



TOPICAL RESEARCH AND HIGHLIGHTS

DYNAMICS OF HOUSE PRICES IN BULGARIA BETWEEN 2000 AND 2016

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BULGARIAN NATIONAL BANK

Dynamics of House Prices in Bulgaria between 2000 and 2016

The dynamics of house prices¹ reflects macroeconomic and financial conditions in Bulgaria and the ensuing changes in demand for and supply of housing. Housing demand is affected by household expectations for the economic situation in Bulgaria, household sentiments for savings and decisions for loans. The inflow of foreign direct investment (FDI) in the real estate activities sector² also puts pressure on prices. The relationship between house prices and demand for housing loans is bilateral: prices form the value of the collateral against which banks extend loans and the amount of extended loans has an effect on prices. Both factors determine the developments of investment in real estate. Supply of new housing reflects firms' expectations of price developments, dynamics of construction costs and their access to financing.

In 2016 the annual growth rate in house prices accelerated to 7.0 per cent compared with 2.8 per cent in 2015 and 1.4 per cent in 2014. The analysis in this research is aimed at identifying the main factors driving house price dynamics in the 2000–2016 period and to present the price developments in the context of macroeconomic and financial conditions in Bulgaria. Based on the identified factors a vector error correction model is designed which allows to determine whether house prices are in line with macroeconomic factors and, if any misalignments have been detected, to measure and evaluate their magnitude and direction.

1. Major Factors Determining the Level of House Prices in Bulgaria

Housing market developments in Bulgaria between 2000 and 2016 can be divided into three sub-periods differing by factors driving house prices and the magnitude of their effect. The first sub-period (from 2000 until the first half of 2003) is characterised by a weak dynamics of the housing market and house prices achieved immediately after macroeconomic and financial stabilisation. The second sub-period (2004–2008) encompasses the time prior to the global financial crisis and is characterised by fast growth rates of the housing market and relatively strong upward price developments. The third sub-period encompasses the time between 2009 and 2016 and shows the adjustment of the housing market to the changed economic environment in Bulgaria after the global economic crisis.

In the period from 2000 until the first half of 2003 the weak house price dynamics in Bulgaria corresponded to the subdued housing market development (see Chart 1). This reflected the macroeconomic instability in Bulgaria since 1991 resulting in a deep financial and economic crisis in the 1996–1997 period, slow restructuring of the economy, low household income and poor development of financial intermediation at that time. Housing investment accelerated only at the end of 2003. Fast growing housing demand, supported by the strong FDI inflow and limited supply of new residential buildings contributed to higher house prices in the period preceding the global financial crisis. In a two-year period (2004–2005) house prices doubled and between 2007 and 2008 they grew by another 60 per cent. The 2009 global financial crisis changed economic conditions in Bulgaria: adjustment of housing market to increased economic uncertainty, lack of FDI and weak economic activity in Bulgaria went through a prolonged period of decline in house prices (2010–2014). After 2014 a gradual upward trend in house prices occurred reflecting strengthened economic growth, and the related increase in employment, and improved household expectations. In the analysis below major demand and supply side factors, driving house price developments, are thoroughly examined.

1.1. Demand Side Factors

- Income and lending rate developments

¹ The analysis is based on the house price index (HPI), published by the NSI.

² In accordance with NACE.BG-2008 the real estate activities sector includes buying and selling of own real estate, renting and operating of own real estate, real estate agencies and management of real estate.

Disposable income and opportunities for using loans were the major factors determining households' house purchases. From 2004 until the first half of 2008 disposable income of households steadily increased in line with the high rates of economic growth and an employment increase. In addition, the entry of foreign banks in Bulgaria and enhanced competition for market shares among them facilitated the access to housing loans and created conditions for decreasing the interest rates on these loans. Over the same period interest rates on housing loans followed a downward pattern of over 12 per cent in early 2004 to reach about 7.8 per cent in early 2008. Concurrently, the volume of these loans started to grow rapidly, indicating an increasing demand for housing, which put upward pressure on prices (see Charts 2, 3 and 4). The temporary slowdown in house price growth, a result of the measures launched in early 2005 by the BNB to limit credit risk and credit growth, was indicative of the effect of bank loans on housing demand.³

In the post-crisis period the relationship between household income growth and house prices weakened reflecting the enhanced economic uncertainty in Bulgaria, worsened labour market conditions and higher household propensity to save. Between 2014 and 2016 the relationship strengthened again driven by favourable macroeconomic conditions in Bulgaria and the related improvement of household sentiments for house purchases. The increase in the amount of new housing loans due to the downward dynamics in interest rates and eased bank credit standards was an additional factor encouraging the house demand and house price rises.

