



Relationship Between the Housing Market and Macroeconomic Factors in Bulgaria and the European Union

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Abstract:

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The paper investigates the correlation between house prices and main macroeconomic factors for the markets in Bulgaria and the EU for the period from 2016 to the first half of 2023. The analysis aims to enrich existing research on the Bulgarian housing market which is still developing and compare the findings to the EU market as a benchmark for the performance of a developed residential market. Residential property prices in Bulgaria experience the highest correlation with inflation, unemployment and GDP while they are least related to changes in the average mortgage interest rate. In contrast, the European housing market overall is most strongly correlated to changes in the average mortgage interest rate, followed by GDP and unemployment while it is least related to inflation. Results are consistent with existing studies which indicate that different macroeconomic factors impact the housing markets because of local economy specifics. Comparison to prior analysis of the Bulgarian market suggests that the relationship between housing prices and macroeconomic factors also varies during different periods and economic cycles.

Keywords:

Bulgaria; European Union; housing market; macroeconomic factors.

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Introduction

Real estate is the biggest store of global wealth in the world according to Savills (2023) – it is worth USD 380 trillion at the end of 2022 which is almost four times larger than the global GDP and is more than the combined value of global equities and bond markets. Majority of its value is concentrated in residential properties – USD 288 trillion, commercial property makes up 13% (USD 51 trillion) and agricultural land – 11% (USD 41 trillion). According to CBRE real estate has reached record highs in terms of volume of investment in Europe during the last couple of years following the COVID-19 pandemic with 2021 recording the highest volume of 371 billion euros. Bulgaria also experienced a strong property market performance. This paper investigates the correlation between the residential properties market and macroeconomic factors in the country and the European Union.

Real Estate and Macroeconomic Factors

The relationship between the real estate market and macroeconomic factors has been the subject of many studies. Hoskins et al. (2004) investigated the real estate markets in the UK, US, Australia and Canada for the period between 1985 and 1999 and the correlation between the price of real estate and macroeconomic factors. Their research concluded that the strongest relationship to property markets exists with inflation, unemployment rate and GDP. Also, their findings indicated that the relationship between various macroeconomic factors and property markets differs between countries. Ding (2022) studied the US residential market over a period of the last 15 years and investigated its relationship to dynamics in various macroeconomic indicators including population, stock market, GDP, mortgage interest rates and unemployment. Results determined that stock market and economic growth significantly contributed to rising house prices while mortgage interest rates and unemployment rate had a negative impact on house prices. Tripathi (2019) reviewed the property markets of 43 countries between 1970 and 2017 and analysed a wide set of macroeconomic determinants of housing prices – rent levels, GDP growth, interest rates, inflation, employment in services, urbanisation, population age and others. Results largely support findings from other studies that GDP and inflation had a positive impact on housing prices. Findings differ in relation to employment in services (which is associated with higher income) having a negative impact on housing prices and interest rates having no effect on housing prices.

Demary (2009) analysed the relationship between housing prices and economic output, inflation and monetary policies in ten OECD countries including the US, UK, Japan, Australia and major European countries for the period from 1970 to 2005. His findings indicate that the causal relationships were asymmetric and varied across geographies. Overall, the housing market played a key role in the dynamics of GDP, inflation and interest rates. Lorenz and Truck (2008) studied various European markets and found that macroeconomic factors explained a significant amount of the observed total property returns but a single factor model could not be applied to all markets. Therefore, different markets experience differences in terms of the most influential macroeconomic factors due to local specifics of the economy.

Purpose and Data

The purpose of this paper is to investigate the correlation between the housing prices and the main macroeconomic factors in Bulgaria and the European Union (EU). This analysis will contribute to further understanding the dynamics in the Bulgarian property market which is still developing and compare the local observations to the more developed real estate market in the EU. This paper builds on the work of Mavrov (2018) who looked at Bulgarian house prices and GDP, unemployment and inflation by adding a review of mortgage interest rates and comparing the results to the European market after 2015 when indices were harmonised across the EU. The scope of the analysis is covering the period from 2016 to the first half of 2023.

