and subject of research are defined. Emphasis is placed on the research methodology, on the basis of which the main goal, tasks and research thesis are presented.

Chapter One

THEORETICAL BASICS OF THE RESIDENTIAL REAL ESTATE MARKET

In **the first chapter of the dissertation**, an in-depth look is directed at the theoretical foundations determining the nature and specifics of the residential real estate market in the context of its functioning in the conditions of a global pandemic. In this connection, the interactions between the market participants, as well as the factors that influence its overall development, are tracked. The classifications made take into account some basic practical situations and touch points in the context of the considered primary and secondary real estate markets. The specifics of the real and financial sectors are highlighted in order to distinguish the types of markets, while at the same time an emphasis is placed on the role of the capital market in the sector. An in-depth look at the established regulatory framework in which the residential real estate market operates is also provided. Chapter one ends with a detailed description of the research methodology used.

The first paragraph of chapter one examines the nature and specifics of the residential real estate market. Through the method of deduction and from a general to the particular point of view, the real estate market is examined and subsequently, in detail, that of residential real estate. Attention is paid to definitions proposed by Bulgarian and foreign authors concerning the housing market and its specifics, and in addition, the characteristic features of residential buildings are outlined according to the various classifications in modern literature.

Based on the considered theoretical foundations and the presented definition concerning the real estate market in general, we propose the following definition of a residential real estate market: "a set of existing real, potential buyers, sellers and expert market participants functioning in a complex system of economic, interpersonal and legal relations, with the aim of providing basic human needs, extracting certain economic benefits and making a profit". Given the presented systematizations, we

present the following classification for the objects on the real estate market (fig. 1).

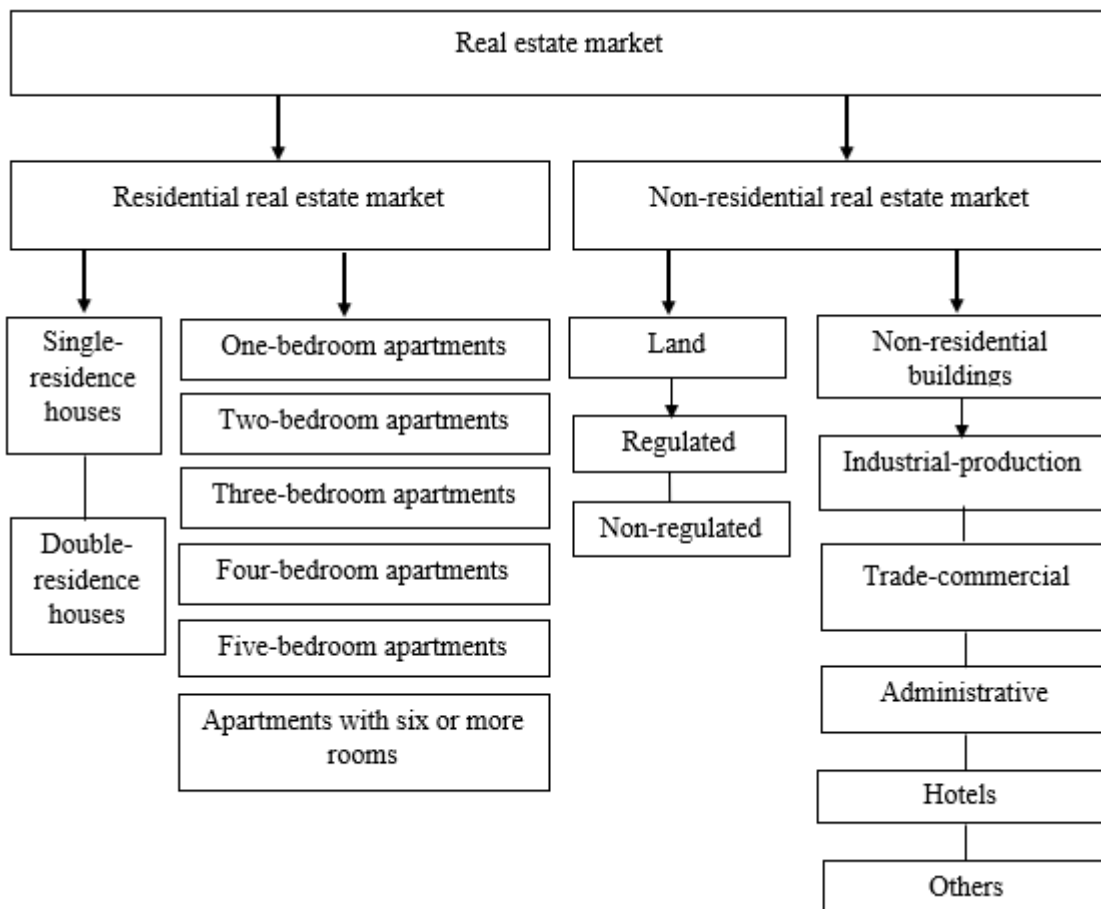


Fig. 1. Real estate market object classification

Source: Developed by the author

At the end of the first paragraph of the first chapter, an emphasis is placed on the health crisis that occurred at the end of 2019 with the spread of the COVID-19 virus. Given the impact of the health crisis on the modern economy, comparisons between it and the 2008 financial crisis are justified. Some of the points of comparison are the growing social and economic costs of the pandemic, similar to those made in the context of the financial crisis more than a decade ago. In addition, a detailed look at the financial markets would show similar negative trends viewed in the short term. An observed and established fact from both crises remains the changing characteristics of specific market sectors during and after the onset of the global financial crisis and the COVID-19 pandemic, respectively. Specifically, from the perspective of the residential real estate market, the effects are more closely related, given that the sector was at the root of the

bankruptcies that occurred in 2008. With the global pandemic, the housing market and its participants are affected by the rapidly changing situation .

Based on the nature and specifics of the residential market, we can summarize the following:

1. The theoretical knowledge of real estate and their classifications, on the basis of which the role and characteristics of the housing market are identified, have been expanded. There is a proposed author's definition of the market for residential real estate as well as a classification of the types of real estate.
2. The specifics of the real and financial market of real estate with an emphasis on the residential segment, as well as their main fundamental differences, are highlighted.
3. The essence of the health crisis is a prerequisite for its significant impact on the changes in the dynamics of internal sector relations in the market of residential real estate and the sector "Real Estate Operations" as a whole.
4. We believe that the essence of the residential real estate market does not change significantly in the conditions of the pandemic in view of the functions and the meaning that the market has for the economy. However, there are specifics that determine the trends of the real estate market. An event like the COVID-19 global pandemic is able to change the dynamics in the sector as a whole.

The second paragraph of chapter one is dedicated to clarifying the connections and interactions between the entities in the market for residential real estate.

Participants in the real estate market are connected through the market mechanism - the continuous dynamic interaction between demand, supply and prices of real estate, based on competition. Characteristic of the "Real Estate Market" system is the implementation of mutually beneficial purchase and sales, full use and maintenance of real estate. Given the complex structure of the real estate market, the high degree of complication in the relationship between the market counterparts involved in it should be taken into account. Depending on the type of market and specific characteristics, many entities are involved in a system of complex market relationships.

The dissertation work presents visualizations describing different situations between market sites in the context of the implementation of a specific transaction. In addition, we look at the market in two directions - primary and secondary.