• Household sentiments

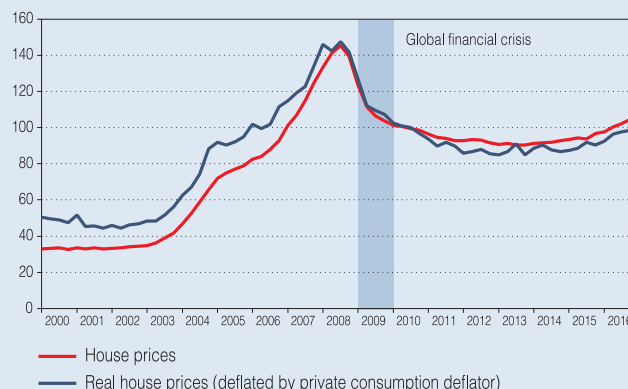
Household sentiments and their assessment of the economic development are an essential factor determining housing demand. According to the surveys regularly conducted by the NSI, household intents to purchase or build a home followed a sustainable upward trend in the 2004–2008 period, which was consistent

³ In April 2005 the BNB introduced administrative credit limits (credit ceilings), which remained effective until January 2007. Banks reporting total quarterly growth of loans exceeding the reference values set by the central bank were required to maintain higher minimum required reserves. After the implementation of credit ceilings credit growth slowed down and credit risk in the banking system subsided.

Chart 1

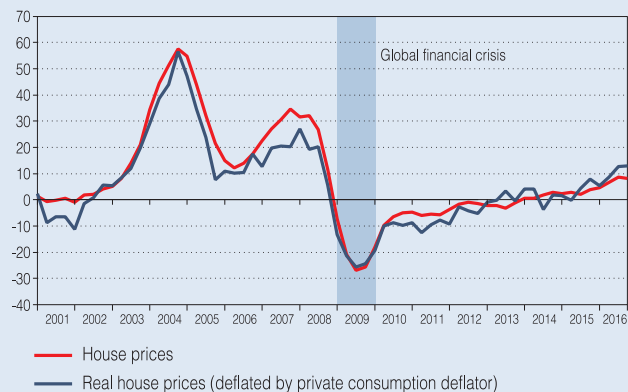
a) Nominal and Real House Prices

(index 2010 = 100)



b) Annual Growth of House Prices

(per cent; on an annual basis)

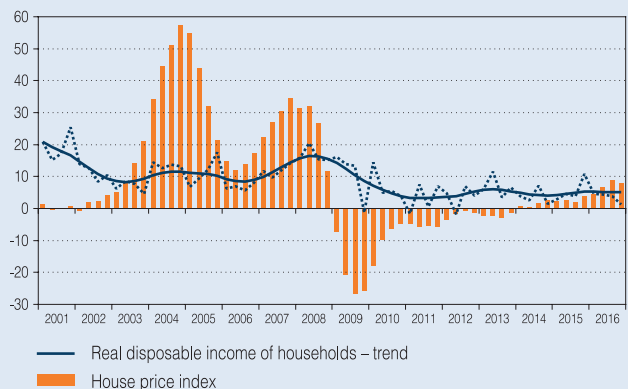


Sources: NSI, Eurostat, own calculations.

