Analysis

What factors influence house prices and residential construction?

Finnish economy | 03 July 2019 | Annika Lindblad, Mikko Sariola, Hannu Viertola

AUTHORS



Annika Lindblad
Senior Economist



Mikko Sariola
Adviser



Hannu Viertola
Senior Economist

The favourable momentum on the Finnish housing market in recent years is gradually fading. In order to understand housing market cycles, it is important to identify what factors drive movements in house prices and construction. Recognising the significance of different supply and demand factors in driving the housing market also has important implications for both macroprudential and fiscal policy. Shifts in demand are observed to have a determining role in shaping the housing market cycle. In recent years rising demand has fuelled residential investment growth and house prices. Positive supply developments have, in turn, bolstered housing investment while at the same time mitigating price growth significantly.



The Finnish housing market has been buoyed by favourable economic conditions and low interest rates in recent years; however, the first signs of change are already apparent in the decline in the number of housing starts and building permits issued for new blocks of flats. Residential investment growth is projected to slow considerably in the future, as the pace of new-build construction declines. Regional housing market disparities between growth centres, such as Helsinki, and the rest of Finland are also substantial. In order to understand the housing market's upturn in recent years, as well as describe its emerging developments, it is important to first identify the factors that have contributed to movements in the construction cycle and in house prices. Recognising the significance of different supply and demand factors in driving the housing market also has important implications for both macroprudential and fiscal policy.

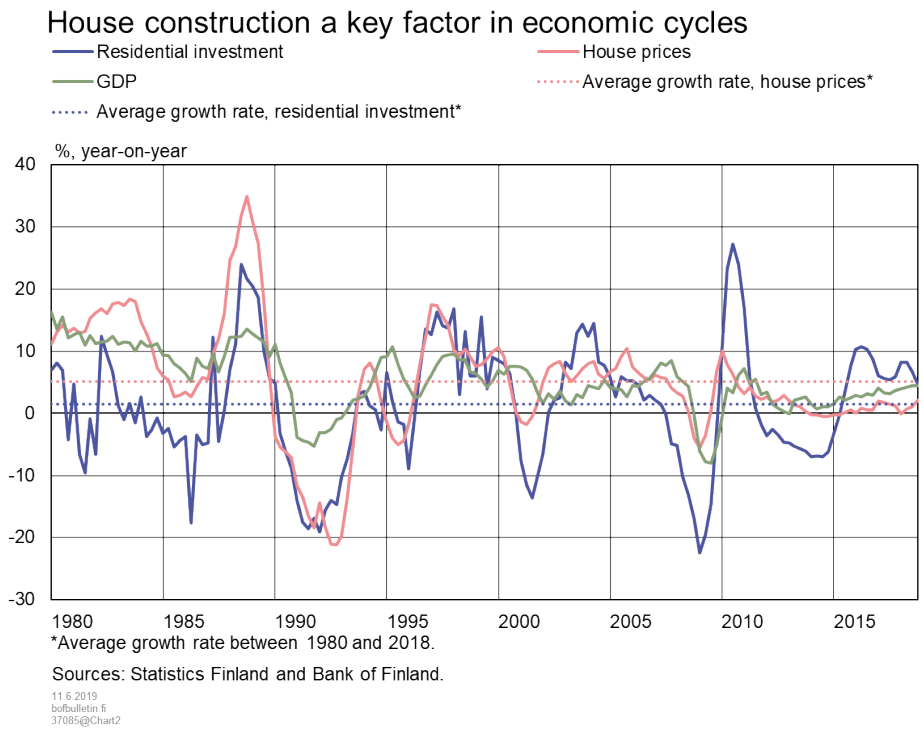
This article examines the impact of supply and demand on the Finnish housing market and decomposes their effects using a time series model. Shifts in demand are observed to have a determining role in shaping the housing market cycle. In recent years, rising demand has fuelled residential investment growth and house prices. Positive supply developments have, in turn, supported housing investment while at the same time mitigating price growth significantly.

The housing market amplifies economic cycles

The positive momentum on the Finnish housing market has continued for a few years now. Residential investment volumes in particular – and hence housing starts and completions – have grown sharply and reached new heights (Chart 1). However, the volume of housing starts has begun to decline markedly, especially outside the Helsinki region. In addition, sales of existing homes also appear to have declined across the whole country. The recent downward turn in

construction is already affecting the industry's employment level, which has begun to descend from its peak. Nominal prices[1] of existing homes have continued to rise, albeit at a relatively listless pace for quite some time now. In real terms[2], however, house prices have remained stagnant since 2010. Price developments have also varied widely by region. While real house prices have, as a rule, increased in Helsinki and other growth centres, the opposite is true for a large portion of the country. As a result, the housing market is characterised by considerable regional disparities not only between e.g. the Helsinki metropolitan area or other growth centres and the rest of Finland, but also within these areas themselves.

Chart 1.

