

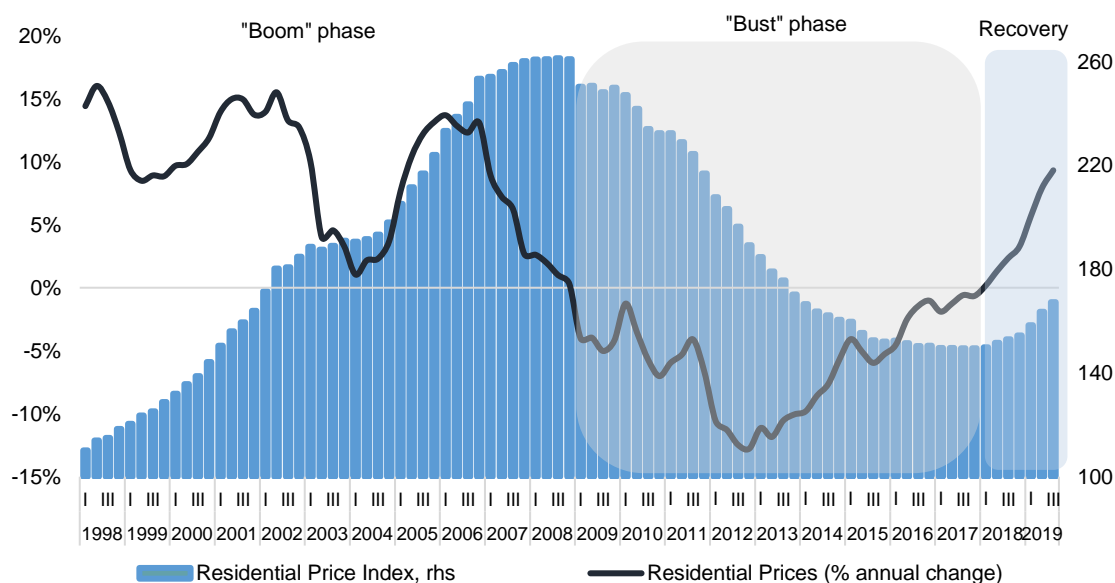
The rise, fall and revival of the residential property market in Greece: Bringing new drivers of house price fluctuations to the foreground

1. Introduction

Over the last two years, the Greek residential property market has clearly re-entered an upwards course. The recovery dynamics in house prices accelerated further in the first nine months of 2019, with house prices rising by 7.4% y-o-y, creating equity gains for post-crisis investors and offsetting a small part of the excessive losses incurred during the previous decade. A breakdown of the index by region reveals that house prices in Athens lead the way in the current recovery, increasing by 10.3% y-o-y in the first nine months of 2019, on the back of the rapid expansion of the short-term rental market through the home-sharing economy and the Golden Visa programme. Furthermore, residential investment embarked on an upward trend for the first time in 2018 after almost a decade of consecutive declines, along with the remarkable increase of net capital inflows from abroad for property purchases in Greece.

A better understanding of the current market recovery path and its future direction presupposes some empirically-driven conclusions from the historical market mechanics as well as the fresh technological and policy challenges. In particular, an assessment of the nexus between macroeconomic conditions and the real estate market in the recent historical perspective may start by dividing the timespan of available house price series into three main phases; boom, bust and recovery.

Graph 1. Residential Property Market: The Boom-Bust Cycle and Signs of Recovery Going Forward



Source: Bank of Greece

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The above EU-average growth in economic activity during the '90s and '00s along with the financial liberalisation and the adoption of the euro - which rendered borrowing for buying a house convenient - led to a buoyant rise in housing demand. Given that supply needs a long time interval to meet demand, real estate prices went on dramatically increasing. The boom phase stopped with the global economic meltdown. During the "bust" phase of the real estate price cycle, the house price index dropped cumulatively by 42.4% from its peak in Q3 2008 until the trough in Q3 2017 (*Graph 1*). However, from Q4 2017 onwards, the Greek housing market shows signs of recovery, with house prices increasing cumulatively by 11.5% until Q3 2019, offsetting a small part of the large losses incurred during the recession.

During the third phase, the observed revival in the Greek residential property market is in line with the mild recovery of economic activity, with real GDP recording positive annual growth rates for ten consecutive quarters. Although business and house price cycles are both now in an upturn phase, housing loan growth remains negative, albeit relatively stable. Consequently, although in the period before the financial crisis mortgage credit growth supported the strong expansion of the house price cycle, the recent recovery dynamics might be broadly characterized as "credit-less".

The strong upward dynamics prevailing in the current phase of the house price cycle imply significant gains for the Greek economy. First, rising house prices improve the value of collaterals and the capital position of banks *via* the rise in the value of their own real estate assets and/or their positive effect on non-performing portfolios. Second, there are significant gains for household wealth, taking into account the high homeownership ratio in Greece. Thus, in accordance to the life-cycle framework, higher property prices stimulate economic activity through wealth effects, enhancing investment and private consumption (Aladangady, 2017).

The current issue of *Insights* aims to analyse what causes real estate price fluctuations in Greece and shed light on the newly emergent macro- and micro-economic factors that contribute to the recent sharp acceleration of the house prices growth rate and the revival of the residential property market in Greece.

The rest of this *Insights* is organized as follows. *Sections 2.1* and *2.2* provide a historical background and summarise some key stylized facts that characterise the Greek housing market emphasizing on its interaction with the developments in the domestic banking system. In *Section 2.3* we present a short literature review of the determinants of residential property prices, focusing mainly on the demand-side factors. *Sections 2.4* and *2.5* briefly discuss some key recent developments of property taxation in Greece and the regime switch during the crisis towards higher recurrent taxes on immovable property and lower taxes on property transactions as well as the evolution of homeownership over time and relative to other EU countries. *Sections 3.1* and *3.2* shed light on the synchronization of the business and credit cycle with the house price cycle and the role of additional factors in the current revival of the domestic real estate market, while *Section 3.3* evaluates the current phase of the house price cycle in terms of households' affordability and envisaged profitability by market participants. *Section 4* concludes.

2. Stylized Facts

2.1 The Historical Background

House price data is available in Greece after the mid-1990s. Anecdotally, according to the post-war dreamers, no man has lost his money by investing in land. This saying implies, at least, the non-existence of persistent downward shifts in residential property prices during that period. From a historical perspective, the long-term trend of construction activity and house prices in Greece was dominated by demographic, social and economic factors.

More specifically, the post-war rural exodus intensified construction activity in urban areas (Charalambis *et al.*, 2004), while the baby boom in the '60s and the diminishing fertility ratio during the past three decades of the 20th century may have (Mankiw and Weil, 1989) an almost twenty-year lagged impact on the demand and prices of new houses. Migration outflows, mainly to Northern Europe in the '60s and migration inflows from the Balkans and Eastern European countries in the '90s had, in all likelihood, an immediate, but short-term, impact, respectively.

From a sociological perspective, the purchase of an owner-occupied house in the urban areas of Greece

marked an upsurge in socio-economic status, facilitating the movement from the lower social classes toward the middle class (Burgel (1976) and Patatouka (2015)). Finally, from a financial point of view, the purchase of a house was extensively considered as a sort of saving, rather than investment, protecting wealth from a weak and inflation-prone currency. As a result, property accounts for a large chunk of household wealth in Greece, which has a relatively higher homeownership rate compared to other European countries over time (see also *Section 2.5*).

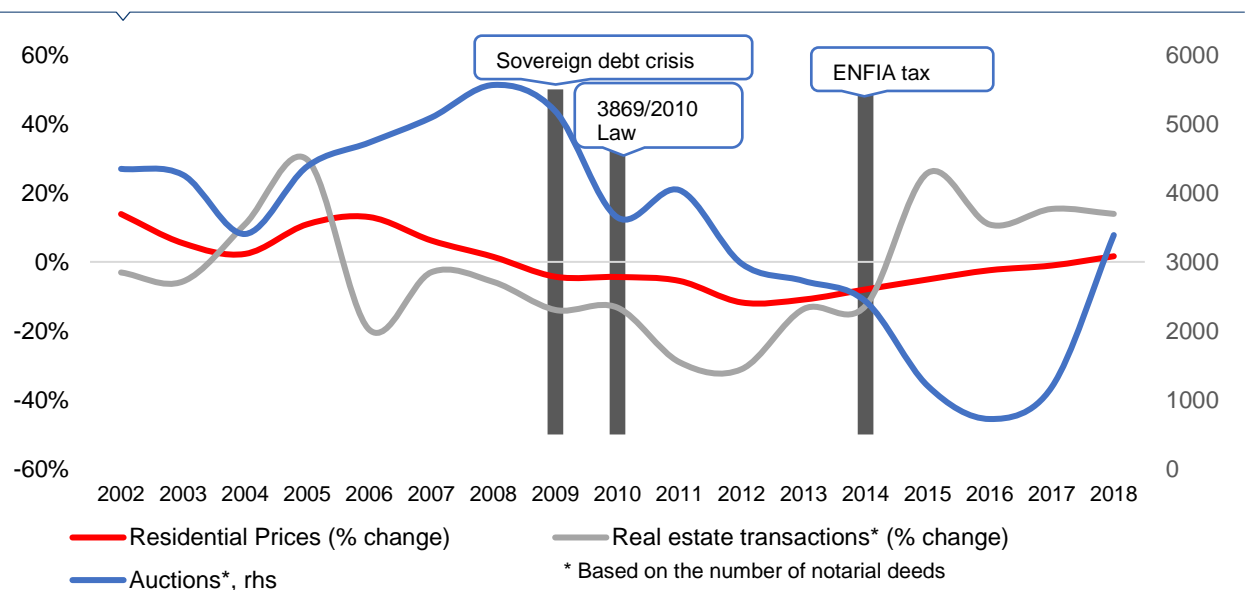
Before the mid-'90s, two methods of housing provision prevailed complementarily in the Greek real estate market; flats-for-land and self-built (Patatouka, 2015). Both methods were characterized by the absence of bank lending participation in financing house purchases, which were financed either by cash, accumulated through savings or family bequests, or *via* sales contracts between property owners and constructors (Brissimis and Vlassopoulos, 2009).