Chart 2

Growth of Disposable Household Income (Deflated by Private Consumption Deflator)

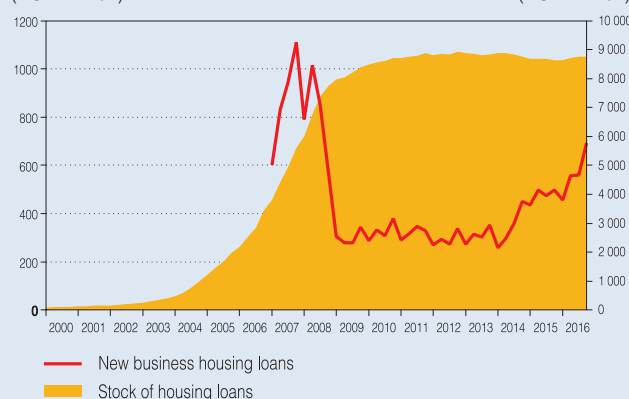
(per cent; on an annual basis)



Sources: NSI, own calculations.

Chart 3

Loans for House Purchases – New Business and Stock
(BGN million)



Sources: NSI, own calculations.

with the positive economic developments in Bulgaria and reflected gradually increasing housing demand. Based on the surveys, the peak in demand over the pre-crisis period was in mid-2007 (see Chart 5), which broadly coincided with the highest value in the house price dynamics. Concurrently, consumer expectations of the overall economic situation in Bulgaria and their financial position followed a downward trend since mid-2005, that is they did not correspond to the increasing household sentiments for house purchases. This was indicative of an irrational household behaviour evidenced by the rapid increase in the price-to-rent ratio.⁴ The latter can be considered as a ratio between the asset price (housing) and financial benefits from it (rent), (see Chart 6). In the economic literature the price-to-rent ratio is considered to be relatively stable in time, with possible deviations in the short run resulting from irrational behaviour. In the 2005–2008 period, the price-to-rent ratio was higher than the long-term (historical) value, indicating that property prices exceeded significantly financial benefits from property acquisitions.

Starting from the fourth quarter of 2008, house prices tended to decline strongly, their cumulative decrease reaching 32 per cent until the end of 2010. Between 2010 and 2013 they continued to fall, though at slower rates. This reflected largely a deterioration in consumer confidence of households in the context of economic uncertainty and growing unemployment, as well as the halt in external demand for real estate financed through FDI inflows. The financial crisis affected also dynamics of households' disposable income, albeit less strongly, as compensation per employee continued to grow on an annual basis (though at slower rates). In addition, the savings rate, followed an upward

⁴ According to the asset pricing literature, house prices are supposed to reflect the amount of expected capital gains or future economic benefits from the purchase of residential property (income from renting). It is therefore considered that if the price-to-rent ratio is higher than its equilibrium (long-term) value, it indicates an irrational economic agent behaviour and could be interpreted as a sign of overvaluation of house prices. In this case, the house price is higher than the expected economic benefit from the property. For further information, see: *Cuerpo Caballero, C., M. Demertzis, L. Fernández Vilaseca and P. Pon-tuch. 'Focus: Assessing the dynamics of house prices in the euro area'. Quarterly Report on the Euro Area, 11(4), 2012, pp. 7–18.*

Chart 4

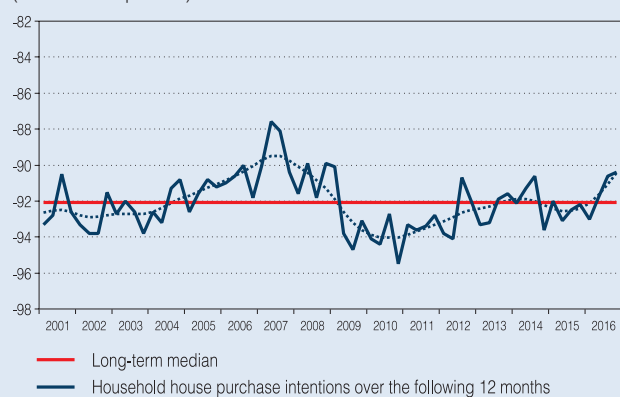
Interest Rates on New Housing Loans
(per cent)



Sources: NSI, own calculations.