For the purposes of the dissertation, a visualization is presented displaying the two types of markets and the representatives of each of the considered groups. In our opinion, for the purposes of illustration, as the main representative of consumers in the residential real estate market, buyers should be expressed - therefore, they occupy a central position in the scheme (Fig. 2).

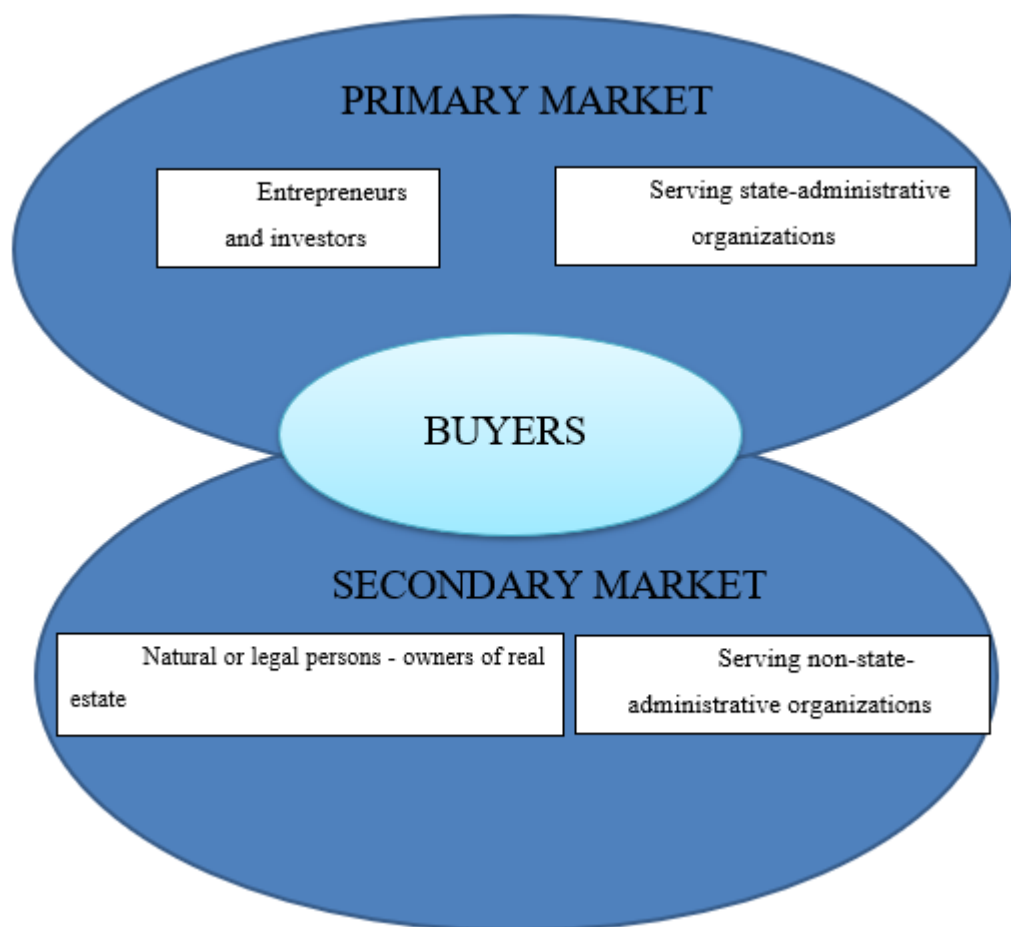


Fig. 2. Visualization of participants in the residential real estate market

Source: Developed by the author

In addition to the classification considered for participants in the residential real estate market, the interactions of the market in terms of trades are also taken into account. In view of the possibilities of the demand representatives, there is an option to

target the cash flows to real estate in the real (DRE) or the financial sector (IRE), for which some specifics and characteristics should be clarified (Table 1).

Table 1

Characteristics of the real and financial sectors in real estate trades

	Advantages	Disadvantages
Direct Real Estate	Access to direct cash flows and price appreciation in the long term	Require time and effort to manage
	Tax benefits	High financial barriers to entry into the sector
	High level of control over decisions	Low liquidity
Indirect Real Estate	Income without the need to manage real estate	Lack of tax relief
	High dividends and prospects for their growth	Sensitivity to alterations in interest rates
	High liquidity	Risks associated with the property types in the portfolio

Source: Developed by the author

Based on the characteristic of the links between the entities representing the housing market in the **second paragraph of chapter one**, we can outline the following main conclusions:

1. Relations between participants in the real estate market are extremely dynamic. In the context of a global pandemic in the foreground, the need for adaptability and flexibility in the market entities in order to ensure the seamless course of established market processes is crucial.

2. In our opinion, the impact of the pandemic on the real sector is more significant than on the financial sector, given the need to carry out transactions and the accompanying actions at real physical locations.
3. In a period of market uncertainty, market entities involved in operations with considerable cash flows shall have a serious responsibility in order to determine market trends. In this line of thought, construction contractors and banking institutions are key in terms of setting the direction of development of the sector as a whole.

The links and interactions between market entities are carried out under the influence of specific factors, which largely determine the development of the market and its specifics.

The third paragraph of chapter one focuses on the factors that influence the functioning of the housing market, as well as the methodology used in the study.

In terms of factor analysis, the PESTE model is used, through which factors from the point of view of political, economic, social, technological and environmental aspects were considered. The model aims to present a detailed analysis of the sector, as well as a more comprehensive, but at the same time, a detailed look at the changes in it. The real estate market is one of the most dynamic and rapidly developing competitive industries in the world. Therefore, changes in the regulatory framework, the development of new technologies and the economic environment make a significant contribution to the development of the sector.

In the context of PESTE analysis, for the purposes of the study, more attention is paid to the main macroeconomic units that affect the construction industry and specifically on the real estate market. In modern literature, a serious focus is made on economic factors as a major drive force for the changes that occur on the real estate market. Regression analyzes also largely support the thesis, indicating that a significant part of the changes in the sector are due to fluctuations of major macroeconomic aggregates.

The identification of selected factors that are able to influence the development of the housing market is fundamental for the fulfillment of the tasks set in the dissertation.

At the end of the third paragraph of chapter one, attention is directed at the research's methodology. A key part of it is the secondary data for specific indicators used to carry out the subsequent analysis in chapter two.

The main problem, which is exposed and subsequently analyzed, is tied to the evaluation of the influence of the COVID-19 pandemic on the market of residential real estate, as well as the examination of its development as a whole. In the dissertation, we emphasize the importance of specific macroeconomic indicators in the context of the analysis, giving a quantitative dimension to the interconnections between them.

In order to resolve the problem, secondary data is obtained on the indicators, specifically related to the residential real estate market:

- Housing price index in the period 2016-2022 (quarterly data);
- Projection of the indicator "Average market prices of housing after 2016 in the period 2016-2022 (quarterly data);
- Volume of residential buildings in operation in the period 2012-2022 (quarterly data);
- Volume of building permits issued in the period 2012-2022 (quarterly data);
- Volume of residential real estate transactions in the period 2012-2022 (quarterly data) with an emphasis on the fluctuations in the indicator in the period immediately after the onset of the pandemic-2020-2021;
- Value of invested funds in housing (in million euros) (annual data).