As a proxy of changes in residential property prices will be used data from Eurostat on the House Price Index. The main reasons for focusing on the housing market are:

- the availability of comparable data across Bulgaria and the EU for this property type, and
- the fact that the majority of the value of global real estate is concentrated in residential properties.

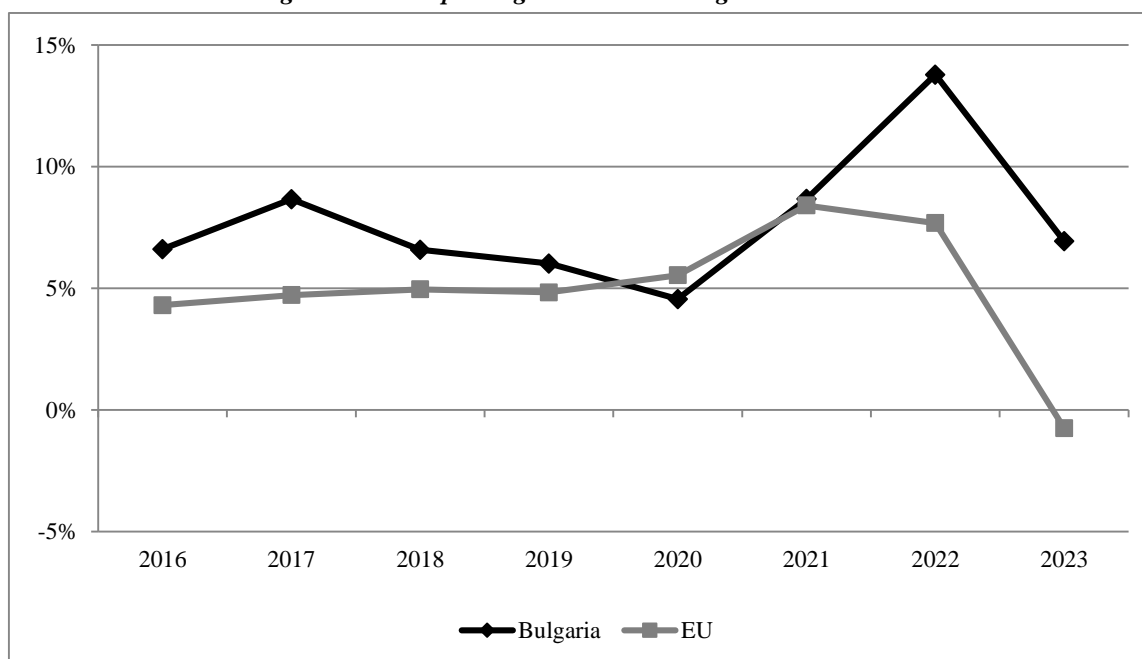
The macroeconomic factors which will be reviewed are GDP, unemployment, inflation and average mortgage rates as existing research suggests that these factors have the strongest relationship with the real estate market and housing prices. In addition, PWC (2022) interviewed more than 1000 real estate professionals in their Emerging Trends in Real Estate Europe 2023 report who indicated that their major concerns for the European business environment for 2023 are related to inflation (91%), interest rate movements (89%) and economic growth (88%) with the latter two being of major concern for the next three to five years as well, indicated by 73% and 76% respectively. Eurostat indices are used for data on GDP, inflation and unemployment dynamics. Data from the European Central Bank (ECB) and Bulgarian National Bank (BNB) is used for changes in the average mortgage interest rates.

Dynamics of House Prices in Bulgaria and the EU

Housing prices in Bulgaria consistently grew by a greater extent compared to the EU over the period. 2020 is the only exceptional year when EU house prices grew by almost 1% more compared to the Bulgarian market. This is mainly due to the impact of the COVID-19 pandemic on the residential market in the country. In 2021 the market in Bulgaria quickly recovered and at the end of 2022 prices recorded a peak growth rate of 14% outperforming significantly the EU market. During 2022 the pace of growth of housing prices in the EU slowed down starting a downward trend which actually led to a reduction in prices by the first half of 2023 of -0.7%. While the growth rate in Bulgaria also started to trend downwards housing prices still grew by 7% during the first half of 2023.