On the contrary, after the 1994 financial deregulation, commercial banks were also allowed to provide housing loans, which until then was conducted only by special credit institutions (Brissimis and Vlassopoulos, 2009). This credit liberalization implied substantial liquidity gains for households, diminishing their borrowing constraints. This trend intensified, especially after the country's entry to the Eurozone in 2001, accompanied by low interest rates, which made the banking sector the main financing source for households' purchasing residential property.

2.2 The Fairy Tale of the Interaction between the Banking System and the Real Estate Market in Greece

Housing loans recorded remarkable growth in Greece during the period 1996-2008, with an average annual growth rate of 26.6%¹ mainly in order to meet the significant pent-up demand. Additionally, the competition between banking institutions became stronger, on the back of advanced financial products that aimed to tackle borrowers' necessities precisely (Brissimis and Vlassopoulos, 2009). Furthermore, the bank credit growth fuelled purchasing power, much more than savings, supporting fresh demand for housing in suburbs as well as an increase in house price inflation (Patatouka, 2015). Residential property prices moved upwards during the period 1998-2008, recording an average annual growth¹ around 9.2%, typically exceeding that of household disposable income (8.3%). In 2004, the euphoria of the Olympic Games led to 165,988 property transactions in Greece and residential investment reached 10% of GDP.

Graph 2. Residential Property Prices, Auctions and Real Estate Transactions



Source: Bank of Greece, ELSTAT

¹ The annual rates of change take into account reclassifications and loan write-offs, exchange rate variations and corporate bonds and loans transferred by credit institutions to their non-resident subsidiaries (Bank of Greece).

The 2007-8 global financial crisis exacerbated Greece's budget deficit and external debt obligations, the latter exceeding 145% of GDP by 2010, resulting in a collapse of the economy and the real estate market. The fiscal austerity policies pursued in the context of MoU agreements had a rapid and hugely negative impact on disposable income. The decline in aggregate demand prompted bankruptcies and layoffs. Unemployment in Greece rose from 7.8% in 2008 to its historical peak of 27.5% in 2013. The average households' disposable income had effectively compressed, falling by 33.3% from 2009 to 2017. With over a third of households unable to meet tax obligations and keep up with house loan repayments, real estate prices were greatly compressed. Residential property prices countrywide dropped by around 42.4% since the outbreak of the Greek debt crisis, namely from the peak in Q3 2008 until the trough in Q3 2017.

The debt crisis boosted state bond yields to almost 40% in 2012. This affected liquidity and increased interest rates in the corporate sector, making retail and housing lending less affordable. On top of the unprecedented increase in unemployment, about 223 thousand young persons aged 25-39 years old have left the country during the period 2008-2013 (Lazaretou, 2016), adding to the weakening domestic demand for residential real estate. The combination of the aforementioned factors caused a sharp drop in property demand, leading to a decrease in the number and volume of transactions. According to ELSTAT figures, the number of real estate transactions in Greece declined by 72.5% between 2008-2014, dropping from 158 thousand to 43.4 thousand.

From the supply side, the real estate market boom in the early '00s led to an overabundance of housing, with Greece reaching a very high homeownership ratio as mentioned above, which in turn pushed prices further down. Additionally, as people were unable to pay back their loans, in December 2018, the share of non-performing housing loans reached a critical level of 44.5%. Initially, with a law enacted in 2010, the suspension of foreclosures for debts to credit institutions and the protection of primary residence were legislated². *Graph 2* depicts the evolution of house prices along with real estate transactions and auctions.

2.3 House Price Determinants: What Theory Suggests

Real estate prices are affected by both demand and supply factors; however, given that the supply side of the market is more rigid (land shortage, time for new construction etc.), most of the studies in the empirical literature focus mainly on demand-side factors. Housing demand can be viewed either as consumption expenditure on housing services or as investment on a non-financial asset. The main factors that affect residential demand and, thus, prices, can be disaggregated into four main groups: (a) general macroeconomic variables, (b) demographic determinants, (c) housing taxation and other fiscal policies and (d) financial factors related to the deregulation of financial markets and access to mortgage lending (Andrews *et al.*, 2011). *Figure 1* categorizes the main demand-side determinants.

The main macroeconomic factors affecting the evolution of residential prices are households' disposable income, the unemployment rate and real interest rates. According to ECB (2003), rises in households' disposable income tend to increase the demand for houses and, thus, residential prices. Evidence from several empirical studies corroborate the strong positive link between GDP growth and house prices (see, for instance, Tsatsaronis and Zhu (2004), Schnure (2005), Adams and Fuss (2010)). Furthermore, falls in unemployment raise house prices as employment gains benefit consumer confidence and increase households' disposable income. For instance, Schnure (2005) found that an increase in unemployment rate by 1 unit leads to a decrease in house prices by 1%. Moreover, residential prices are negatively related to interest rates, since increases in interest rates lead to a lower demand for houses (see e.g. Andrews (2010)).

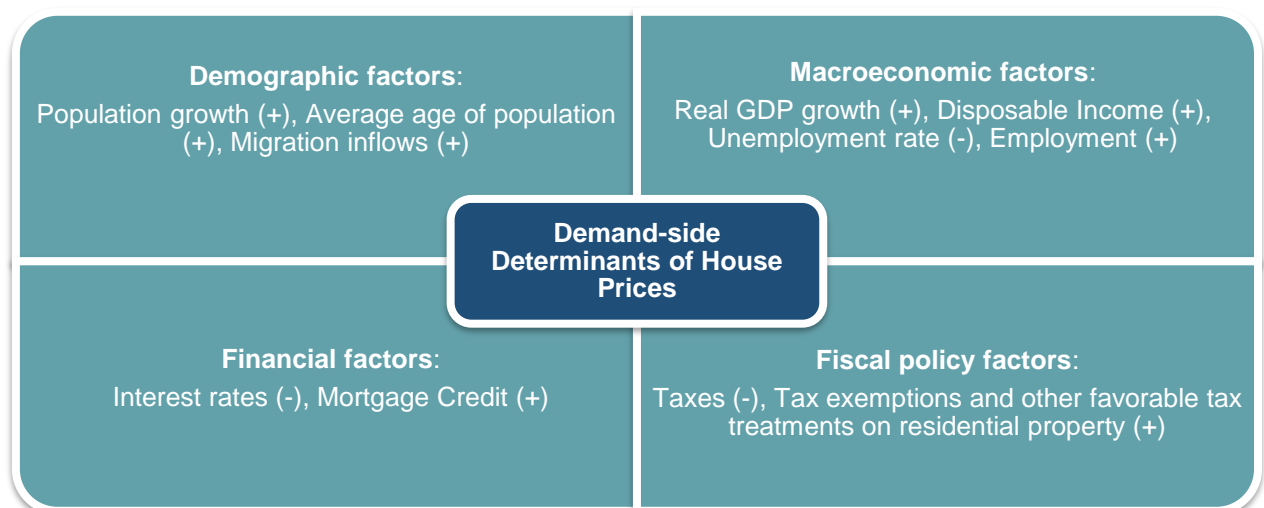
Demographic factors, such as population growth (baby booms), average population age (measured by the relative size of older and younger generations), the upward trend of the median age and migration flows

² Although the law expired at the end of 2014, the government continued to provide protection for primary residences, especially to families with incomes below the poverty line. It has been argued by Kapopoulos *et al.* (2017) that the combined effect of the vast decline in real estate prices and the suspension of foreclosures since the end of 2008, may urge strategic default or free riding behavior.

are significant drivers of housing demand and prices. The natural increase in population, through an increase in the number of births (baby boom) has a small short-term impact on residential prices but implies strong positive effects in the long run (Mankiw and Weil, 1989). On the other hand, increases in migration inflows have a greater effect on house prices in the short run.

The gradual deregulation of the financial sector, on the back of financial reforms during the 1990s, facilitated access to mortgage lending and diminished households' liquidity constraints, increasing homeownership and house prices. According to Andrews *et al.* (2011), financial deregulation has increased real house prices by as much as 30% in the average OECD countries. Furthermore, this created a virtuous cycle of a further mortgage loan expansion through the "financial accelerator" effect, as higher real estate prices fueled borrowers' collateral and their borrowing capacity (see also Bernanke *et al.* (1999) and Brissimis and Vlassopoulos, (2009)). Taxation is another important factor that can affect house prices, either directly or through an indirect effect of a favorable tax treatment of owner-occupied housing relative to other forms of capital investment (Andrews *et al.*, 2011).