In terms of macroeconomic aggregates influencing the market, the indicators have been examined:

- Interest rates and volumes on loan balances other than overdraft, for the household sector 2012 - 2022 (quarterly data);
- Interest rates and volumes on loan balances other than overdraft, for the non-financial enterprises sector 2012 - 2022 (quarterly data);
- Interest rates on balances and term deposits (over 2 years) per household sector in the period 2012 - 2022 (quarterly data);
- Consumer prices index for the period 2016-2022 (quarterly data).

For the purposes of the analysis of the interconnections between selected indicators characterizing the development of the residential real estate market and specific macroeconomic aggregates, the statistical software SPSS is used. The analysis of the dependencies between the indicators is performed through correlation analysis, in which the main measurement of dependency is the correlation coefficient (r).

On the basis of the following conclusions in Chapter One, we have drawn the following conclusions:

1. In the context of PESTE, the analysis of macroeconomic factors is of a major importance and an impact on the development of the residential real estate market.
2. During and after the COVID-19 pandemic, it is highly likely that the importance of various factors will be different compared to the period before the health crisis.
3. The accepted methodology in the dissertation enables us to perform an analysis to determine the levels of significance of the selected correlation dependencies.

Chapter Two

ANALYSIS OF THE RESIDENTIAL REAL ESTATE MARKET IN THE CONDITIONS OF A GLOBAL PANDEMIC

In chapter two of the dissertation, the regulatory framework of the residential real estate market in Bulgaria is discussed and comparisons are made with the legal frameworks in selected European countries. Quantitative data concerning the housing market are presented, on the basis of which a correlation analysis is carried out, determining the interconnections between selected macroeconomic aggregates and indicators describing the tendencies of development in the sector. The dynamics of the residential market in Bulgaria are studied by macroeconomic, chronological, territorial and international aspect.

The first paragraph of chapter two focuses on the legal specifics governing the residential market in the country. At the forefront, the regulatory documents forming the legal framework in which the market operates are highlighted. Attention is drawn to laws governing the real market for residential real estate, as well as the financial one.

Comparing the various legal regulations in the field of residential real estate, we believe that there are significant differences between the legislations considered. The regulatory approaches of the countries regarding the sphere of residential real estate differ in view of state strategies and tax policies taken, with an emphasis on regulatory actions linked to the regulation of tax levels depending on the relevant situations. From the point of view of the positive development of the sector, the in-depth market analysis and the evaluation of alternative visions for the legislation are crucial.

It should be noted that changes in the regulatory framework governing the sector "Real Estate Operations" must be carefully evaluated and calculated. They occur in a relatively long period of time due to the severity of the legislative processes. In other words, the legislative regulator must correctly predict the upcoming market trends and make the most adequate decision possible in view of the well-being development of the sector.

In addition, changes to the legislative framework concerning the Real Estate Operations sector are strictly tied to the trends in the overall development of the economy. Specific changes to the regulatory framework are not only able to regulate the processes of the real estate market, but also to affect aggregate demand and supply in the sector.

In the dissertation, we focus on economic performance because of the dynamics tied to the influence they have on the real estate market. In order to make a deeper look at this claim, we investigate the dependence between specific economic indicators and those explaining the path of development of the real estate market.

The onset of the COVID-19 pandemic in early 2020 largely highlighted changes in the global economy, therefore the Real Estate Operations sector is also influenced by them. In our opinion, the measurement of the degree of influence defines which of the examined aspects of PESTE analysis are of the most substantial significance on the development of the housing market.

Based on what was stated in the first paragraph of chapter two, the following general conclusions can be drawn about the regulatory framework of the housing market in Bulgaria:

1. Normative documents regulating the real residential real estate market also comprehensively describe the Real Estate Operations sector. It should be noted that there is a multitude of laws regulating real residential properties, in comparison to the significantly smaller number of laws regulating the financial market.
2. The onset of the COVID-19 pandemic highlights the need for changes in the regulatory framework with a view to ensuring the well-being of the market and its participants.
3. There are differences between the legislation in Europe and that in Bulgaria regarding the regulatory approaches in the field of residential real estate. The main differences are tied to the different tax levels and the interrelationships with specific factors that contribute to their determination.

The second paragraph of Chapter Two examines the impact of the COVID-19 pandemic on selected macroeconomic indicators and the residential real estate market. The trends in indicators not only in the country, but also in the leading world economies are examined.

The economic shocks caused by the global pandemic sharply change the dynamics of economic activity in the Bulgarian economy in the month of March 2020. The trend of relatively high real growth over the last few years contributed to Bulgaria being among the countries where there was real growth in the first quarter of GDP on an annual basis of 2.4%. The relatively rapid economic effects of the pandemic are reflected in the main macroeconomic aggregates in the second quarter. Gross domestic product shows a decline of 8.5% in real terms from the second quarter of 2019 and of 10% from the first quarter of 2020. Consumption remains relatively stable and even registers a minimal real growth of 0.4% on an annual basis. This is the result of multiple factors, including measures to preserve employment and wage levels in the private sector, which prevent a sharp decline in household incomes, as well as the lack of restrictive fiscal measures to curb collective consumption by the government.

Key indicators that are considered in the context of the analysis of the residential real estate market are the building permits issued and residential buildings put into operation. For the purposes of the research, we use quarterly data for the eight largest cities in the country in the period 2012-2022. A growth trend is observed in the issued building permits, with the onset of the pandemic affecting the trend only in the first two quarters of 2020. The slowdown was then offset by a distinct increase at the end of 2021 (Fig.3).

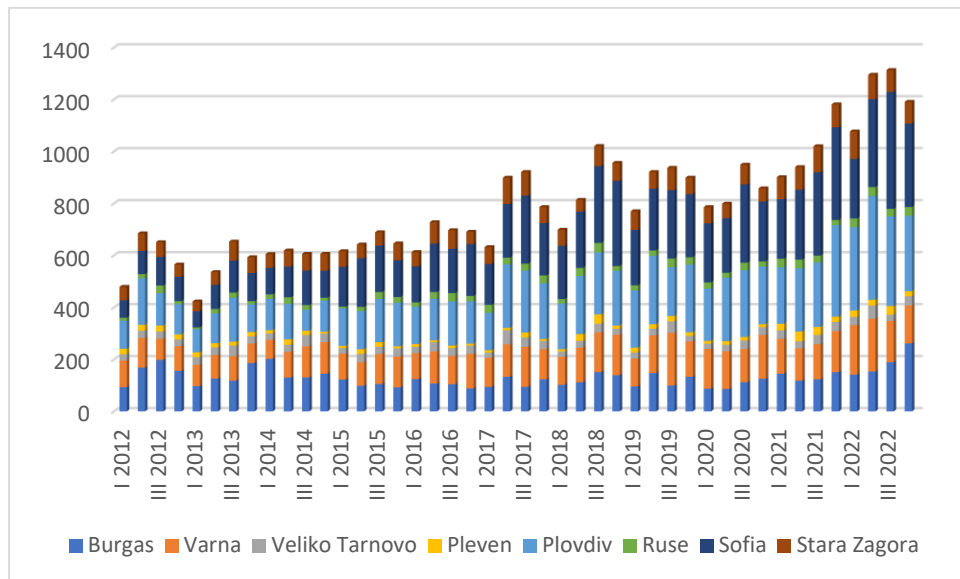


Fig. 3. Construction permits issued (for residential real estate) in the period 2012 – 2022 (quarterly data)

Source: National statistical institute

Similar to the changes in the "issued building permits" indicator, a similar trend can be observed in residential buildings put into operation (Fig. 4).