Figure 1 presents the dynamics in the housing markets in Bulgaria and the EU during the period from 2016 to June 2023 indicating the annual percentage change in residential property prices.

Figure 1. House prices growth rate in Bulgaria and the EU



Source: Eurostat

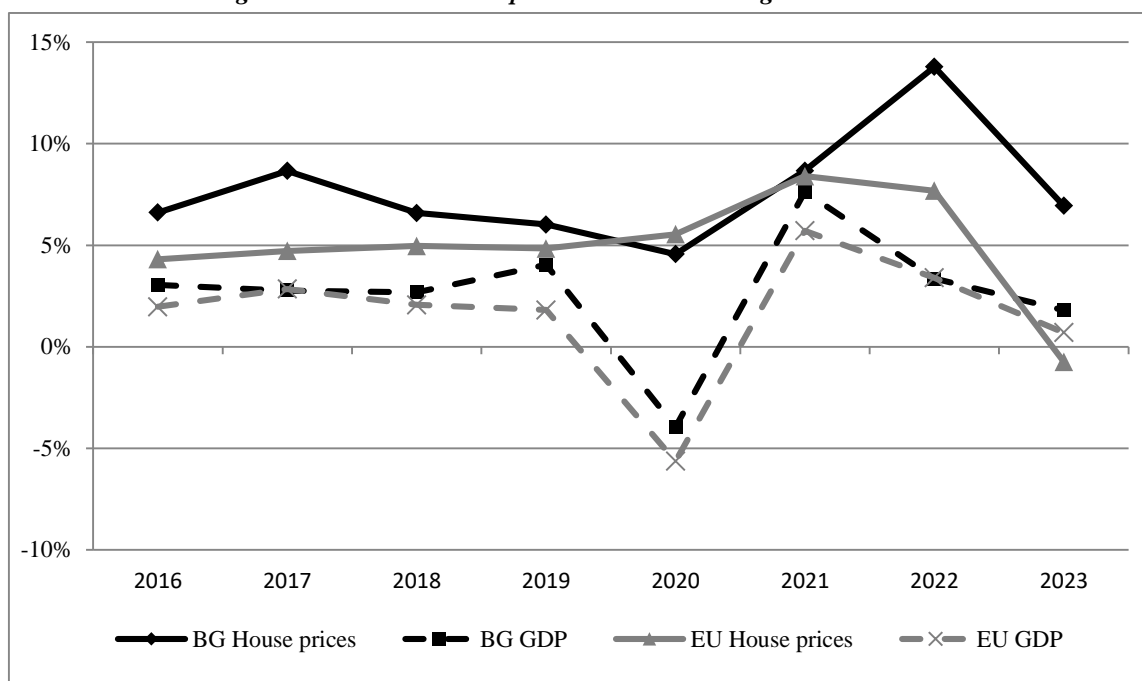
Real Estate and GDP

In economic theory the relationship between house prices and GDP is explained by the term wealth effect. The rising prices of assets cause an increase in the nominal wealth of the owners and investors in the assets and they tend to increase their spending. This is explained by the psychological effect of financial security caused by the increased value of the assets. This in turn leads to an increase in general demand and consecutively a rise in GDP. Case, Quigley and Shiller (2001) analysed this effect in 14 developed markets across the US, the UK, Canada and Europe. They tested the wealth effect created by rising stock values and property values and their impact on household expenditure. Their results showed the rise in stock values could not be associated with higher household spending. On the other hand, the increase in housing values created a significant wealth effect contributing to higher household expenditure.