Figure 1. A Taxonomy of House Price Determinants³



The empirical literature that emphasizes mainly on the driving factors of house price volatility in Greece has identified several potential macroeconomic determinants. Apergis and Rezitis (2003) study the dynamic response of house prices to several macroeconomic variables and find that the most significant determinants include interest rates, inflation and employment. Furthermore, Simigiannis and Hondroyiannis (2009) examine the long-term relationship between house prices and mortgage loans and provide evidence of a bidirectional causal relationship between the two variables. Moreover, there is no significant evidence of housing overpricing or underpricing over the period 1994-2007. Brissimis and Vlassopoulos (2009) examine the interaction between house prices and housing loans in Greece and find that, although in the short run there is a bidirectional relationship between the two variables, a long-run causal relationship running from housing loans to housing prices is not confirmed. Other potential factors that could explain the developments of house prices in Greece over the period 1993-2005 include households' expectations about their future income, variations in interest rates, demographic factors (e.g. migration inflows) and the lower returns of financial assets.

Merikas *et al.* (2010) investigate the determinants of house price variations in Greece over the period 1985-2008, with construction and labor costs affecting house prices positively, while interest rates and non-construction production negatively. Moreover, they provide evidence of substitutability among the housing market and the stock market in Greece. Katrakilidis and Trachanas (2012) examine the asymmetric dynamics between house prices and macroeconomic fundamentals, indicating the presence of asymmetric

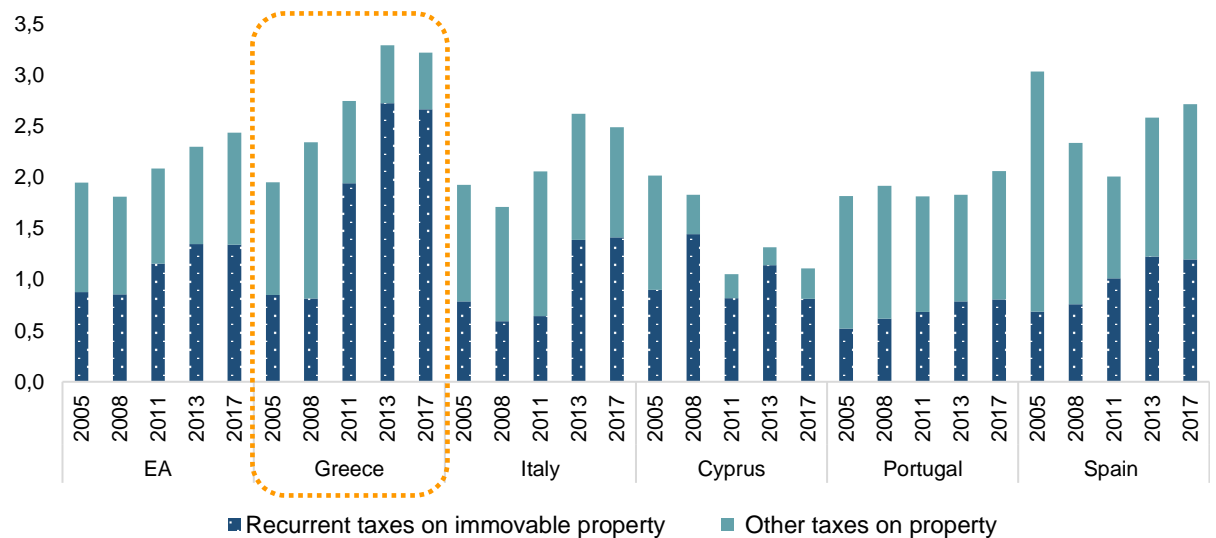
³ The sign in brackets (+/-) indicates the (positive or negative) effect of a variable on house prices.

long-run effects from the consumer price index and the industrial production index towards house prices. Finally, Panagiotidis and Printzis (2016) study the long-run determinants of the housing market in Greece over the period 1997-2013, finding that there is evidence of a causal relationship from mortgages and retail trade in the long run, while, in the short run, mortgages, CPI inflation and retail determine house prices variations. Furthermore, house prices are not affected by changes in industrial production.

2.4 The Regime Switch towards Taxes on Property: An Unpopular but Collection Efficient Levy on a Broad Tax Base

Taxation on immovable property, conditional on its type, e.g. recurrent property taxes, transaction taxes and tax deductibility of interest on mortgage loans, may have important implications on house price dynamics. Amongst the main grounds for taxing residential property are, on the one hand, the high housing stock value and on the other the low tax avoidance, given its durability and immobility (Leung (2004); Panagiotidis and Printzis (2016)). Homeownership, though, benefits from a favorable tax treatment in many countries, especially *via* tax exemptions, compared to other forms of capital investment (Andrews *et al.* 2011). For instance, in many countries, mortgage interest payments can be tax-deductible and/or the valuation of the property for tax purposes is lower than its market value (ECB (2009), Andrews *et al.* (2011)).

Graph 3. Recurrent taxes on immovable property and other taxes⁴ on property (% of GDP)



Source: European Commission, Taxation trends in the European Union, 2019 Edition

However, as a large strand of the literature argues, this favorable tax treatment towards owner-occupied properties may crowd out investment in alternative forms of capital assets and, thus, increase the stock of houses as well as residential prices (Gervais (2002); European Commission (2012); Andrews *et al.* (2011); Van den Noord (2003)). According to the European Commission (2012), recurrent taxes on immovable property are more stable over the business cycle and more progressive compared to transaction taxes on real estate property, which are more volatile and sensitive to business cycle fluctuations. In addition, housing is considered a relatively inelastic and immobile tax base.

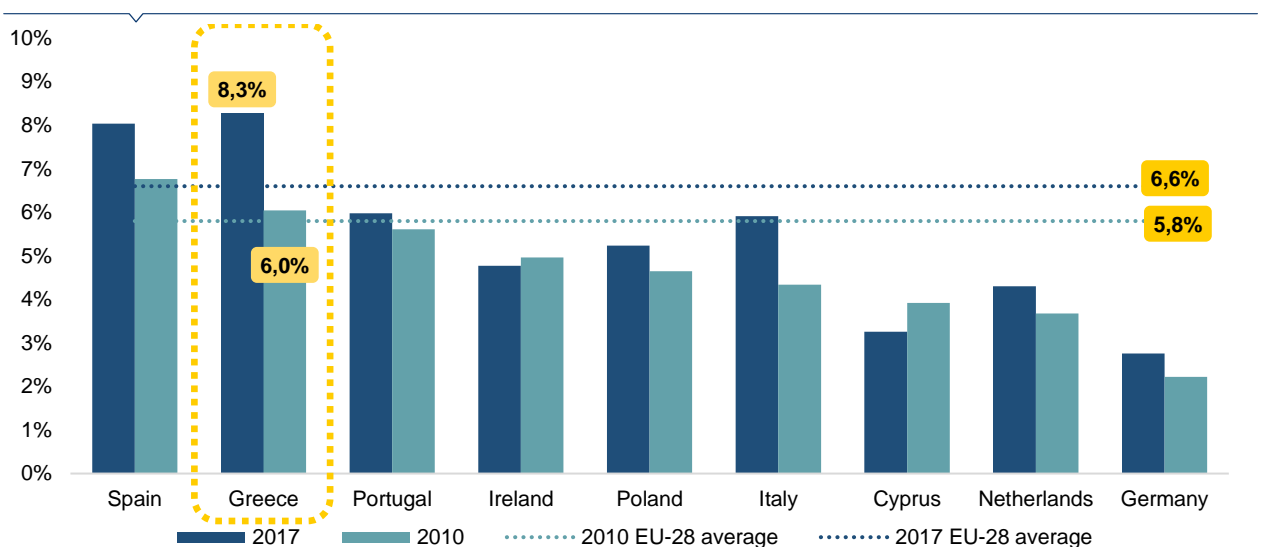
The Greek real estate market is marked by significant tax reforms, which took place since the onset of the economic crisis, signifying a possible regime switch, especially in relation to the introduction of the Uniform Real Estate Property Tax (ENFIA) in 2014 and the shift towards a lower property transaction tax of 3% (Law 4223/2013). The implementation of the ENFIA as of 2014 signified a rather more permanent nature of real estate property taxation in comparison to the previous property taxes, while the shift from tax on acquisition / operation to tax on ownership was made under the pressure of the fiscal austerity program

⁴ Other property-related taxes include taxes on net wealth, inheritance, gifts and other property items and on financial and capital transactions (source: European Commission, 2012).

and the urgent need to boost the country's fiscal revenues. The ENFIA property tax was introduced in replacement of the EETHDE levy collected through electricity bills and the real estate tax (FAP) and is imposed on property rights on all types of real estate, including commercial, agricultural and industrial properties. The ENFIA takes the form of a principal tax per real estate property and a supplementary tax on the total value of the real estate property, calculated based on the objective property tax zonal values. In recent years, progress is made in rationalizing the property tax valuation system in order to align the objective property tax values and market values; this is expected to be completed by 2020.

In the context of the recent coherent reform towards less distortionary taxation, the ENFIA tax was reduced by 22%, on average. Additionally, the new policy reforms include a package of fiscal measures aiming to further stimulate the domestic real estate market, which includes the suspension of VAT on building activity and the goodwill tax on real estate transactions for 3 years as well as a tax deduction for real estate renovations and energy upgrades. The aim is to improve the business climate and attract private investment to sustain the ongoing recovery of building activity and real estate asset valuation.