Chart 5

Household House Purchase Intentions
(balance of opinions)



Sources: NSI, own calculations.

trend in the post-crisis period, indicating availability of funds for financing real estate purchases at macro level, although households refrained from such purchases. Households refrained also from incurring new debt which was evidenced by the low amount of newly extended housing loans in the period after 2009. Quarterly Bank Lending Survey data of the BNB signalled comparatively weak demand for housing loans in the post-crisis period despite the long-term downward trend in interest rates and credit standard easing which started in the middle of 2010 (see Chart 7).

In the 2014–2016 period, the negative effects of the above domestic factors began to weaken, as reflected in a change of household behaviour and strengthened housing demand. Acceleration in GDP growth to 3.4 per cent in 2016 along with the associated increase in disposable income, improved household sentiments, accumulated high savings in the post-crisis period and low interest rates in the economy were the factors which stimulated housing demand and relevant price increases. This was underpinned by the commercial bank policy toward a gradual easing of credit standards.

• Foreign direct investment

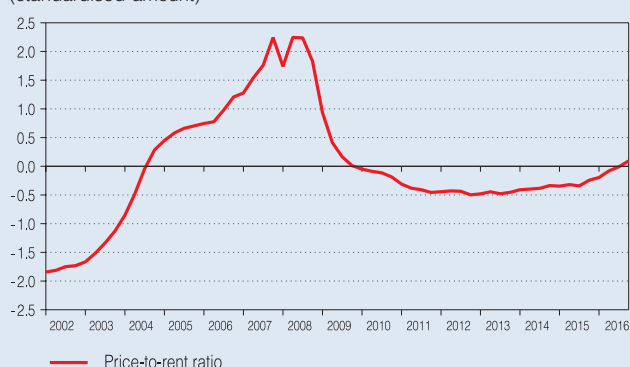
Another important factor contributing to the housing market development in the period prior to 2009 was the significant FDI inflow into Bulgaria. Part of it was attracted by the construction sector, leading to greater supply of new residential buildings. Concurrently, the significant FDI attracted by the financial sector provided resources to domestic banks to pursue an aggressive credit policy in competition for a market share. Advantageous conditions offered on the market of housing loans reinforced demand for housing. In the context of relatively low house prices, after 2014 Bulgaria was attracting annually a large FDI inflow into the real estate activities sector (see Chart 8). This inflow started to increase more substantially in the 2006 to 2007 period when positive expectations of Bulgaria's development were formed after EU accession. The positive effects of FDI inflows attracted by other economic sectors, such as industry and transport, storage and communications, contributed to boosting production capacities and economic restructuring, while affecting indirectly housing demand thanks to higher household income.

After the global financial crisis, FDI inflows into the real estate activities sector has dried up which weakened the upward pressure on house prices. This corresponded to the overall trend observed in the Central and Eastern European countries in the post-crisis period showing comparatively low FDI inflows due to the increased economic uncertainty in the region, deterioration of economic growth

Chart 6

House Price-to-Rent Ratio

(standardised amount)



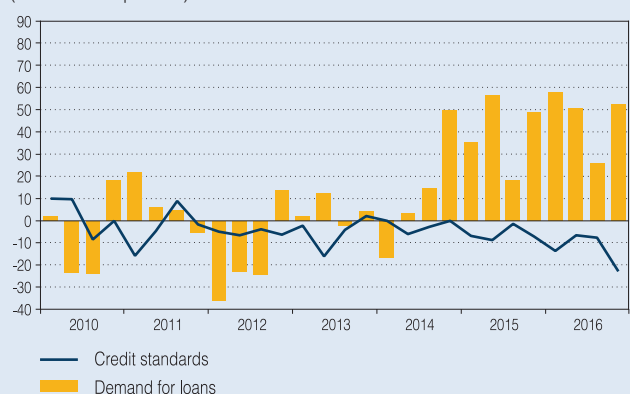
Note: The price-to-rent ratio is calculated based on HICP data on market prices for rents.

Sources: NSI, own calculations.