Lee (2018) examined the causality relationship between GDP growth and real estate price dynamics in Hong Kong from 1980 to 2017 reaching the conclusion that there is dual causality. This implies that rising property prices contribute to GDP growth, thus, confirming the wealth effect discussed above, as well as rising GDP contributes to an increase in property prices. Adams and Füss (2010) studied the property markets of 15 countries over a period of 30 years and concluded that economic growth affects positively house pricing.

Figure 2 reveals the relationship between movements in housing prices and GDP in Bulgaria (BG) and the EU.

Figure 2. Growth in house prices and GDP in Bulgaria and the EU



Source: Eurostat

Changes in GDP in Bulgaria and the EU are quite in line with each other. The contraction of GDP in 2020 is due to the COVID-19 pandemic and the closure of many businesses for the year. This can be treated as an exception and economic productivity rose again in 2021 after businesses resumed operation. There is a clear downward trend in the growth rate of economic activity both in Bulgaria and the EU in 2022 and 2023.

House prices seem to move in line with GDP. This is more evident for the residential market in the EU apart from the exceptional 2020 when the EU housing prices growth rate outperformed 2019 whereas the Bulgarian market grew by less compared to 2019. There is a bit of a time lag in the Bulgarian housing market which recorded highest growth rate in 2022 but slowed down in 2023. The correlation between house prices and GDP over the analysed period is 0.45 in Bulgaria and 0.31 in the EU which reveals that the Bulgarian residential market moves slightly closer related to changes in the GDP compared to the EU.

Real Estate and Inflation

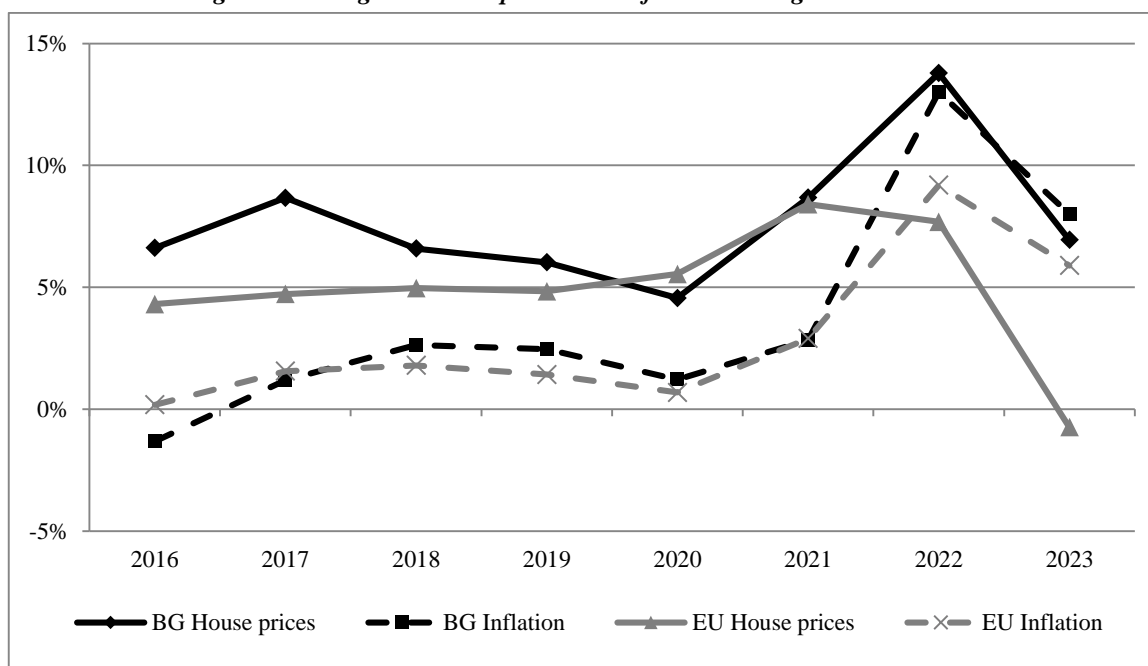
Real estate has widely been considered an asset class which protects investments from inflation. Anari and Kolari (2002) analysed the US housing market between 1968 and 2000 covering periods with higher and lower inflation and they found that residential properties effectively protected from inflation in the long run. Demary and Voigtlander (2009) studied the return on direct investments in different types of properties between 1998 and 2007 for property markets in the UK, US, Canada, Australia and Europe. They found that direct investment returns in residential and office buildings moved in line with inflation and it had a positive impact on these two types of properties with housing performing best against inflation.