Graph 4. Taxes on property (% of total taxation) across selected EU-28 countries, 2010 and 2017



Source: European Commission, Taxation trends in the European Union, 2019 Edition

Graph 3 illustrates the recurrent taxes on immovable property and other property-related taxes (as % of GDP) in 2005, 2008, 2011, 2013 and 2017 for selected euro-area countries. The shares of taxes on immovable property and other property-related taxes exhibit great variation across countries and over time. In Greece, during 2005-2010, recurrent taxes on immovable property as a share of GDP ranged from 0.8% to 1%, broadly close to EA-19 average levels (0.9%-1.1%). Following the changes in property taxation that took place from 2011 onwards, this share rose significantly from 1.9% in 2011 to 2.7% in 2013 and remained broadly close to these levels up to 2017, well above the respective EA-19 average (2011: 1.2%; 2013: 1.3%). Conversely, as of 2008, other property-related taxes as a share of GDP embarked on a declining trend, from 1.4% in 2009 to 0.6% in 2017, falling below the EA-19 average from 2011 onwards. On top of the property tax reforms that were legislated during this period, this declining trend also mirrored the effect of the economic crisis on the declining volume of property transactions. In addition, Greece currently exhibits one of the largest shares of property taxes as % of total taxation. As depicted in Graph 4, real estate property taxes in Greece added a large share to total tax revenues in 2017 (8.3%), followed by Spain (8%), well above the respective EU-28 and EA-19 average, standing at 6.6% and 6.1%, respectively. Notwithstanding some exceptions, e.g. Denmark, Lithuania, Romania, in the vast majority of EU-28 countries, taxes on property (as % total taxation) increased during 2010-2017.

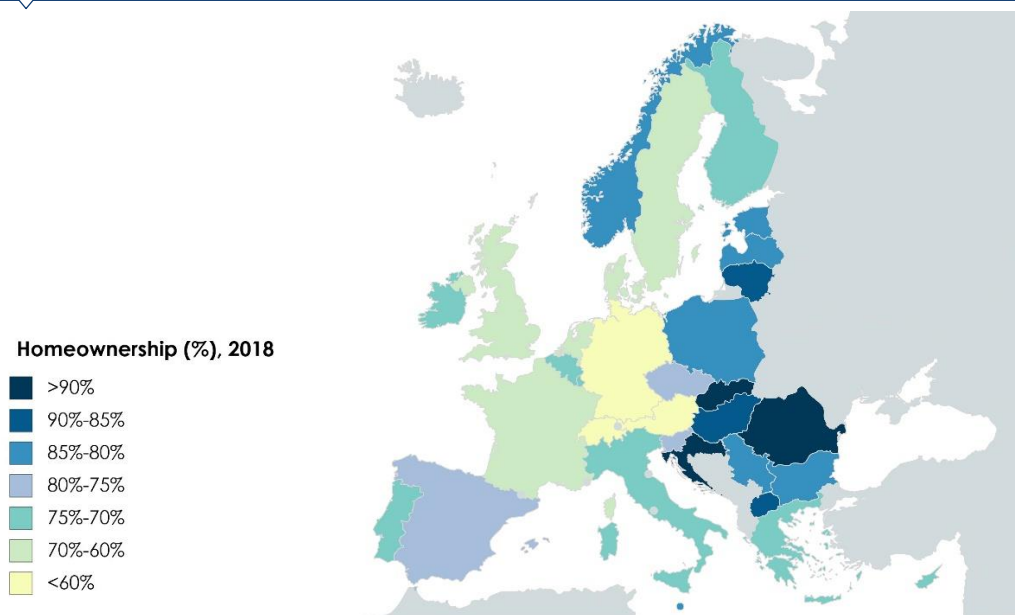
According to IOBE (2018), the reduction in residential prices because of the introduction of the EETHDE levy and the Uniform Real Estate Property Tax (ENFIA) is estimated at 19%. Apart from the increase in the tax burden on residential property, other factors that raise the distortions in the real estate market include:

additional taxes implemented on the same tax base (e.g. taxes on income from rents and VAT), inefficiencies on property valuations (divergence between the objective and commercial real estate property values) and the imposition of the property tax by the central government instead of local authorities.

2.5 Homeownership Rate in Greece: Owners, Borrowers and Tenants?

As typically observed in Southern European countries, the housing market in Greece is characterized over time by a rather high homeownership rate (see Graphs 5 and 6). According to the data from the European Union Statistics on Income and Living Conditions (EU-SILC), the share of population in Greece living in owner-occupied dwellings stood at 73.5% in 2018, considerably above the EA-19 (66.2%) and EU-28 average (69.3%). Homeownership rates exhibit substantial heterogeneity across EU countries (*Graph 5*).

Graph 5. Distribution of homeownership across EU, 2018

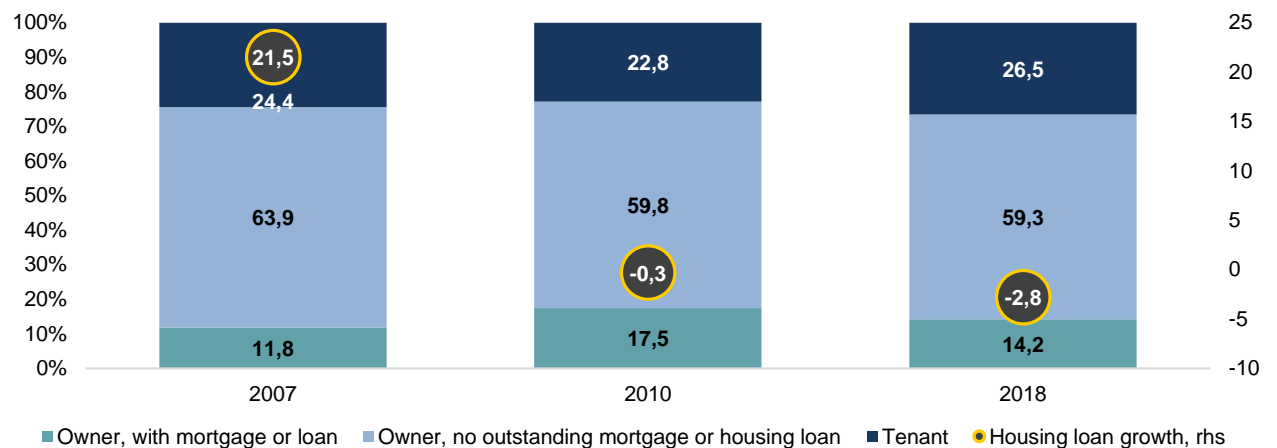


Source: EU-SILC, created with mapchart.net

The highest shares of population living in an owner-occupied dwelling are mostly observed in Eastern European countries, where post-communist policies allowed the occupants of state-owned apartments to purchase their dwellings (OECD, 2006). Southern European countries, e.g. Italy, Spain, Greece, Portugal and Cyprus also exhibit high homeownership rates, markedly above EU-28 and EA-19 averages, while the lowest homeownership rates in 2018 (below 60%) are observed in Austria (55.4%), Germany (51.5%) and Switzerland (42.5%). Since the onset of the economic crisis, the homeownership rate in Greece recorded a decline from 77.2% in 2010 to 73.5% in 2018, with the EA-19 average remaining broadly stable over this period (2010: 66.8%; 2018: 66.2%). Subsequently, the ratio of population living in rented dwellings increased from 22.8% in 2010 to 26.5% in 2018.

By decomposing domestic population by tenure status, it becomes evident that the share of population living in an owner-occupied home for which there is no mortgage or loan, i.e. outright homeowners, is traditionally high in Greece, as in most Southern European countries. This ratio followed a declining trend from 2007 (63.9%) to 2010 (59.8%). During this period, the corresponding ratio of homeowners with a loan or mortgage gradually increased, peaking at 17.5% in 2010 (2007: 11.8%), in line with the high domestic housing credit growth¹ recorded (2007: 21.5%; 2008: 11.2%; 2009: 3.7%). Since 2010 and up to 2018, the ratio of outright homeowners remained broadly stable, while the ratio of homeowners with a loan declined to 14.2% in 2018.