Chart 7

Changes in Credit Standards and Demand as Applied to Housing Loans

(balance of opinions)



Note: As regards credit standards, the chart presents banks' balance of opinions defined as a difference in percentage points between the percentage of banks responding 'tightened' ('considerably' and 'somewhat'), and the percentage of banks responding 'eased' ('considerably' and 'somewhat'). As regards credit demand, the balance of opinions is defined in percentage points as a difference between the percentage of banks responding 'increased' ('considerably' and 'somewhat') and the percentage of banks responding 'reduced' ('considerably' and 'somewhat'). All opinions are weighted by the bank's market share in the relevant credit segment.

Source: BNB (Bank Lending Survey).

prospects and expected return on new projects along with foreign investors' higher risk aversion.

1.2. Supply Side Factors

Supply side factors can be analysed from several points of view. The housing stock in Bulgaria and construction production index dynamics are fundamental indicators for the changes in housing supply and its reaction to demand. Additional information about future changes in housing supply is contained in the number of newly issued permits for residential buildings and opinions of managers of surveyed construction firms about the future economic activity and major obstacles hindering business activities. Dynamics in firms' profit and expenditure was another factor affecting their decisions to construct new residential buildings.

• Housing stock and construction of new residential buildings

Between 2004 and 2009 new housing supply measured by the number of new residential buildings put in operation increased gradually (see Chart 9). The housing stock grew cumulatively by 2.3 per cent. Under the influence of rising prices and strong demand for housing, the construction production index followed a sustainable upward trend, with building construction contributing most positively⁵ to it (see Chart 10).

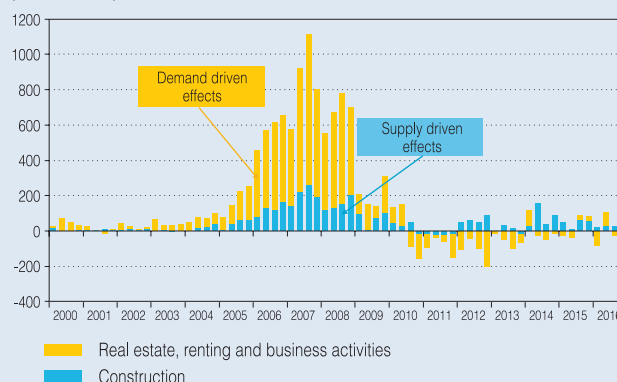
Growing demand for construction production in the period before the global economic and financial crisis allowed firms in this sector to achieve a high growth rate of profitability:⁶ a precondition for a housing boom in construction. In the period prior to 2009, an increase

⁵ Building construction includes construction of residential and non-residential buildings, while civil engineering covers infrastructure construction of roads, bridges, pipes, power lines, gas pipelines, telecommunications and other construction works.

⁶ The analysis employs national accounts data on value added dynamics in the construction sector. Although value added and related indicators are comparatively less accurate measures of housing supply compared to the construction production index (building construction) as they include also civil engineering in Bulgaria, they, nonetheless, contain important information about the profits of firms in this sector.

Chart 8

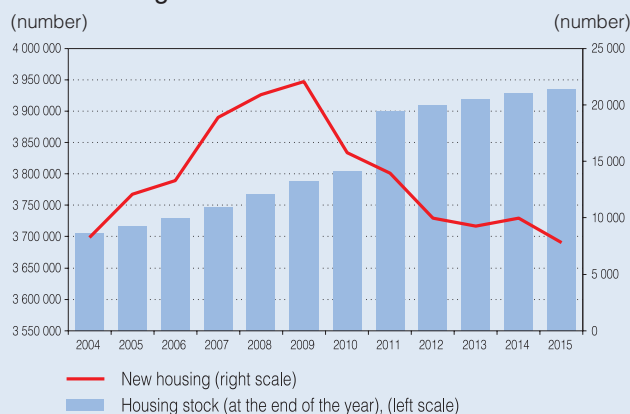
FDI Flows in Sectors Related to Real Estate Market (EUR million)



Sources: BNB, NSI, own calculations.