Research on causality between inflation and housing prices is inconclusive – depending on the analysed markets some researchers found that inflation

contributed to an increase in the housing market (Christy et.al. (2021), Kuang and Liu (2015)), while others found that a rise in property prices led to greater inflation (Liu et. al. (2022)). Nevertheless, the two seem to be highly correlated and to change in the same direction especially in the long-term (Cohen and Karpavičiūtė (2017)).

Changes in housing market prices and inflation in Bulgaria and the EU are shown in Figure 3.

Figure 3. Changes in house prices and inflation in Bulgaria and the EU



Source: Eurostat

Residential prices have risen consistently above the level of inflation up to 2022 in both Bulgaria and the EU, therefore, protecting the invested capital by investors and owners from inflation. A major reason for the sharp increase in inflation in 2022 is due to the war in Ukraine and the significant increase in energy costs in Europe. The COVID-19 pandemic also contributed to the rise in the general price levels as businesses could not bring up operations to pre-pandemic levels while demand recovered faster. These short term effects are boosted further by the long-term impact of the quantitative easing undertaken by the ECB in 2015.

In 2020 the housing market in the EU outperformed the growth in the previous year even though inflation was lower compared to 2019 due to the lockdowns. In 2022 there is a divergence in the performance of the housing market in Bulgaria and the EU – the market in Bulgaria still outperformed the level of inflation and is moving closely to it so far in 2023 while the EU market grew by less than the level of inflation and the gap between the two is increasing during the first half of 2023. This leads to a significant difference in the correlation between housing prices and inflation observed in Bulgaria – 0.75, and in the EU – 0.02. The correlation coefficient found in the Bulgarian market by Mavrov (2018) is 0.6 for the period 2002-2014 and it is increasing after the housing market recovered in 2014 from the financial crisis which started in 2007/08. This indicates that there exists a

consistently strong relationship between inflation and residential property prices in Bulgaria for the last 20 years.