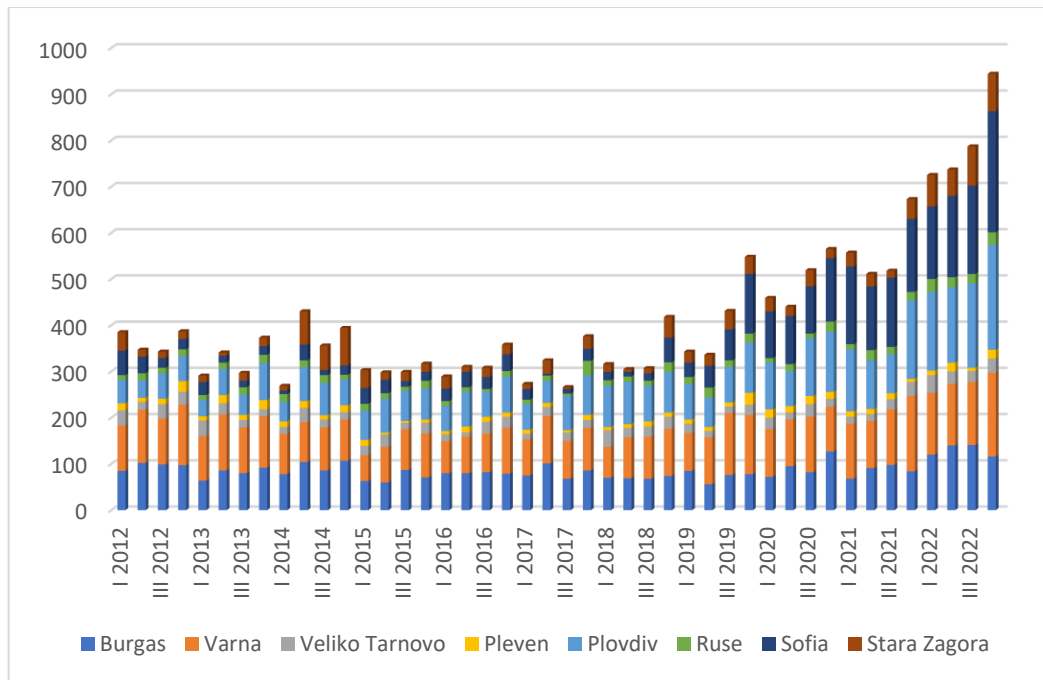


Fig. 4. Residential buildings commissioned in 2012 -2022 (quarterly data)

Source: National statistical institute

For the purposes of analyzing the relationship between changes in the trends pertaining to the residential real estate market, an emphasis is put not only at the trends of change in the number of transactions and prices of residential properties for a specific period, but also on the correlation dependence with the impact of COVID-19 on them. In addition, international markets should be looked at to identify the impact that the global pandemic is having on the market. In this case, in addition to the residential real estate market, other areas of real estate are also affected, which affects the dynamics of the sector and is a factor responsible for subsequent changes in the analysis.

From the data presented, we can draw the following conclusions regarding the impact of the COVID-19 pandemic on the residential real estate market:

1. In the first and second quarters of 2020, immediately after the onset of the pandemic, there is a drop in the number of real estate transactions, which is subsequently compensated by a significant increase already in the last quarter of 2020 and the first quarter of 2021.
2. The considered trends in Bulgaria are similar to the ones seen on the global housing markets.

3. The established growth in residential buildings commissioned and building permits issued in the period 2016-2019 stops in the first half of 2020 and resumes in early 2021.
4. There are changes in the behaviour of demand representatives, resulting in intra-sector redistributions - there is a redirection of cash flows in the direction of the residential real estate market at the expense of commercial premises and office buildings.
- 5.

The third paragraph of the second chapter is devoted to the study of the correlation dependences between selected macroeconomic aggregates and indicators determining trends in the housing market.

Analyzing the effect of changes in macroeconomic aggregates on the real estate market is essential in order to outline the framework of a more comprehensive study. The selected research period is 2012-2022 in order to highlight and analyze longer-term trends or deviations in them. The interrelationships between main macroeconomic aggregates and specific indicators determining the development of the housing market are investigated: the total number of real estate transactions and the housing price index.

One of the key relationships studied is that between the interest rate and the total number of real estate transactions. The investigated indicators are "Effective annual interest rate" and "Number of entries by personal and real system".

Given a significance level of $\alpha = 0.05$ (risk of first-order error) and number of observations $n=44$, a look at the coefficient of determination should be taken, which shows how much of the variation in the dependent variable is due to the influence of the independent (R Square = $r^2 \cdot 100$). R Square = 0.0701, which shows that 7% of the changes in the indicator "Number of real estate transactions" are due to the changes in the indicator "Interest rates on loans, other than overdraft, for the sector of non-financial enterprises" (Table 2).

Table 2

Regression model of the indicators "Interest rates on loans, other than overdrafts, for the sector of non-financial enterprises" and "Number of real estate transactions" on quarterly data for the period 2012-2022

Regression Statistics					
Multiple R	0.264774632				
R Square	0.070105606				
Adjusted R Square	0.047965263				
Standard Error	19612.41074				
Observations	44				
ANOVA	df	SS	MS	F	Significance F
Regression	1	1217952543	1217952543	3.166419172	0.082404121
Residual	42	16155159510	384646655		
Total	43	17373112053			

Source: Developed by the author

If we narrow the scope of the study, reducing the analyzed period from 2012 to 2021, we conclude that the study of the selected variables is statistically relevant with F-criterion values less than the significance level (Table 3).

Table 3

Regression model of the indicators "Interest rates on loans, other than overdrafts, for the sector of non-financial enterprises" and "Number of real estate transactions" on quarterly data for the period 2012-2021

Regression Statistics					
Multiple R	0.333237716				
R Square	0.111047375				
Adjusted R Square	0.087653885				
Standard Error	19274.72832				
Observations	40				
ANOVA	df	SS	MS	F	Significance F
Regression	1	1763558247	1763558247	4.74693492	0.035621266
Residual	38	14117575771	371515151.9		
Total	39	15881134018			

Source: Developed by the author

In both instances, the presented correlation dependence can be interpreted as weak to moderate in view of the fact that values of the correlation coefficient $r < 0.3$ define it as insignificant. The dependence is straight, due to the positive values of the

coefficient r , which suggests that a decrease in the interest rate is followed by a decrease in the number of real estate transactions.

Another key macroeconomic indicator, the study of which is relevant to our research, is the consumer price index. Because of the clearer interrelationship between inflation and its potential impact on real estate prices, the indicator "House Price Index (HPI)" was used. In order to identify and analyze the relationship between the two factors, a regression model is applied, where the customer price index (CPI) is the independent variable (x) and the dependent variable (y) is the HPI.