Chart 9

Housing Stock (Number of Existing Housing) and New Housing

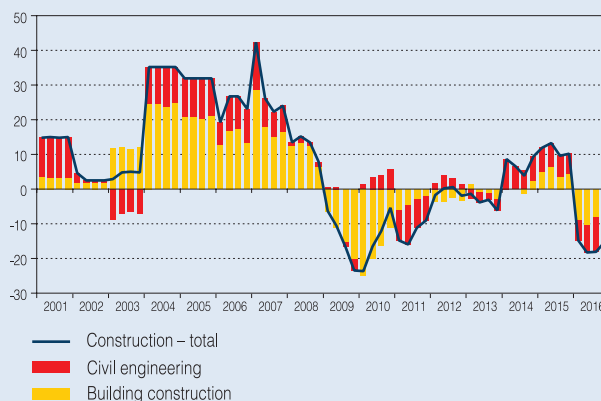


Source: NSI.

Chart 10

Construction Production Index

(per cent, percentage points)

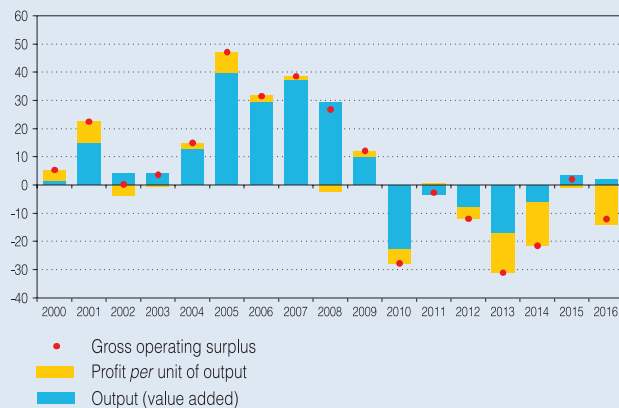


Source: NSI.

Chart 11

Contribution to Gross Operating Surplus Growth in Construction

(per cent, percentage points)



Source: NSI.

in the gross operating surplus was reported in construction, which is an indicator of firms' profit dynamics. The upward trend in gross operating surplus in absolute terms was due to both higher economic activity (measured by value added) and the increasing unit profit (see Chart 11).

Decreased demand for construction production over the 2009–2013 period and limited access to loans pushed down the construction activity which was accompanied by a prolonged period of employee dismissals. As a result, after 2009 the number of new residential buildings began to contract in line with the fall of newly issued building permits (see Chart 12). The upward trend in house prices since 2014 has helped intensify building construction and increase the number of issued residential buildings permits which have, however, remained significantly below the levels achieved prior to the global economic and financial crisis. A factor which is likely to continue limiting economic activity in the construction sector is the persistent downward trend since 2010 toward a decline in unit profits.

• Construction costs

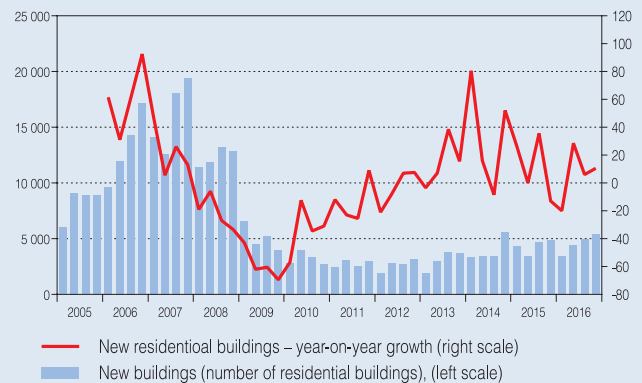
Other factors determining the level of house prices are related to construction costs. Between 2004 and 2009 construction firms expenditure increased, which initially reflected mainly higher prices of input materials (see Chapter 13). In the 2007–2009 period, however, growth in compensation per employee in the sector also started to exert upward pressure on costs. This was probably due to the higher demand for labour in con-

Chart 12

Issued Permits of New Residential Buildings

(number of buildings)

(per cent, on an annual basis)