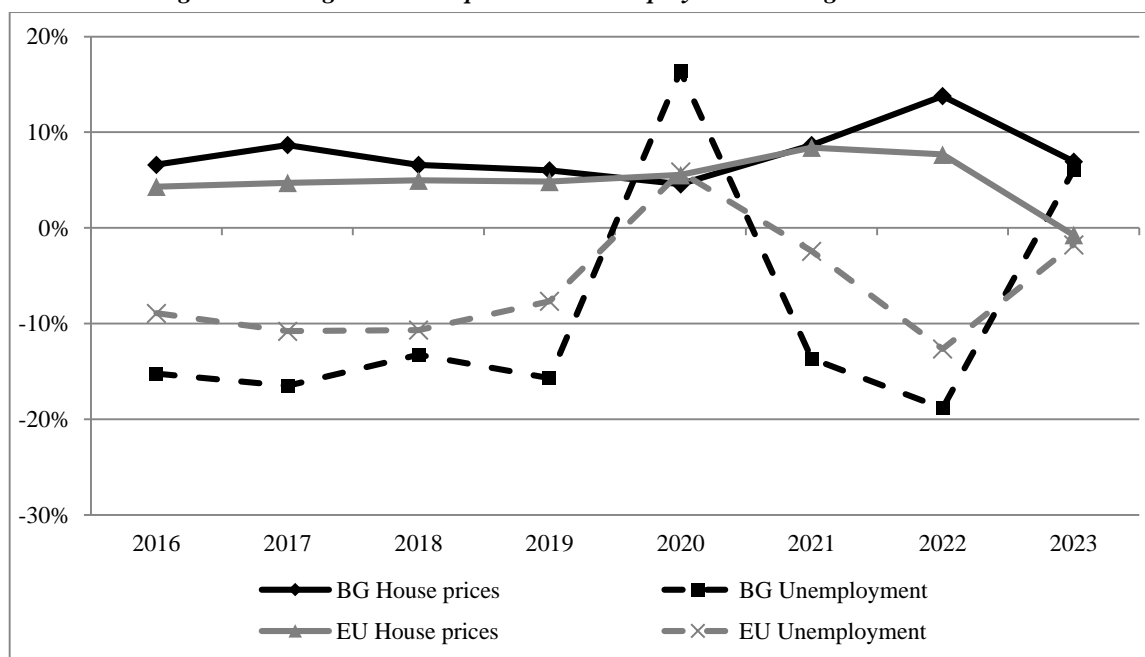
Real Estate and Unemployment

The relationship between unemployment and housing prices is reciprocal – a rise in unemployment is expected to lead to a decrease in disposable income, which leads to a decrease in demand resulting in a negative impact on GDP and housing prices. Geerolf and Grjebine (2015) studied the effect of house price movement on unemployment in 34 countries for the period 1970-2010. They discovered that changes in the housing market have a causal effect on unemployment not only in the construction sector. A fall in property prices contributed to a rise in overall unemployment due to the real estate market influence on the business cycle. This reciprocal relationship was observed both in periods of strong housing market performance and the property bubble bust during the 2007 crisis. Dogan and Topuz (2020) investigated this relationship for major US metropolitan areas during the period from 1990 to 2018 and concluded that the effect of changes in housing prices takes between 9 and 12 months to materialise in a reciprocal change in unemployment rates both before and after the financial crisis.

Iqbal et.al. (2023) studied the impact of unemployment on housing markets in 20 developed markets of OECD countries. They discovered that an asymmetric causal relationship exists between house prices and unemployment which runs both ways – from unemployment to housing prices and vice versa. Dvorkin and Shell (2016) investigated the US market during the 2007 crisis and found that counties with a larger housing price reduction experienced a greater increase in unemployment.

Figure 4 presents the dynamics in the prices of residential properties in Bulgaria and the EU and the corresponding trends in unemployment in the two markets.

Figure 4. Changes in house prices and unemployment in Bulgaria and the EU



Source: Eurostat

In the period up to 2020 small movements in house prices correspond to the observed changes in the unemployment rate in Bulgaria and the EU. The shock in 2020 caused by the pandemic had a stronger impact on the Bulgarian market both in housing price level and unemployment. During the recovery from the pandemic in 2021 and 2022 prices in Bulgaria increased and there is a corresponding drop in unemployment in the country. With the slowing down of the growth of residential property prices in 2023 there is a corresponding rise in unemployment, therefore, the data confirms the reciprocal relationship between the housing market and unemployment in the country.

In the EU the trends are similar but the pandemic caused a lesser increase in unemployment which did not affect the housing market – actually prices increased by more compared to 2019. After the pandemic unemployment is falling in the EU. Even though in 2023 the unemployment is still reducing by 1.8% residential prices have started to decrease. It may well be due to the time lag it takes for the impact of falling property prices to affect unemployment found by Dogan and Topuz (2020). This also leads to a weaker correlation between the two during the observed period in the EU of -0.17 compared to -0.56 in Bulgaria. The correlation of unemployment to housing prices in Bulgaria found by Mavrov (2018) was -0.8 for the period 2002 to 2014. It is lower during the period from 2016 to 2023 but it is still relatively high indicating that the relationship of unemployment to the housing market in Bulgaria is significant in the long term.