A regression analysis between the two indicators for the period 2016-2022 shows a correlation coefficient of $r=0.810$. The coefficient of determination R Square takes values equal to 0.655, which indicates that 66% of the changes in the indicator "House Price Index" are due to the changes in the indicator "Consumer Price Index" (Table 4).

Table 4

Regression model of the indicators "Consumer Price Index" and "House Price Index" on quarterly data for the period 2016-2022.

Regression Statistics					
Multiple R	0.80958017				
R Square	0.65542005				
Adjusted R Square	0.64216698				
Standard Error	12.0806081				
Observations	28				
ANOVA	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	7217.4	7217.4	49.4542	1.81535E-07
Residual	26	3794.47	145.941		
Total	27	11011.9			

Source: Developed by the author

The presented correlation dependence can be interpreted as significant in view of the fact that values of the correlation coefficient $r > 0.7$ define it as strong. The dependence is straight, due to the positive values of the coefficient r , which suggests that when the consumer price index increases, housing prices increase. The observed trend can be interpreted with the importance of the consumer price index as a macroeconomic factor and its impact on the Real Estate Operations sector.

In addition to the analysis of the interrelationships between selected macroeconomic aggregates and housing market indicators, the third paragraph of chapter two examines other factors that have a more specific nature and their role somewhat extends to explaining market trends in the shorter term, focusing on the dynamics of the sector's development. A significant part of the changes in these factors are amplified by the effects of the global pandemic.

At the end of the paragraph, the points of contact between the crisis caused by COVID-19 and the financial crisis of 2008 are touched upon. The main emphasis of the comparison is the impact on the residential real estate market and the identification of one of the main differences - the levels of interest rates worldwide scale.

Based on the data processing and analysis in the third paragraph of the second chapter, the following conclusions can be drawn:

1. There is an upward trend in residential real estate prices in Bulgaria with a noticeable slight decline in the first and second quarters of 2020, which overlaps with the onset of the COVID-19 pandemic.
2. There is a weak to moderate correlation between the indicators "Interest rates on loans, other than overdrafts, for the sector of non-financial enterprises" and "Number of real estate transactions" for the period 2012-2021.
3. There is a strong correlation between the Consumer Price Index and the Housing Price Index for the period 2016-2022.
4. The analysis of the residential real estate market shows its connection with the leading macroeconomic factors. On the one hand, it can be argued that the development path of the market is predictable in view of the considered aggregates. On the other hand, there are factors such as disruptions in logistics chains, population density and prices of construction materials, which are strictly linked to the effects of the pandemic.
5. The main prerequisite for quickly dealing with the consequences of the crisis caused by COVID-19, compared to that of 2008, is the security of some main markets such as real estate, as well as the stability of the financial sector. In addition, low interest rates are helping to bring about a more contained and relatively minor rise in inflation levels.

Chapter Three

OPPORTUNITIES FOR THE DEVELOPMENT OF THE RESIDENTIAL REAL ESTATE MARKET IN A POST-PANDEMIC ENVIRONMENT

Chapter three of the dissertation is devoted to considering the prospects for the development of the residential real estate market in the period after the COVID-19 pandemic.

The first paragraph of chapter three examines the world's leading practices for assessing the state of the housing market. The focus is on the post-pandemic period and delineating trends in the short and medium term.

Seen through the lens of the past decade, the residential real estate market has been growing, despite the emergence of the health crisis and environmental changes. In the period since the first waves of the pandemic, which coincides with the second quarter of 2021, house prices are at record highs and mortgage rates are at historic lows. The residential real estate market has been one of the few relatively stable growth sectors in a period somewhat reminiscent of the 2008 financial crisis.

However, the housing market is constantly changing, and real estate trends are often subject to external factors. The industry is highly localized with different conditions in each country, district, city and even region.

Due to the high complexity and correlation dependence with multiple macroeconomic variables, analyzing the outlook for the residential real estate market is challenging in view of the dynamism caused by the COVID-19 pandemic, as well as the intra-sector changes that have occurred. Identifying trends in the residential real estate market post-pandemic is of interest in terms of the substantial importance and influence the sector has on other areas of the economy. The factors considered in the second chapter are most often at the municipal, regional and national level and were developed by the National Statistical Institute in the Republic of Bulgaria.

Another perspective from which the "Real Estate Operations" sector should be observed is related to the number of transactions that are concluded on the territory of the country in the corresponding quarter (Registration Agency, 2023). In combination, the two indicators depict the state of the sector and their values make it possible to analyze it.

The shortcomings regarding the data that the considered indicators illustrate concern limitations to the market view, as well as the inability to take into account other factors that would have an impact on the situation in the sector. It can be argued that an increase in prices and the number of transactions would be interpreted as a positive phenomenon for the housing market, but it would be a challenge to identify the prerequisites and causes of the observed phenomena when the indicators are considered in isolation.

At the moment, in the context of examining the state of the market in Bulgaria, there is no consolidated indicator that would show the position of the sector against the background of identical sectors in other countries, not only in Europe, but throughout the world. Moreover, it would be of interest from the perspective of residential real estate market analysis to consider how trends stand out against changes in other key economic aggregates.

One of them is household income. Households have a key impact on the housing market, and their influence is measured by the affordability ratio, which is the ratio of the average wage to the price of one square meter of living space. It is an indicator monitored by the United Nations for each settlement and helps to identify the purchasing power of households in the context of purchasing residential real estate.

The affordability factor takes into account the purchasing power of a country's population against the background of residential property prices; thus, the Real Estate Operations sector is not considered in isolation in the context of the processes occurring solely within it. Due to the nature of economic relations, the need to study such an indicator is revealed, in order to account for the overall impact of the economy in the analysis of the residential real estate market.

The consideration of the concept of housing affordability is linked to the case study "financialization of the housing market", which is the subject of analysis by the

European Parliament and other affiliated institutions. Financialization is a term used to describe how housing is treated as a commodity – a vehicle for wealth and investment – rather than a human right and social good for individuals and communities.

Financialization is one of the defining phenomena of the development of the world economy in recent decades. At the core of the concept is its influence as a factor in the non-financial economy and wider socio-economic goals at the expense of potentially burdening investment, widening inequality and increasing economic and social vulnerability. These harmful effects are particularly worrying for developing economies and markets, where the need for sustainable structural transformations that can generate the value creation needed to drive human development is even more pressing; a task highly specific to the residential real estate market, becoming increasingly difficult to accomplish given the disproportionate impact on the world's more vulnerable populations (Bonizzi, Kaltenbrunner, & Powell, 2023, p. 129).

Based on the above, the following conclusions can be drawn:

1. The main leading methods of analysis worldwide are aimed at the study of macroeconomic indicators and their impact on the residential real estate market.

2. At the moment, in the context of examining the state of the housing market, Bulgaria lacks a consolidated indicator to illustrate the ability of groups of the population to purchase real estate.

3. Through the affordability factor, the purchasing power of households is taken into account against the background of residential real estate prices and provides the opportunity to study at a deeper level the purchasing power of specific population groups and their impact on the residential real estate market.

4. In the context of the affordability of the housing market, the concept of financialization has been highlighted as a trend threatening the economy in view of the effects it is able to bring - widening inequality and increasing economic and social vulnerability.

In the second paragraph of chapter three, the author's model for determining the development opportunities of the residential real estate market is presented. Its construction is prompted by the currently missing affordability factor, which monitors the ability of households to purchase one square meter of living space.