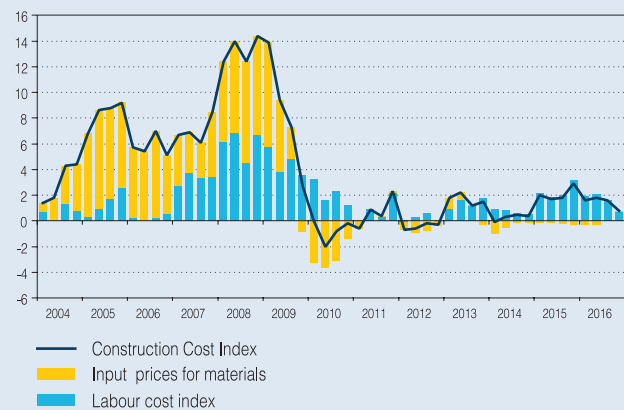


Source: NSI.

Chart 13

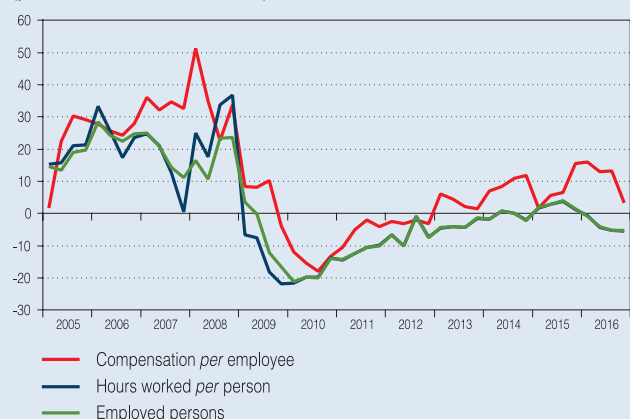
a) Construction Costs

(per cent, percentage points; on an annual basis)



b) Labour Costs in Construction

(per cent; on an annual basis)



Note: The construction cost index (CCI) shows the trend in all costs incurred by the contractor/producer during the construction process and includes costs of labour materials, equipment and overhead.

Source: Eurostat.

struction underpinned by enhanced economic activity in this sector and the overall upward trend in wages observed in Bulgaria.

From 2009 input materials' price dynamics remained relatively subdued and did not result in an increase in house prices. Firms' adjustment to the lower demand conditions and limited access to funding for new projects in the post-crisis period was coupled with a significant reduction in the number of employed in construction (a total of 41.2 per cent less for the period between the end of 2008 and the end of 2013) and a fall in the compensation *per* employee. This contained labour costs. The accumulation of unsold residential buildings built probably at relatively high costs in the pre-crisis period was an additional factor that prolonged and made firms' adjustment to the changed economic conditions after the global financial crisis more difficult. In the 2013–2016 period the downward trend in compensation *per* employee reversed and labour costs started to increase again, albeit at a relatively slow pace, exerting no upward pressure on house prices.

- **Economic uncertainty**

Regular NSI surveys on the business environment in Bulgaria show that economic uncertainty is the key factor hampering construction firms' activities at the end of 2016 and in the beginning of 2017. At the same time, according to the surveys, the adverse effect of factors related to insufficient demand or financial problems has weakened significantly. This gives grounds to believe that in the following months we may expect enhanced economic activity in construction and an increase in the supply of new housing which would have a dampening effect on house price rises.

2. Estimation of the Long-term Level of House Prices

The analysis suggests that the increase in house prices in the 2014–2016 period was mainly due to stronger domestic demand related to the higher consumer confidence, household income growth and enhanced borrowing for house purchases. In contrast to the pre-crisis period, the lack of strong domestic demand for real estate, an indication of which is FDI, and the weak construction costs growth are factors containing house price growth.

A Vector Error Correction Model (VECM) is used for modelling house prices. The merits of this type of model lie in finding a stable long-term cointegration relationship between house prices and the already identified fundamental macroeconomic factors, assuming that in the short-term prices can hover around the so called equilibrium (long-term) level.⁷ In addition to the quantitative assessment of these factors' influence on house price developments in Bulgaria, the model makes it possible to determine to what extent the upward trend in those prices in the 2014–2016 period is in line with the outlined fundamental macroeconomic factors. Upon verification of the statistical characteristics of different specifications⁸, a specification was chosen for which a statistically significant cointegration relation exists between house prices, a synthetic indicator for households' house purchasing power constructed by the authors of the model, and the amount of FDI in the real estate activities sector. The households' house purchasing power indicator was constructed in line with the Addison-Smyth,

⁷ For more information on this type of models for Bulgaria see Kotseva, P., M. Yanchev. Analysis of the Housing Market Developments and the Underlying Macroeconomic Fundamentals in Bulgaria. Bulgarian National Bank, Discussion Papers No 103, 2017.