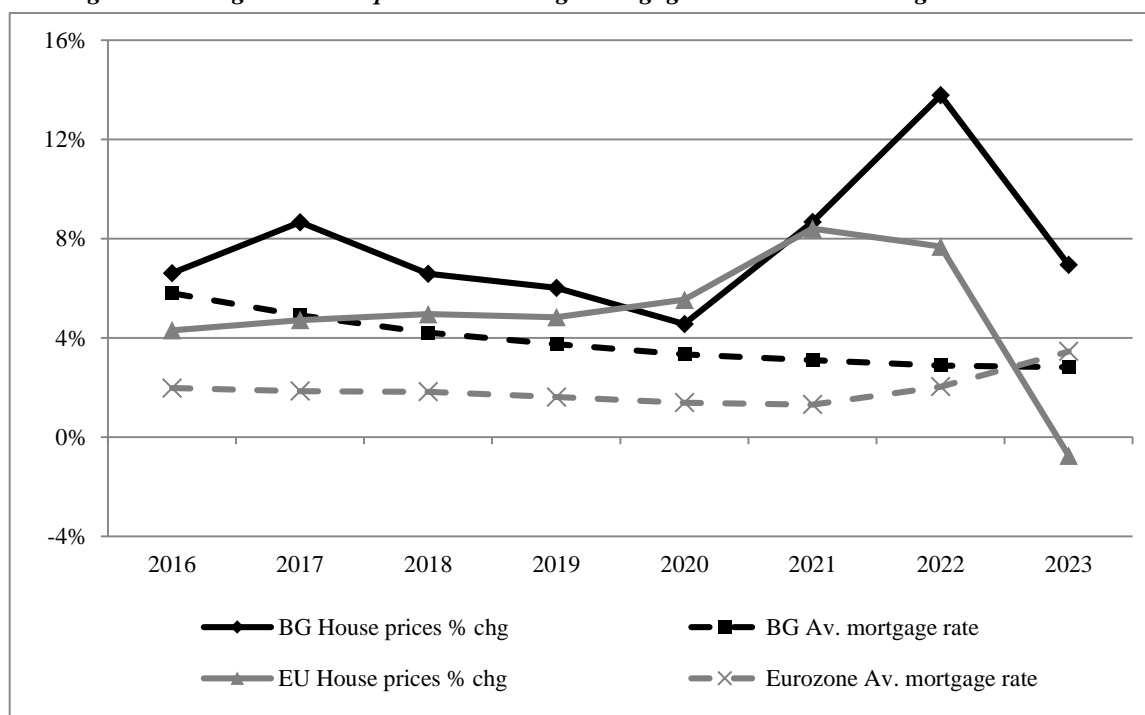
Real Estate and Interest Rates

Dynamics in interest rates affect house prices as the interest rate determines the return on cash deposits as well as the cost of borrowing. A reduction in the interest rate will prompt savers to look for better return on their savings and will reduce the cost of servicing mortgage loans used for the purchase of properties. This will have a positive impact on demand for properties and will drive prices upwards. On the other hand, any rise in the interest rate will increase the financial cost of servicing loans and will have a negative impact on demand and prices. This is applicable especially where purchases are financed through borrowing. Larson (2022) analysed the impact of mortgage rates on US house prices in 100 largest US cities. The results confirmed that rising cost of financing puts a strain on households' ability to service debt causing a reduction in demand and driving house prices back to their long-term equilibrium level.

Sutton et al. (2017) studied the housing markets of 47 countries between 1970 and 2015 and found a negative relationship between short-term interest rate movements and house prices – a decrease in the interest rate caused an increase in house prices. The authors found that in emerging economies, where the securitisation of homes is far less adopted compared to developed markets, house prices exhibited stronger impact of the change in the short-term interest rates.

Figure 5 below illustrates the changes in house prices and average mortgage interest rates in Bulgaria and the EU.

Figure 5. Changes in house prices and average mortgage interest rates in Bulgaria and the EU



Source: Eurostat, ECB, BNB

The average mortgage interest rate in Bulgaria has been steadily declining during the whole period of analysis. Housing prices have been rising between 6% and 9% up to 2020. In 2021 and 2022 prices started an upward trend with 2022 being the best year for the market growing by 14%. There is not a corresponding sharp decrease in the mortgage interest rate in 2021 or 2022 but the stable credit conditions supported the market. Other factors had greater impact on the market – demand was at the highest during the post-pandemic years and the number of completed deals have started to fall back to pre-pandemic levels during 2023. The higher inflation particularly in the construction sector (cost of materials and labour) also contributed to the rise of prices in the residential market.