Calculating the indicator in Bulgaria would be useful in order to highlight the relationship between the average salary and housing prices in the country. In this way, not only the trends in the observed values can be analyzed, but intervals can also be set, which are indicators for taking specific actions in order to regulate the market in case of need.

The challenge in this case is that the National statistical institute (NSI) does not monitor prices per square meter residential area. The only indicator linked to real estate prices that the Institute produces is the House Price Index. Data on specific prices per square meter of living space are usually generated by surveys of private organizations.

Due to the presumption that CPI values are tied to the dynamics of real prices per square meter, it can be argued that replacing the average price per square meter with the index values would give logically close results. However, in order to reach more exact values in the context of the integration of the model, we also use a projection of the "average market house prices" indicator. We look at two affordability ratios – one relative to the housing price index and a second relative to their average market prices

In order to adapt the methodologies of the United Nations and the European Commission with the data available at the National Statistical Institute, the following mathematical model can be proposed to illustrate the relationship between household income and residential real estate prices. As per the formula below, we calculate the quarterly affordability ratio as the ratio between the Average Wage (AW) and the House Price Index (HPI) for the current quarter.

$$K1 = \frac{AW_Q}{HPI_Q}$$

where:

$K1$ – quarterly affordability ratio according to the Housing Price Index;

AW_Q – average wage for the current quarter;

HPI_Q – housing price index for the current quarter.

As far as K2 is concerned, we calculate the quarterly affordability ratio as the ratio between the Average salary (AW) and the Average market prices of housing (AMPH) for the current quarter.

$$K2 = \frac{AW_Q}{AMPH_Q}$$

where:

$K2$ – quarterly affordability ratio according to the average market prices of housing;

AW_Q – average wage for the current quarter;

$AMPH_Q$ – projection of the average market prices of housing for the current quarter.

In order for the results of the model to be exact, in view of the types of economic activities distinguished in the indicator "Average gross monthly salary of persons employed in a labor and service relationship", an accessibility factor should be calculated for each of the indicated activities. Through it, a comparative analysis is carried out at the sectoral level, emphasizing the fluctuating capabilities of the representatives of the respective sectors in the period under consideration. In addition, depending on the values of the affordability coefficient, the behavior of representatives of different market segments leads to different results and direction of development for the residential real estate market.

Through the calculated affordability coefficient on the abscissa and the housing price index on the ordinate, a matrix was compiled, contributing to the construction of a model through which the state of the residential real estate market can be interpreted in the context of the considered variables. The dynamics of the average salary is also implemented in the matrix, due to the direct proportionality between the indicator and the affordability coefficient (Fig. 5).

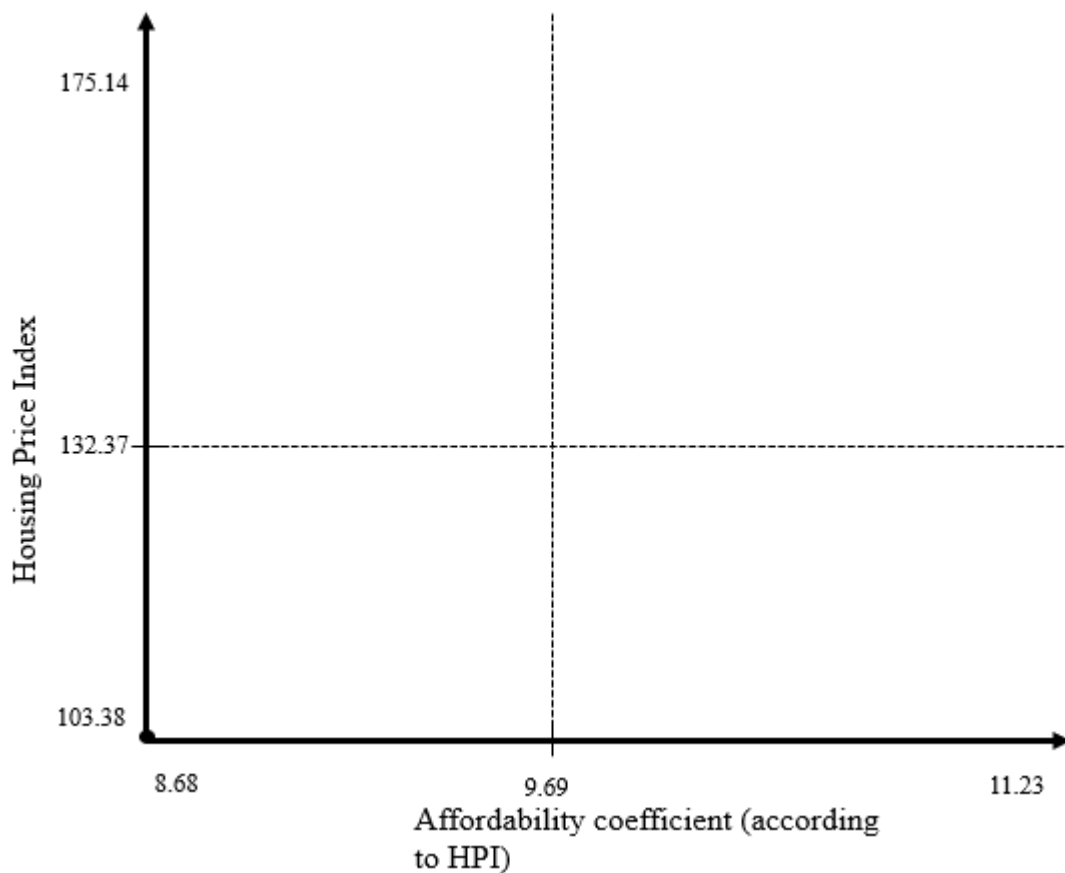


Fig. 5. Diagnostic model of the residential real estate market by the affordability ratio according to the HPI for the period 2016-2022. A look at the aggregate values of the nomenclature by activities

Source: Developed by the author

The values 8.68 and 11.23 were set as the minimum and maximum values of the coefficient, respectively, denoting the interval of the general accessibility coefficient, calculated in Appendix 3 of the dissertation. Taking into account the mode, the mean and the median, we arrive at the average value of 9.69, denoting the boundary vertical interval line by which the four quadrants with the different situations to be analyzed are distinguished. On the ordinate axis, the minimum and maximum values of ICI are 103.38 and 175.14, respectively. Similarly, the average value denoting the boundary horizontal interval line is 132.37.

Similarly, a second matrix was constructed, with the values from all sectors according to the nomenclature by activities indicated on the abscissa axis (Fig. 6).