⁸ For the purposes of house price modelling different specifications of a vector error correction model were constructed which varied in number of included fundamental macroeconomic factors in the long-term (cointegration) relation equation. Having made different statistical tests, a specification was chosen which includes only demand side variables in the long-term equation: household income, housing loans interest rates and amount of FDI in the real estate activities sector. The factors on the supply side identified in the analysis are not included in the long-term equation of the chosen best specification of the model, as the estimated coefficients preceding these variables are statistically insignificant and with the wrong sign. The Granger casualty tests between house prices and supply-side driven factors confirmed that the supply is lagging behind the movement of prices. Given the foregoing, it can be concluded that the dynamics of supply-side driven factors has an impact on house prices only in the short-term and therefore, these are not included in the long-term equation of the chosen best specification.

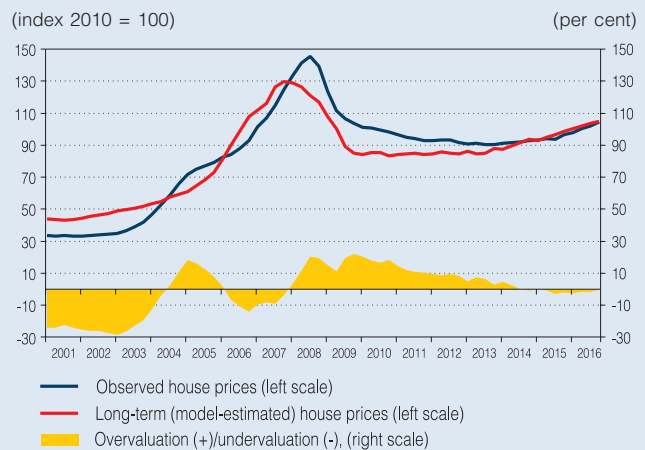
McQuinn and O'Reilly's (2009) methodology⁹ and takes into account the effect of the changes in income (GDP *per capita*) and interest rates on housing loans.

The results of the model show that in the period prior to 2004 house prices were significantly undervalued, which is a prerequisite for relatively rapid price changes in the following years (see Chart 14). In the 2004–2008 period an increase in the long-term level as determined by the model is observed in line with the significant FDI inflow, income growth and lower interest rates on housing loans. The factors that were not included in the model possibly related to the overly optimistic household sentiment or higher construction costs underpinned the short-term overvaluation of house prices observed in mid-2008. From 2009 onwards the downward adjustment of households' expectations and the preference for a higher savings rate facilitated the convergence of the prices observed with their estimated long-term values. According to the model results, no over- or undervaluation of house prices was observed by the close of 2016.

The thus constructed model shows that the gradual increase in house prices reported between 2014 and 2016 was mainly due to effects of fundamental factors related to increased domestic demand. These factors include growing household income and the downward trend in housing loans interest rates. The lack of significant external demand due to the lack of FDI in the real estate and construction sector, is the reason behind the expected lower than pre-crisis price rise rates in the following quarters. Price developments will also depend on the speed of adjustment of the supply of new housing to the emerging higher demand.

Chart 14

Observed and Long-term (Model Estimated) House Prices



Source: NSI.

⁹ Addison-Smyth, D., K. McQuinn, G. O'Reilly (2009), Modelling Credit in the Irish Mortgage Market, Central Bank of Ireland Research Technical Paper, 9/RT.

THE SCULPTURAL COMPOSITION BY KIRIL SHIVAROV DEPICTING HERMES AND DEMETER ON THE SOUTHERN FAÇADE OF THE BULGARIAN NATIONAL BANK BUILDING IS USED IN COVER DESIGN.