Graph 6. Distribution of population by tenure status in Greece (%) and House Loan Growth¹



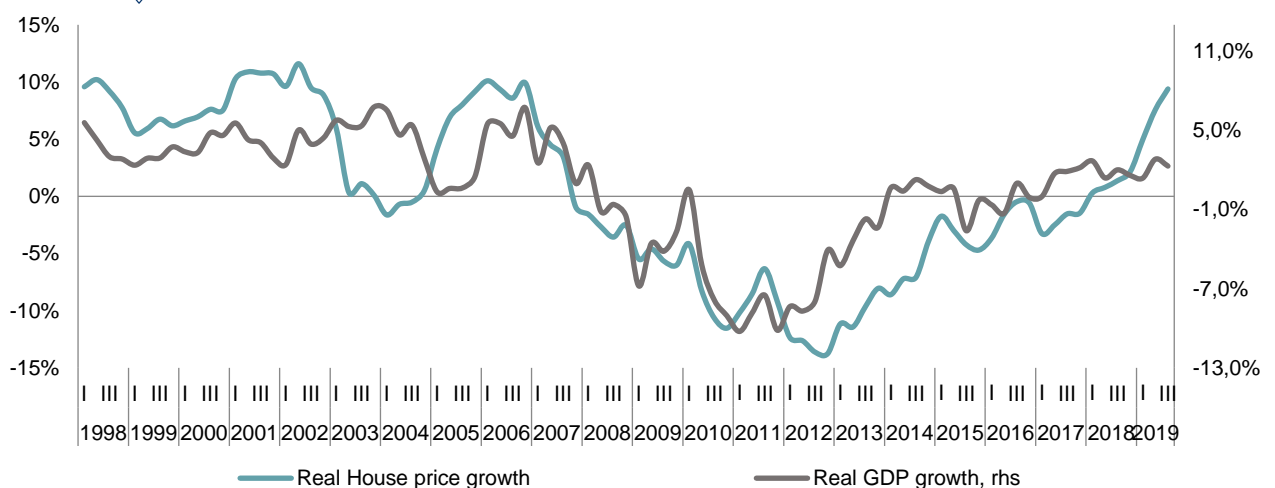
Source: EU-SILC, Bank of Greece

3. Credit-less Recovery in the Greek Real Estate Market

3.1 Do Business, Credit and Real Estate Cycles Synchronise?

Several studies have underlined the synchronization of the house price cycle with the business and credit cycles (e.g. ECB Economic Bulletin, 2015). Evidence from empirical studies corroborates the strong positive link between economic activity, credit and house prices (see, for example, ECB (2003); Adams and Fuss (2010); Tsatsaronis and Zhu (2004); Merikas *et al.* (2010); Panagiotidis and Printzis (2016)). As illustrated in *Graph 7*, which compares the pattern of annual growth rates of real house prices⁵ in relation to annual real GDP growth, a broad alignment of the real house price cycle with the business cycle becomes apparent. The degree of co-movement between the business and house price cycle is particularly strong during the recessionary and the recent recovery (from 2017 onwards) phase of the Greek economy. Thus, the expected strengthening of real GDP growth in the coming quarters is expected to contribute to the further recovery of the housing market.

Graph 7. Real House Price Growth and Real GDP Growth

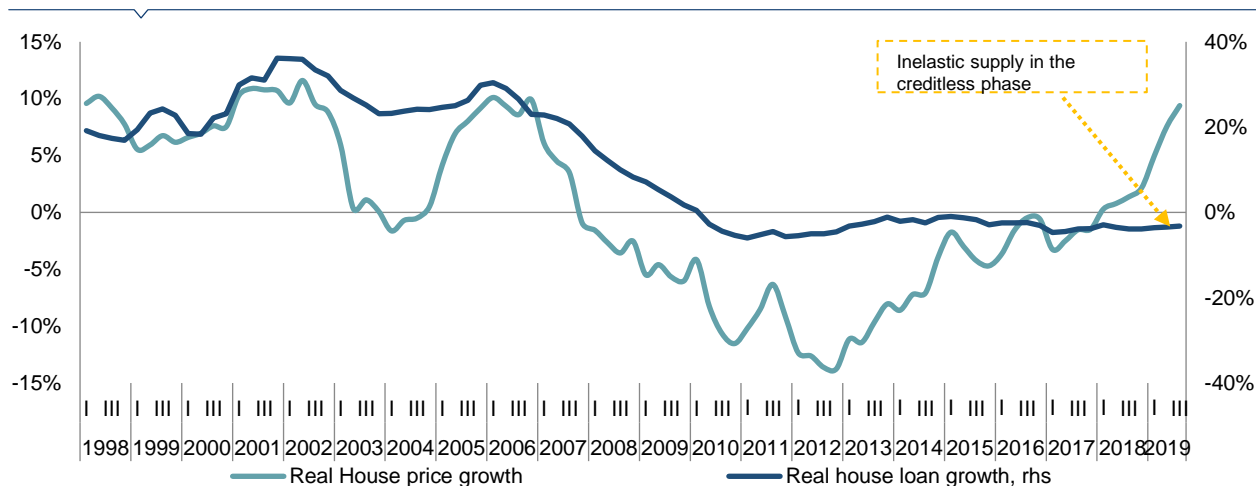


Source: Bank of Greece, ELSTAT

⁵ To increase data availability, the analysis in this section employs the house price index, drawn from the Bank of Greece urban areas index of prices of dwellings (historical series, provisional figures in 2018 and 2019), deflated by the Consumer Price Index (CPI). Provisional (from 2011 onwards), seasonally adjusted real GDP figures.

Financial market reforms during the '90s led to the gradual deregulation of the financial sector, easing access to housing lending and lowering borrowing constraints. This led to an expansion in the supply of housing loans, increasing homeownership and real house prices. As depicted in *Graph 8*, the alignment of real house price cycle with the credit cycle is also apparent, at least during the pre-crisis period and the early years of the recession; there is a steady slowdown in housing credit growth after 2005 along with a deceleration of house price growth, the latter entering negative territory at the end of 2007. From 2013 onwards, the rate of decline in real house prices starts to gradually decelerate, while housing loan growth remains in negative territory and rather stable. From the beginning of 2018, a more vigorous misalignment between housing price growth and housing loan growth becomes evident, signifying the immaterial role of credit in the current recovery. Real house price growth returned to positive territory, signalling the entry of the housing price cycle in a recovery phase, while the real house loans growth rate remains firmly negative.

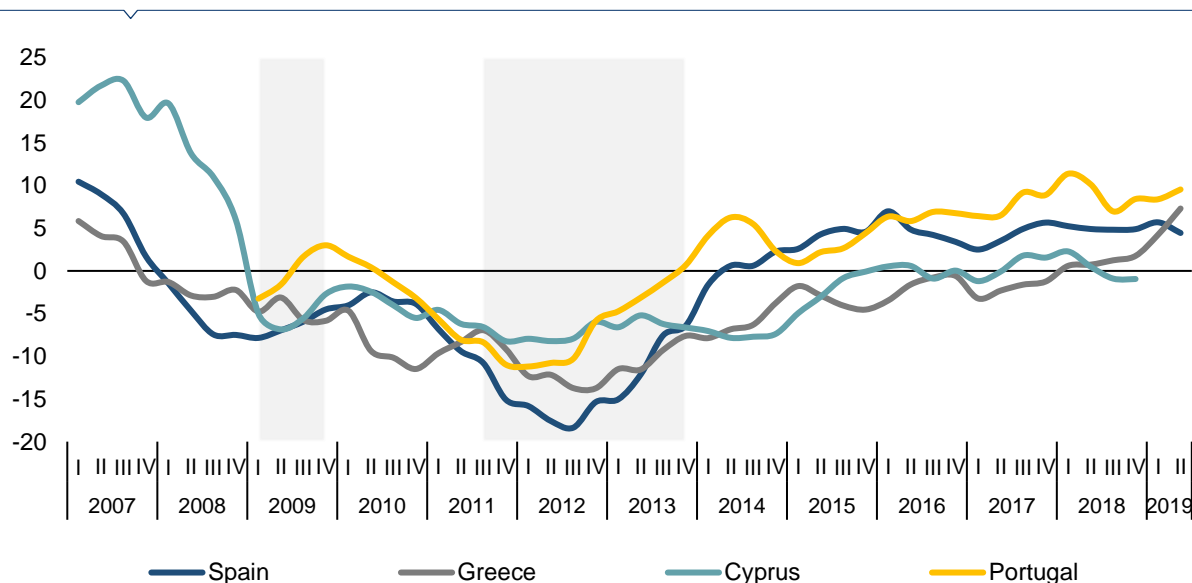
Graph 8. Real House Price Growth and House Loan Growth



Source: Bank of Greece, ELSTAT

House price cycles also tend to co-move across economies (see, for instance, ECB Monthly Bulletin, 2011). *Graph 9* illustrates the evolution of real house prices in Greece, Spain, Portugal and Cyprus. The shaded areas in the Graph mark the common periods during which all four countries experienced negative annual real GDP growth rates, especially during the recessionary phase of the business cycle.

Graph 9. Synchronization of House Price Cycles across Peripheral Economies, % y-o-y Real House Prices (2010=100)



Source: BIS

Box: Investigating the causal relationship between house prices and housing loans.

The positive relationship between house prices growth and house loan growth is well established. However, the direction of the causal relationship between these two variables remains ambiguous. From a theoretical standpoint, there is a bidirectional causal relationship between residential prices and housing loans.

For instance, higher residential prices increase the demand for housing loans, since it necessitates increased amounts of financing. Furthermore, there are indirect wealth effects, as higher property prices boost economic activity, increasing investment and consumption and, thus, the demand for credit. Moreover, an expansion of the supply of housing loans increases homeownership and demand for houses, as households' liquidity constraints are eliminated. This is expected to drive house prices upwards, since the supply of houses is relatively fixed in the short run.

In this context, pairwise Granger causality test is used to identify this bidirectional relationship between housing loan growth and house prices growth for the Greek real estate market. According to the literature, one variable is said to Granger cause the other if it helps to make a more accurate prediction of the other variable than had we only used the past of the latter as predictor. Granger causality between two variables cannot be interpreted as a real causal relationship but merely shows that one variable can help to predict the other one better. Given two time series variables X_t and Y_t , X_t is said to Granger cause Y_t if Y_t can be better predicted using the histories of both X_t and Y_t than it can by using the history of Y_t alone.