The trend in the EU is different – the average mortgage interest rate started rising and has more than doubled by the middle of 2023 to 3.5% compared to 1.3% in 2021. This has been driven by the policy of ECB to raise interest rates in an attempt to stabilise inflation. This aims to reduce spending and consumption, thus, reducing GDP (as evidenced by the falling growth rate in 2022 and so far in 2023). In addition, the rising interest rates increase the financial cost of borrowing which is a main source of financing purchases in the residential market. The significant increase in the mortgage interest rate (55% in 2022 and 74% in 2023) corresponds to a slower growth of housing prices in 2022 and their reduction in 2023 of -0.7%.

The correlation between the two metrics in Bulgaria is -0.27 vs -0.84 in the EU. The relationship is much stronger in the EU compared to Bulgaria. One of the main reasons for this difference is due to the percentage of purchases financed by a loan. According to Eurostat (2021) Bulgarians who own their property are about 85% of the population and only 2.4% have financed their purchase through a loan. In comparison, the average ownership rate is 70% in the EU and 27% of owners have financed their purchase through a loan.

Conclusions

Based on the correlation analysis of the obtained data for Bulgaria and the EU the residential property prices are related to different macroeconomics factors by a various degree. The Bulgarian housing market during the period from 2016 to 2023 was most strongly related to inflation with correlation of 0.75, followed by unemployment (-0.56) and GDP (0.45). The least correlated macroeconomic factor is the average mortgage rate in the country (-0.27). These results coincide with the findings of Hoskins et al. (2004). The mortgage rate in the country has been declining during the period and has not yet been affected by the significant rise in interest rates across the EU, thus, supporting the housing market growth without causing a negative impact.

On the other hand, the EU residential prices have been mostly related to changes in the interest rate with a correlation of -0.84. This is largely due to the significantly higher proportion of purchases financed through borrowing in the EU of 27% compared to only 2.4% in Bulgaria. Out of the other macroeconomic factors analysed GDP comes second with a correlation of 0.31, followed by unemployment (-0.17) and inflation (0.02). These findings are in line with the conclusions of Lorenz and Truck (2008) - they indicate that the Bulgarian residential market is different to the market in the EU and the strength of the relationship between the macroeconomic factors and the housing market is dependent on the local specifics.

The results of the analysis suggest that divergences in the impact of macroeconomic factors exist not only between different markets but also between different periods in the same market. Mavrov (2018) found that the unemployment had the highest correlation to residential property prices in Bulgaria during the period from 2002 to 2014 of -0.8. Inflation was also found to have a relatively high correlation to the housing market over the period of 0.6, coming second after unemployment. Results from the analysis in this paper reveal that these two macroeconomic factors have switched places during the period from 2016 to 2023 – inflation had greater correlation to the prices of residential properties of almost 0.8 compared to unemployment with almost -0.6. Nevertheless, both variables experienced strong correlation to the housing market during both periods proving that there exists a strong long-term relationship.

Interest rates in Bulgaria will most likely follow the rising trend observed in the EU. As the proportion of owners in Bulgaria who have used borrowing to finance their purchase is low, a rise in interest rate may not affect demand for residential properties as much as it has in the EU. However, increased financing costs may have a stronger impact on the supply of housing as developers use borrowing to finance their investments and the construction of new properties. Future analysis could be extended to other macroeconomic factors which impact the housing market – changes in income and salary level, debt-to-income ratio, population and demographic dynamics, rent prices, price-to-rent ratio and others. The country is heading towards the adoption of the euro as a main currency which will impact the whole economy – not only the interest rates but also other macroeconomic factors and the housing market.

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