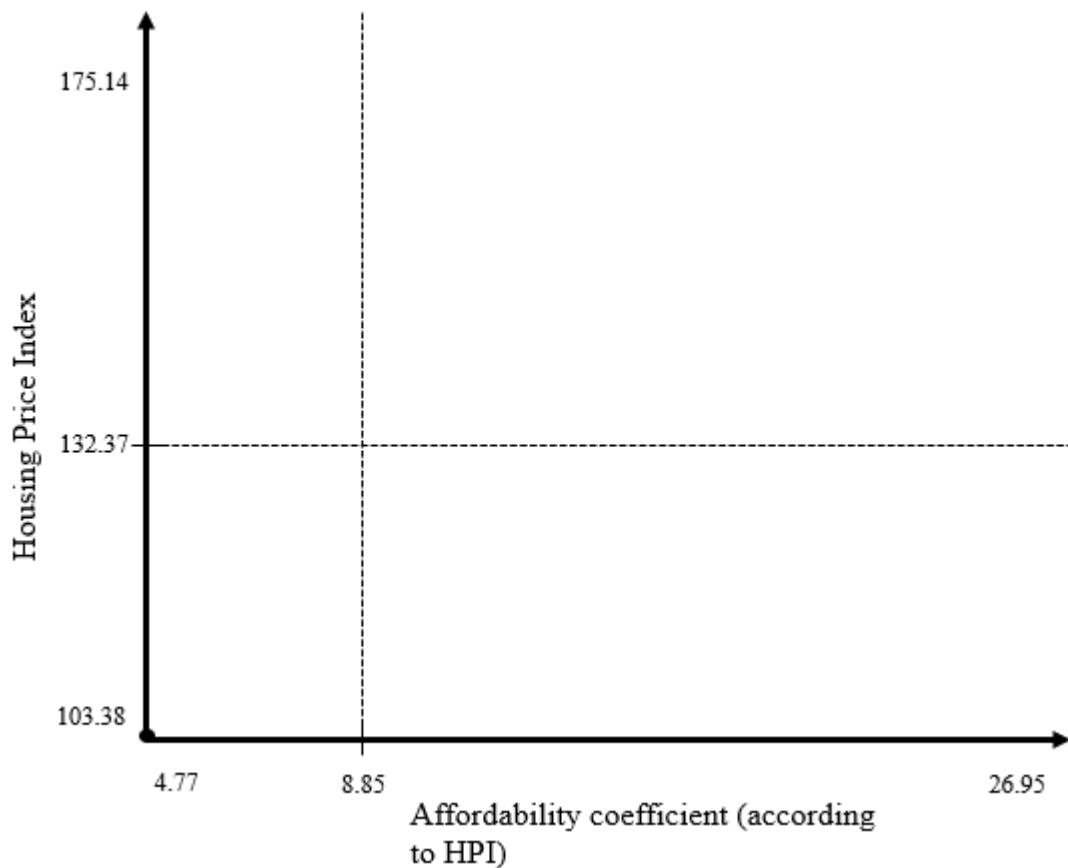


Fig. 6. Diagnostics model of the residential real estate market through the affordability ratio according to the HPI. A look at values from all sectors by activity nomenclature

Source: Developed by the author

Through a more detailed look at the matrix, specific situations and the different perspectives that can be seen in respective market situations in relation to them should be analyzed. The distinct four quadrants have different characteristics and describe different situations in the residential real estate market. Through them, its condition can be diagnosed in the context of the demand representatives' ability to be competitive in the market.

In order to diagnose the position that a specific sector occupies according to the presented matrix, the features of each of the four quadrants should be distinguished (Fig. 7).

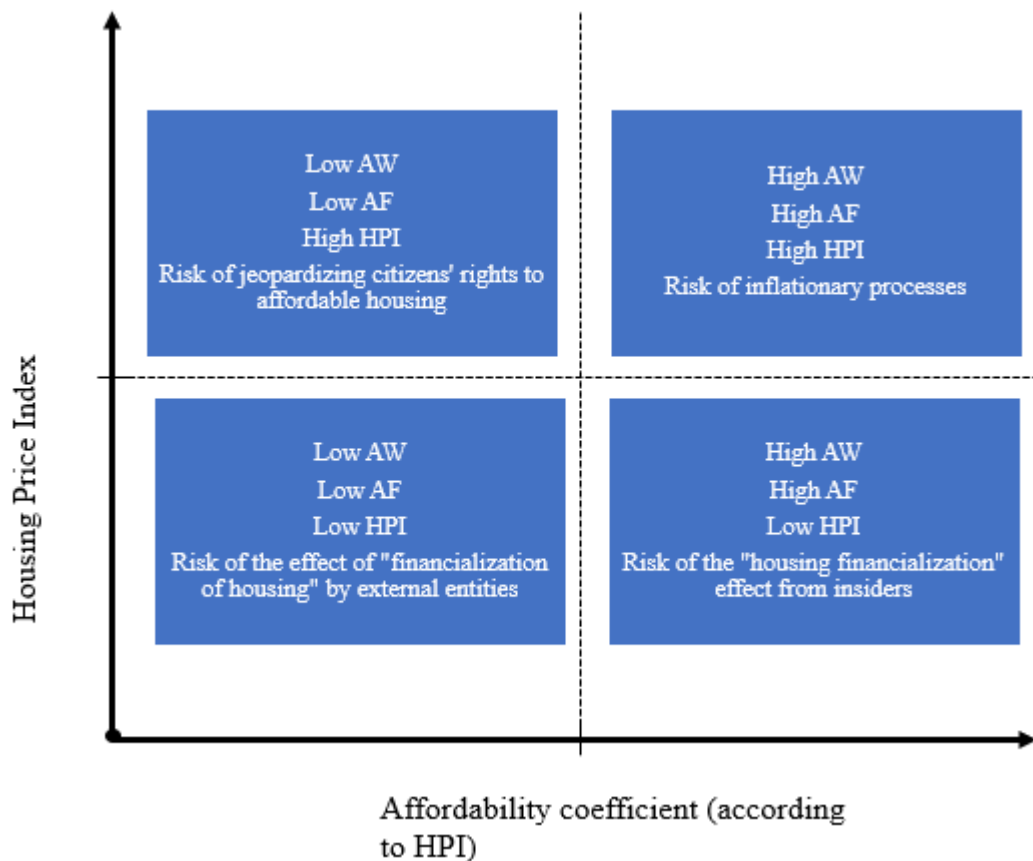


Fig. 7. Characterization of the matrix quadrants according to the dimensions of the affordability coefficient (according to the HPI) and the housing price index

Source: Developed by the author

Values of the affordability ratio and the HPI resulting in intersections in Quadrant 1 signal high levels of the average wage in the sector, as well as those of the HPI. Due to the leading importance of the average wage in the calculation of the coefficient values, it is also high in the cases in Quadrant 1. At first glance, such a scenario looks positive for the development of the market and the economy, signaling a high standard of living, but also carries risks of inflationary processes, especially in cases where the indicators of a significant number of specific sectors fall into the upper right quadrant.

In Quadrant 2, the characteristics are relatively low levels of average wages, but high prices per square meter of real estate, which is an unfavorable situation for the representatives of the sectors belonging to it. In contrast to Quadrant 1, in this case there are signals of a low standard of living and the danger of jeopardizing citizens' rights to

affordable housing. The risks in the specific situation are a continued rise in real estate prices in addition to an insufficient rate of growth of wages in the affected sectors.

Quadrant 3 and Quadrant 4 are characterized by low HPI values, which can be interpreted similarly from the perspective of the residential real estate market, but different in terms of affordability ratio values. Quadrant 3 is characterized by low prices per square meter, but also a low affordability factor. With a predominant concentration of cases in it, there is the danger of external entities with increased financial capabilities taking advantage of the low-price levels and buying for investment purposes. If such trends are maintained, there is a danger of facing the risks in Quadrant 2 – jeopardizing citizens' rights to affordable housing.