When running the Granger causality tests during the whole period (1997 Q1-2018 Q4), we cannot reject the hypothesis that RRE prices growth does not Granger cause mortgage loan growth, but we do reject the hypothesis that mortgage loan growth does not Granger cause RRE prices growth, thus revealing the importance of mortgage loans in the RRE determination. The Granger causality runs one-way from mortgage loans to RRE prices and not the opposite direction. When applying the Granger causality test for the pre-crisis period (1997Q1-2009Q4), the same one-way causality holds, namely housing loan growth Granger cause RRE prices growth. However, during the crisis period (2010 Q1-2018 Q4), this relationship does not hold. In other words, housing credit contraction does not Granger cause the drop of house prices.

3.2 Sharing Economy and FDI Real Estate Inflows: Catalysts for Recovery in the Greek Real Estate Market?

On top of the current macroeconomic environment, there are some additional factors that radically contribute to the resurgence of the residential real estate market in Greece, namely (i) the remarkable development in the short-term rental market over the past years *via* the home-sharing economy and (ii) the launch of the Golden Visa programme, which grants a residence permit in Greece for third party nationals if they purchase dwellings with a value of € 250 thousand or more.

3.2.1 Home-sharing Economy and its Effects on House Prices in Greece

In general, the sharing economy (or peer-to-peer market) is an online marketplace that facilitates matching between demanders and suppliers of various goods and services (for instance, Airbnb for home-sharing and Uber for ride-sharing), improving economic efficiency by reducing frictions (such as search and information frictions) that cause capacity to go underutilized (see also Barron *et al.*, 2017 and Einav *et al.*, 2016). The remarkable expansion of these platforms has been facilitated by significant technological and digital innovations. The main digital determinants of the sharing economy are the consumerization of digital technologies, which means that pioneering digital products are developed to consider first consumers' needs and then businesses' and governments' needs, and the digitalization of trusting each other, which refers to the consumers' ability to trust unknown people through the use of various structures that provide reliable digital information (Sundararajan, 2016).

Home-sharing platforms, such as Airbnb and Homeaway, mostly concern short-term rentals, in contrast to

the tradition of long-term rentals that prevailed in the Greek real estate market in previous decades. Thus, their existence allows a switch from long-term rentals, which are primarily addressed to residents, to short-term rentals, which are mainly addressed to non-residents and tourists (Barron *et al.*, 2017).

The home-sharing economy exhibits a rapid expansion and penetration in the global traditional economy, facilitated by the remarkable expansion of digital platforms and technological innovations. In Greece, the development of short-term rentals through the home-sharing economy is remarkable; according to KEPE (2018), by the end of the first semester of 2018, there are 126 thousand short-term rentals in the Airbnb platform countrywide compared to an almost zero activity in 2010 (*Graph 10a*). Some country-specific factors that contribute to this explosive development of the home-sharing economy in Greece can be summarized as follows:

- ❖ *Lower returns / higher default risk of long-term rentals:* Since the onset of the economic crisis, long-term rentals in Greece are prone to lower or delayed returns, due to the economic recession that compressed the households' disposable income and weakened payment culture. Thus, short-term rentals, in which non-residents and tourists are more likely to participate, imply a significant comparative advantage, since they generate higher and immediate returns without the risk of default.
- ❖ *Tax property burden mitigation:* By viewing residential property from an investment perspective, i.e. the price of the property being equal to the present value of the stream of cash flows (rents) it generates, the tax framework legislated in recent years reduces the present value of the future cash flows of property. In this respect, the home-sharing economy can contribute in offsetting the negative impact of taxation. Until recently, short-term rentals were untaxed, in contrast to long-term rentals, which are taxed at a rate ranging from 15% to 45%, depending on the overall declared income of the taxpayer. Especially within the current low interest rate environment, the home-sharing economy contributes in viewing housing as a more attractive investment for real estate proprietors and/or investors, allowing higher expected returns compared to other forms of investment, such as bank deposits, securities or equity investments.
- ❖ *Secondary residence:* Secondary residences owned by Greek citizens may increase the supply of houses in home-sharing platforms. Many Greek citizens own a secondary own-occupied residence. Typically, secondary residences are located in the countryside or in their region of origin. Furthermore, these secondary residences are typically used by their owners only for a short period within the year, but are associated with high costs (utility bills, ENFIA tax, maintenance costs). Thus, secondary residence owners may attempt to alleviate these costs by renting their property *via* home-sharing platforms.
- ❖ *Shadow Economy:* Renovation and maintenance costs are lower in Greece compared to other European markets. In particular, the average HICP index that refers to the maintenance and repair cost of dwellings is lower in Greece (average 2016-2018: 99.47) than the EU average index (average 2016-2018: 102.77). Home-sharing platforms are based primarily on feedback mechanisms that provide reviews and reputation for each rental. Thus, it is a pre-requisite that owners should keep their houses clean and repair any damages, implying significant maintenance costs. However, the large share of pensioners and self-employed that could contribute their personal effort without payment as well as the high tax evasion, which reduces the actual cost of such maintenance services, create incentives for a further development of short-term against traditional long-term rentals.

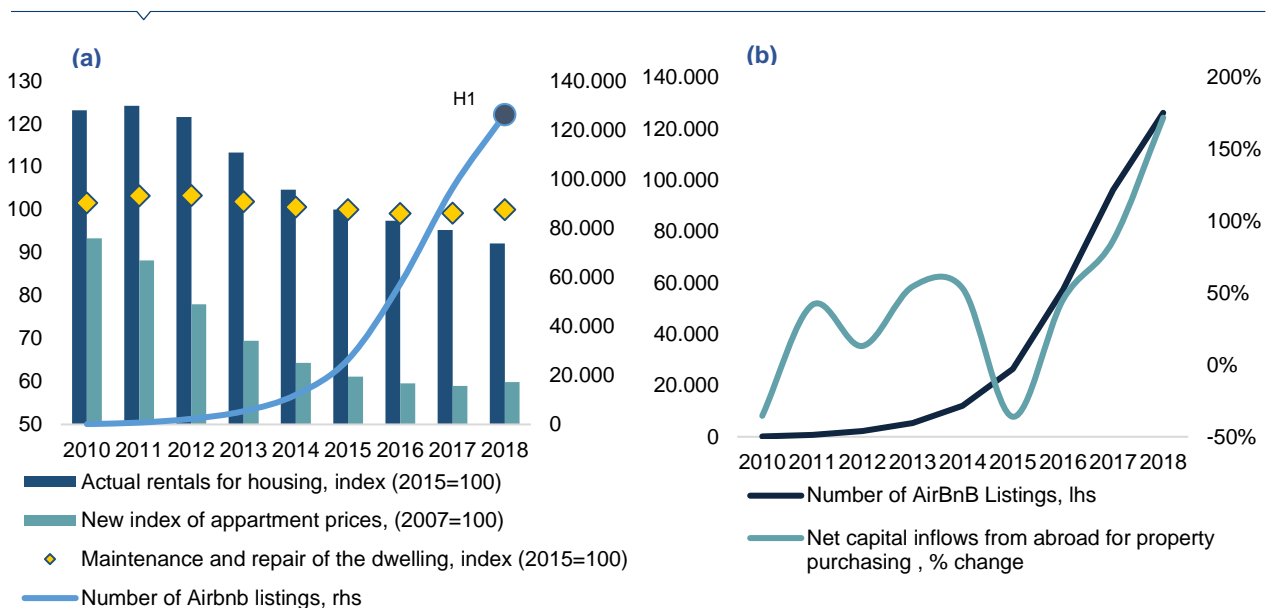
3.2.2 FDI Real Estate Inflows: Business Confidence and the Golden Visa Scheme

The gradual recovery of domestic economic activity leads to a rebound in business confidence, raising incentives for investing. This confidence reinforcement urges (a large share of) homeowners in Greece to negotiate for slightly higher prices. On the other hand, the signs of undervaluation in the domestic real estate property raises incentives, especially for foreign investors, to invest in dwellings (see *Section 3.3*). Thus, as depicted in *Graph 10b*, net capital inflows from abroad for property purchases in Greece have increased markedly since 2016, skyrocketing to an annual increase of almost 172.1% in 2018, reaching €1,128.2 million compared to €414.7 million in 2017. In the first semester of 2019, they rose by 94.6% y-o-

y, reaching €736.6 million from €378.5 million in the respective period of 2018. This trend is supported by the solid performance of tourism activity, which is expected to maintain its upward trend, allowing investors to increase their rates of return *via* short-term rentals.

Moreover, the launch of the Golden Visa Scheme in 2013 facilitates the granting of a five-year residence permit in return for an investment in real estate property (for a value of €250,000 or more). Thus, the introduction of the Golden Visa programme fostered net capital inflows from abroad for property purchases in Greece, substantially contributing to the recovery of the real estate market. However, although the Greek programme requires the lowest investment level in residential property compared to other European investment visa programmes, high property taxes make it less attractive than those of Cyprus and Portugal.

Graphs 10 (a-b). Number of Airbnb listings and Housing Market (**left-panel Graph (a)**) and Number of Airbnb Listings and FDI Inflows for property purchases in Greece (**right-panel Graph (b)**).



Source: Bank of Greece, Eurostat, KEPE

3.3 Evaluating the Current Phase of the House Price Cycle: Affordability and Predicted Profitability

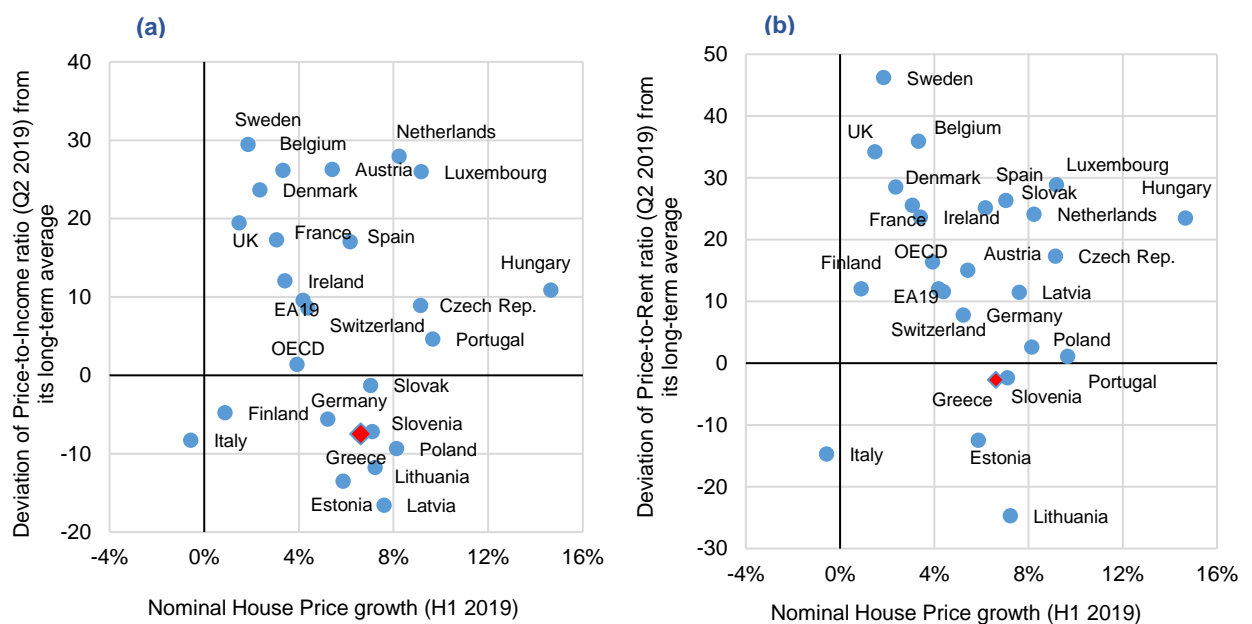
The strong interlinkages between the housing market, the business cycle and financial stability led to increasing efforts to assess housing market developments, so as to anticipate large fluctuations in house prices. To this end, two widely-used measures to assess the value of house prices over the cycle and identify housing market developments are the price-to-income ratio and the price-to-rent ratio. Historically, both ratios have generally inclined to return to their long-term average values, even though they often diverged for prolonged periods. Thus, deviations of the price-to-income and price-to-rent ratios from their long-run average could indicate signs of over- or under-valuation (Andre, 2010).

The price-to-income ratio is defined as nominal house prices divided by nominal gross disposable income per head and can be interpreted as a measure of the affordability of housing. A higher growth rate of nominal house prices relative to the growth rate of the nominal disposable income per capita implies difficulties for households in purchasing and affording to own a house, creating a mismatch between the demand and supply of housing, which, in turn, generates downward pressures on house prices in the long run (Philipponnet and Turrini, 2017). On the contrary, rises in the per capita gross disposable income increase house prices. Thus, the price-to-income ratio tends to return to its long-term average.

The price-to-rent ratio is a measure of profitability and is defined as nominal house prices divided by the rent component of the consumer price index, capturing the relation between the cost of owning a house and the return of renting it out (ECB, 2011). According to the asset pricing approach, residential prices

should be equal to the present value of their future rents, implying that for a given cost of capital, households should be indifferent to owning and renting a house (Philipponnet and Turrini, 2017). A rise in the price-to-rent ratio is expected to incentivize households to rent and decrease their house purchases. On the contrary, a fall in the price-to-rent ratio is expected to increase house purchases. In both cases, price-to-rent ratio will revert to its long-term average over time.

Graph 11 (a-b). Cross-country analysis, Nominal House Price Growth (H1 2019) and Deviation of Price-to-Income ratio (**left-panel Graph (a)**) and Price-to-Rent ratio (**right-panel Graph (b)**) from their long-term average values



Source: OECD, Analytical House Price Indicators Database

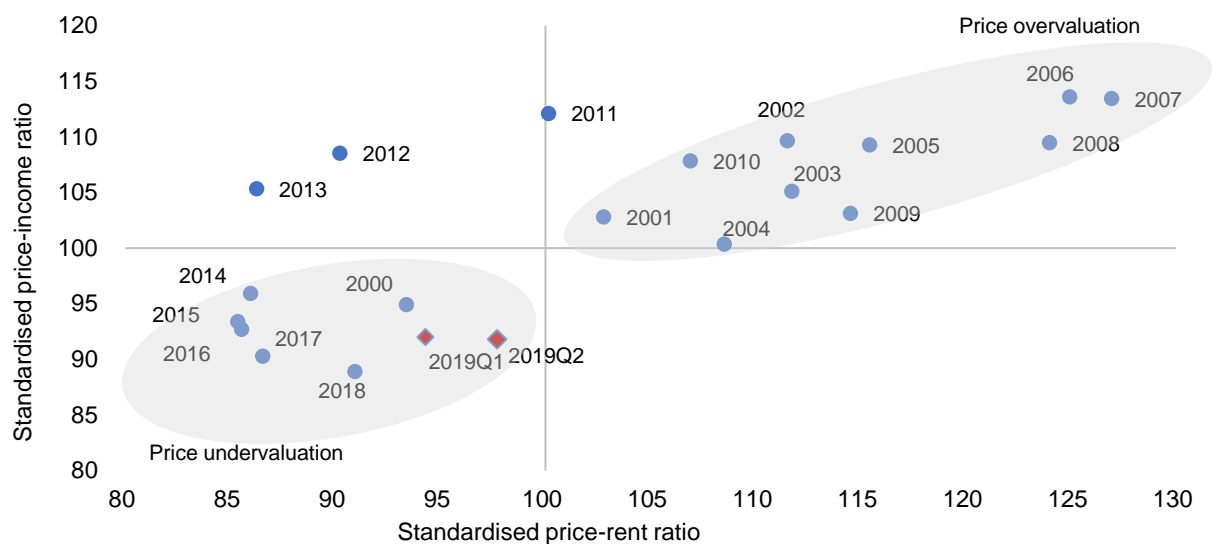
It is worth noting that, although the comparison of the price-to-rent or price-to-income ratios against their long-term average values is a widely employed practice, it is subject to limitations. Regarding the price-to-income ratio, changes in credit conditions (interest rates, credit constraints etc.), which serve as an important source of financing for house purchases, or changes in the size of households, may produce structural shifts in the indicator. For the price-to-rent ratio, the comparison to long-term values also necessitates that the cost of capital remains relatively stable over time (Philipponnet and Turrini, 2017), or, in other words, there is perfect arbitrage between renting and housing. However, in reality, arbitrage is imperfect due to several reasons; high transactions costs for house purchases, the dual nature of the residential property as an investment and a consumption good and the hedge that arises from homeownership against future rents hikes (see e.g. Andre, 2010). Moreover, in contrast to other assets, housing property transactions need more time to be completed. Finally, rents are subject to tight regulatory frameworks in many countries (Andre, 2010). These factors may lead to deviations between rents and house prices. Finally, both ratios rest on the critical assumption of series stationarity. In the case of non-stationarity (their mean and variance change over time), the comparison of current values with long-term averages may not be indicative of a valuation gap (Girouard *et al.*, 2006).

Graph 11 illustrates a cross-country comparison of the nominal house price growth in the first half of 2019, on annual basis, versus the deviation of the price-to-income ratio from its long-term average (Graph 11a) and the deviation of the price-to-rent ratio from its long-term average (Graph 11b) in the second quarter of 2019. It is apparent that residential prices in the Euro area exhibit positive growth rates in the first half of 2019, growing by 4.2% y-o-y (OECD, Analytical House Price Indicators database). Despite the Euro area growth slowdown, house prices rise in all countries (apart from Italy). However, there is heterogeneity across countries regarding the degree of the estimated price of over- or under- valuation. Price-to-income and price-to-rent ratios in the majority of Euro area countries remain well above their long-term average

values, exhibiting signs of overvaluation in Q2 2019. However, at the same time, the Greek residential property market exhibits signs of undervaluation, with both measures remaining below their historical long-term average values.

Graph 12⁶ illustrates the standardised price-to-income and price-to-rent ratios over time for the Greek housing market, which measure the deviation of the price-to-income and price-to-rent ratios from their respective long-run average values (source: OECD, Analytical House Price Indicators).

Graph 12. House price valuations in Greece (standardised price-to-rent and price-to-income ratios)



Source: OECD, Analytical House Price Indicators Database

From 2001 to 2010, signs of overvaluation of housing property is observed, since both price-to-rent and price-to-income ratios deviated positively from their long-term average values. At the peak of the cycle, the standardised price-to-income ratio rose almost to 113.6, while, at the same time, the standardised price-to-rent ratio reached almost 126.9. However, since the onset of the economic crisis and the resulting economic downturn, residential prices began to adjust downwards and, from 2014 onwards, both ratios were below their long-term average values, providing signs of under-valuation in the housing market. However, an upward trajectory is apparent as of 2017 for both ratios, signifying a possible reversal towards their long-term averages, narrowing the gap between actual and “fundamental” price-to-income and price-to-rent ratios.