The summarized conclusions in paragraph two of chapter three, which we have made based on the above, are the following:

1. The presented two models of the coefficients according to the HPI and AMPH give logically close results and form similar trends in meaning, which is why the proposed matrix models look similar.
2. After calculating the affordability coefficients, it becomes clear that the difference between the sectors of the economy is significant in terms of the ability of groups of the population to purchase their own housing. The fact that the average value of the indicator is closer to the minimum indicates a concentration of sectors whose representatives would experience significant financial difficulties when purchasing a residential property.
3. The presented matrix model makes it possible to determine the prospects and forecast the development path of the housing market and subsequently offer different actions and solutions depending on the considered situations.

In the third paragraph of chapter three, the focus is on considering possible regulatory actions through which the state can influence the development of the housing market.

Examining the proposed models regarding the affordability coefficient in the residential real estate market in Bulgaria, we should pay attention to its applicability in relation to specific situations in the conditions of a global pandemic and post-pandemic

environment that can be addressed. Although it has the ability of self-regulation, the market should be analyzed and regulated when the state deems such action necessary.

Given the correlation between interest rates and the consumer price index, the possibility of regulating the residential real estate market should be considered. From the perspective of the housing price index, there is a direct relationship with the consumer price index. When there is high inflation, real estate prices rise. In cases where the residential real estate market is at its peak, there is also an increase in the number of transactions. Its investment character should also be taken into account, which also contributes to the approach to this peak. Similarities are noted between the behavior of inflation indicators and HPI in terms of their difficulty in controlling them. Regarding the customer price index, the most frequently used tool by central banks is to increase the interest rate.

In view of the need for regulatory actions in 2022, the European Central Bank integrates a monetary policy to control the consumer price index linked to the increase in the interest rate. The ECB aims for inflation to fall steadily towards its medium-term target of 2%. As of 09/14/2023, the governing board of the European Central Bank raises its main interest rates again, which is the eighth adjustment within 14 months. The first increases in 2022 are 50, 75, 75 and 50 basis points. Subsequently, a slowdown in the rate of interest rate increases was observed, with the last two changes in 2023 being 0.25% each.

Regarding the basic interest rate in the Republic of Bulgaria, the Bulgarian National Bank announces the basic interest rate (BIR) for the relevant period on the basis of Art. 35 of the Law on the BNB. The Bulgarian National Bank calculates the basic interest rate according to the "Methodology for determining the basic interest rate", adopted by Decision No. 149/16.12.2004, effective from February 1, 2005.

Despite the correlation dependence between the CPI and the HPI, other actions are possible, in case of need, to influence the direction of development of the residential real estate market. From Chapter Two, it became clear that approximately 56% of changes in residential real estate prices are explained by changes in the inflation index. And since the Real Estate Operations sector is one of the main ones when it comes to capital investment by businesses and households, the role of the state and potential other

decisions it can take to provide more serious control in situations when the market is in a state of growth or decline.

The model presented in second paragraph in chapter three examines the affordability ratio based on the average wage by economic activity. In view of the possible normative regulatory actions on the residential real estate market, it is possible to look at the geographical regions in the country. Considering the option of integrating a tax system oriented towards the country's settlements is of interest in view of the widely varying standard of living. Moreover, in the long run such a policy could help the market reach the equilibrium point.

Normative regulatory actions by the state are possible for all four variants of the considered matrix. In the context of the Quadrant 1 situation, a potential alternative is to introduce a progressive tax for owners of more than 1 dwelling. This would represent a mechanism to deal with excessive growth in the residential real estate market, but also a suitable tool to combat the "financialization" effect characteristic of Quadrants 3 and 4, with a view to limiting the financial benefits associated with the purchase of a property with a net investment objective.

In view of what was stated in paragraph three of chapter three, we have derived the following summaries:

1. Currently, institutions at the municipal and state level do not integrate regulatory actions that take into account the affordability of the housing market in Bulgaria. There is a need for more detailed monitoring of the development of the housing market in the country and the accessibility to it of specific risk sector groups, in case the need for the application of normative actions to regulate it is established in a measured and harmonized manner.
2. The proposed possible regulatory actions concern amendments and additions to the Law on Local Taxes and Fees, the Law on Value Added Tax, the Law on Personal Income Taxes and the Law on Territorial Management.
3. Substantial problems that should be resolved are related to population density in densely populated areas. A potential solution that would result in limiting the accelerated market growth is to measure the population density in specific urbanized regions and if the results exceed a legally established norm, to

reduce and limit the issued building permits. Similarly, construction in specific regions where population density is significantly below average should be stimulated.

Conclusion

Based on the research presented in the dissertation work, we consider that the goal and tasks related to it have been solved.

The global COVID-19 pandemic has been confirmed to have a short-term impact on the residential real estate market and specifically on the dynamics of intra-sector changes. Given the established correlation between selected macroeconomic aggregates and indicators related to the development of the housing market in the country, it is clear that it is a fundamental sector reflecting the socio-economic development of the country. In view of the presented interrelationships, it is of key importance that the understanding and awareness of the researched problem of the development of the market in the conditions of a global pandemic be at a high level in order to ensure its well-being and prevent potential problems for the economy, to which processes arising from the housing market, can lead.

III. DISSERTATION CONTRIBUTIONS REFERENCE

The theoretical studies and the analyzes carried out on their basis allow the following theoretical and practical contributions to be summarized:

1. Based on theoretical studies and critical analysis of literary sources, the concept of "residential real estate market" is clarified and an advanced classification of real estate types is proposed.
2. Based on the studied effects of the health crisis and its impact on the economic situation, in particular on the "Real Estate Operations" sector, the correlation dependences of the housing market with selected macroeconomic aggregates are investigated.

3. An adapted model is proposed, which emphasizes the concept of the accessibility factor, with a view to using it to diagnose the possibilities of market development in the conditions of a global pandemic and in a post-pandemic environment.
4. On the basis of the developed and approved model for the analysis of the state of the housing market in the conditions of a global pandemic and post-pandemic environment, pragmatic amendments and additions to the legal framework are proposed, supporting the regulation of the housing market in the Republic of Bulgaria.

IV. DISSERTATION PUBLICATIONS

Articles

1. Yordanov, A. Investigating the relationship between the Consumer Price Index and the Housing Price Index in the period 2016-2021, Volume 7 (3) of REAL ESTATE & BUSINESS Magazine, National Reference List Number – 2619

Reports

2. Yordanov, A. Impact of selected macroeconomic aggregates on the real estate market in the conditions of a global pandemic, Proceedings of the 36th International Scientific and Practical Conference - November 2021, ed. "Science and Economics" IU-Varna, 2021
3. Yordanov, A. Residential real estate as an investment option in the context of global economic uncertainty, Volume 3 of Proceedings of the National School for Doctoral Students and Young Researchers in Social Sciences, 2022, National Reference List Number - 3900, 220- 228.
4. Yordanov, A. Affordability of the housing market in Bulgaria after the COVID-19 pandemic, Collection of scientific works from the Scientific Conference "Knowledge, Science, Innovations, Technologies", organized by

the Institute for Knowledge, Science and Innovation, 2023. Number in the national reference list - 4626, 281-290.