4. An Epilogue: Further Signs of Solid Growth Ahead

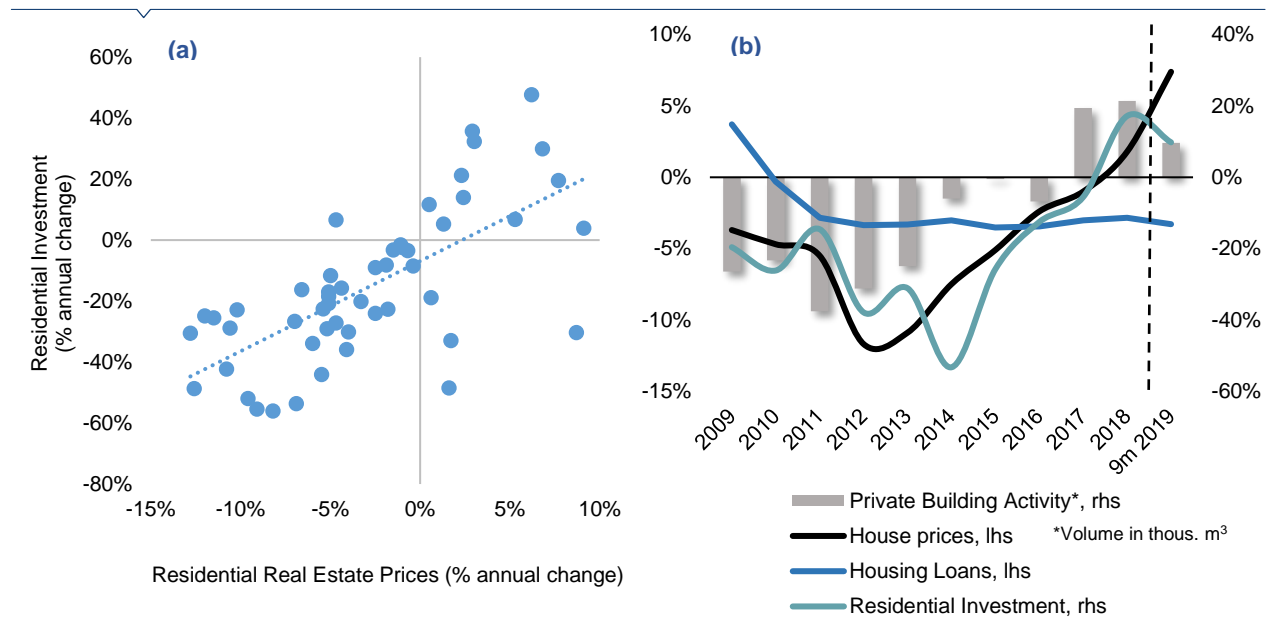
Residential property prices rose by 7.4% y-o-y in the first 9 months of 2019, a trend which is expected to continue, partly offsetting the large losses from the previous decade, despite the negative domestic credit for housing loans. This ongoing revival is underpinned by the significant shift of the property-related tax mix (i.e. the reduction of the property tax by 22% on average and the three-year suspension of VAT on new buildings), which is expected to reduce the distortions imposed on the residential property market, as well as the favourable economic conditions linked to the Greek real estate market (i.e. the robust economic recovery, the expanded short-term rental market and the marked increase of net capital inflows from abroad

⁶ The standardised price-rent and price-income ratios show the current price-rent and price-income ratios relative to their respective long-term averages (calculated over the whole period available when the indicator begins after 1980 or 1980 if the indicator is available over a longer time period). The standardised ratio is indexed to a reference value equal to 100 over the full sample period. Values over 100 indicate that the present price-rent ratio, or price-income ratio, is above its long-run norms. This provides an indication of possible housing market pressures (OECD, Analytical House Price Indicators).

for residential purchases). This credit-less recovery that we are currently witnessing in the real estate market is expected to pave the way for the following effects:

First, the projected rise in house prices raises the prospects for equity gains for investors, pushing collateral values upwards, improving the loan portfolio quality and strengthening profitability prospects. Increases in real estate prices improve the capital position of banks, further easing bank balance sheets, either directly by increasing the value of their own real estate assets or, indirectly, through their impact on non-performing portfolios.

Graph 13 (a-b). Correlation between House Prices and Residential Investment (2007Q4-2019Q3) (**left-panel graph, (a)**), (% annual changes) and Residential Investment, Private Building Activity*, House Prices Growth and Housing Loan Growth¹, (% annual changes) (**right-panel graph, (b)**).



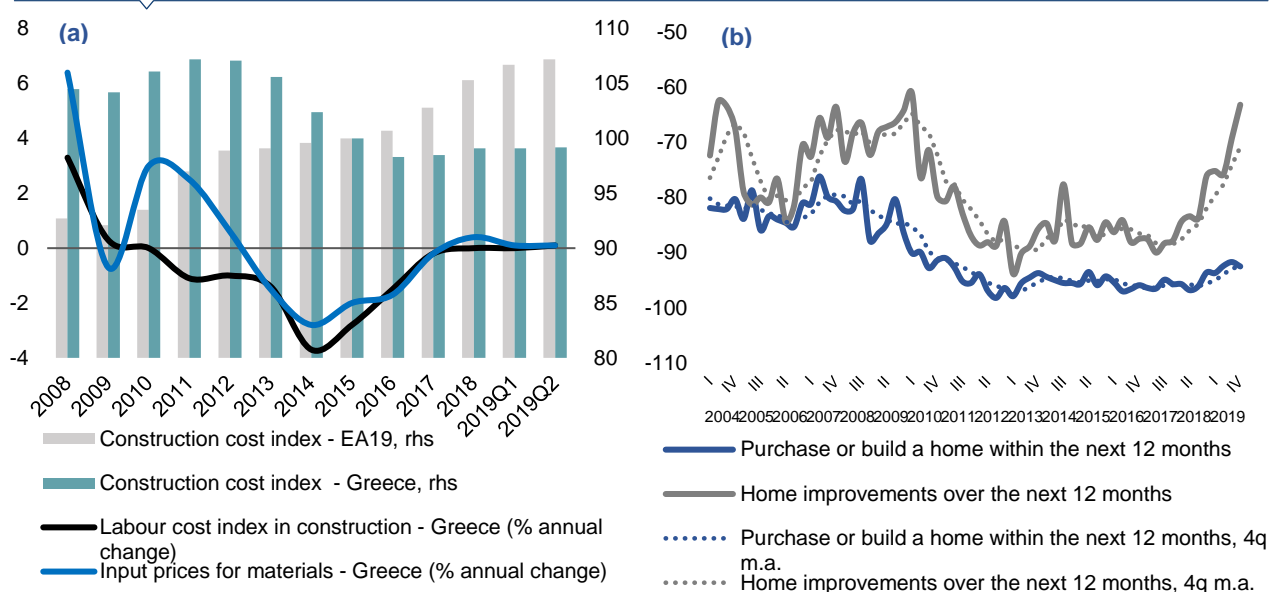
Source: Bank of Greece, ELSTAT

Second, a positive correlation between house prices and residential investment growth is clearly documented by the slope of the regression line in *Graph 13a*. This finding was recently confirmed, as the recovery of the Greek real estate market also reflects the return of residential investment to positive growth rates (17.2%) in 2018 for the first time since 2007, alongside a gradual rise in private building activity since 2017 (growing by 19.5% and 21.7% in 2017 and 2018, respectively). The upward trajectory of residential investment maintained in the first nine months of 2019, growing by 9.8% y-o-y (Q12019: 6.7%, Q22019: 19.4% and Q32019: 3.9% on an annual basis). *Graph 13b* illustrates the co-movement of the recovery of residential prices with the evolution of private building activity (volume in thousands m³) and residential investment (constant prices, 2010) as well, though domestic credit expansion for housing loans remains in negative territory since 2010. A great part of this increase is associated with the marked increase in Foreign Direct Investment (FDI) for real estate purposes (see *Graph 10b* and *Section 3.2.2*).

Moreover, as depicted in *Graph 14a*, during 2008-2017, the construction cost index of new residential buildings (including input prices for materials and labor costs) remained on a declining path, reaching 99.1 units in 2018 from 104.5 units in 2008 and growing slightly by 0.6% in 2018. Historically, during 2008-2014, the construction cost index of new residential buildings in Greece exceeded the respective Euro area index, while negative growth rates were recorded as of 2012, as a result of the gradual decline of the labor cost index in construction and input prices for materials, converging gradually to the Euro area index. During the last two years, the rise in house prices exceeded the increase in construction costs for new residential buildings for the first time since 2007, strengthening incentives for investment in dwellings. Moreover, from 2016 onwards, the Euro area construction cost index exceeds the respective index in Greece, creating a significant comparative advantage for the Greek real estate market.

Households' expectations regarding the real estate market remain promising (*Graph 14b*). More specifically, the quarterly indicator of households' intention for home improvements over the next 12 months soared after Q4 2018. The future households' needs for maintenance, renovation and home improvements are also attributed to the expanding home sharing activity. Furthermore, although it remains low, the quarterly indicator of households' intention to purchase or build a home within the next 12 months has exhibited a slight upward trend since Q2 2018.

Graph 14 (a-b). Construction Cost Index in New Residential Buildings (**left-panel graph, (a)**) and Households' Expectations for Purchases and Improvements of houses over the next 12 months (**right-panel graph, (b)**).



Source: European Commission, Eurostat

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