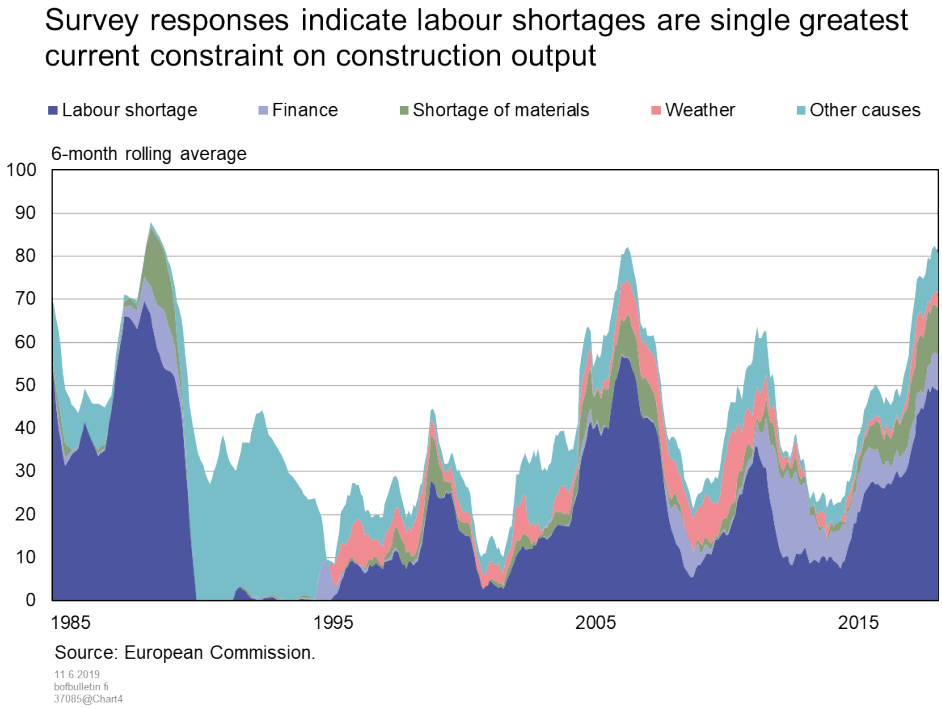


House construction has often proved to be an important driver of business cycles in the Finnish economy. Indeed, cyclical developments in residential construction and house prices, although prone to quick fluctuations, do rather well in approximating more aggregate movements in the economic cycle (Chart 2). As a result, understanding the factors that contribute to the dynamics of the housing market, and the closer analysis of these factors, has important implications both for business cycles and for macroprudential policy.

Residential investment accounts for 35% of total private investment (incl. renovation work) and has a GDP ratio of 6%. However, fluctuations in residential investment are considerably greater than in GDP, and their indirect impact on economic growth is significant. House price growth has

been moderate, remaining at a pace below its long-term average each year since the financial crisis (Chart 2). Residential investment, in turn, has in recent years grown at a pace well above trend. Investment growth is projected to slow down considerably in future, however, as the pace of new-build construction declines (Slowing growth in the shadow of global uncertainties).

Chart 2.



The housing market interacts with many different areas of the economy and has an important influence on the economic cycle, as expectations concerning the housing market affect the investment decisions of firms and consumption decisions of households.

Home-ownership is the preferred form of accommodation in Finland, which raises the housing market's position in the aggregate economy. Consequently, the performance of the housing market is strongly tied to changes in households' levels of wealth. House price movements have an immediate impact on household wealth and market rents and thus affect households' purchasing power and private consumption. The decisions taken by households concerning housing are strongly correlated and are influenced by e.g. the state of the housing market and macroprudential policy. Consequently, the housing market channels and amplifies the economic cycle and affects the stability of the entire financial system. Hence changes in the housing market cycle are felt throughout the broader economy, while at the same time developments in the aggregate economy and on the financial markets are also reflected on the housing market.

Table 1.

Economic indicators before the onset of the financial crisis and thereafter

	1989–2008	2009–2018
House prices	3,0	1,6
Real house prices*	0,8	0,4
Wages (index of wage and salary earnings)	4,1	2,1
Working age population (aged 20–64)	0,3	–0,2
Real interest rate (%)**	4,1	–0,5
Housing starts (number per year)***	13 278	21 080
Residential investment	1,2	2,1
GDP	2,6	0,3
Unless otherwise specified, all the figures above are average annual growth rates.		
* Statistics Finland's real price index, where the nominal price index is divided by the consumer price index.		
** 12 month Euribor minus consumer price inflation.		
*** Blocks of flats. Data available from 1995 onwards.		

House prices are determined by supply and demand

Equilibrium on the housing market is reached when households' demand for house purchase intersects with the supply of available housing financed by investors. Supply and demand affect the housing market in tandem, but their relative and absolute influence on market developments can be expected to rise and fall. To understand the dynamics of the housing market, it is useful to distinguish between the demand factors and supply factors that drive movements in house prices and construction. Often many of these factors can be influenced by appropriate policy actions.

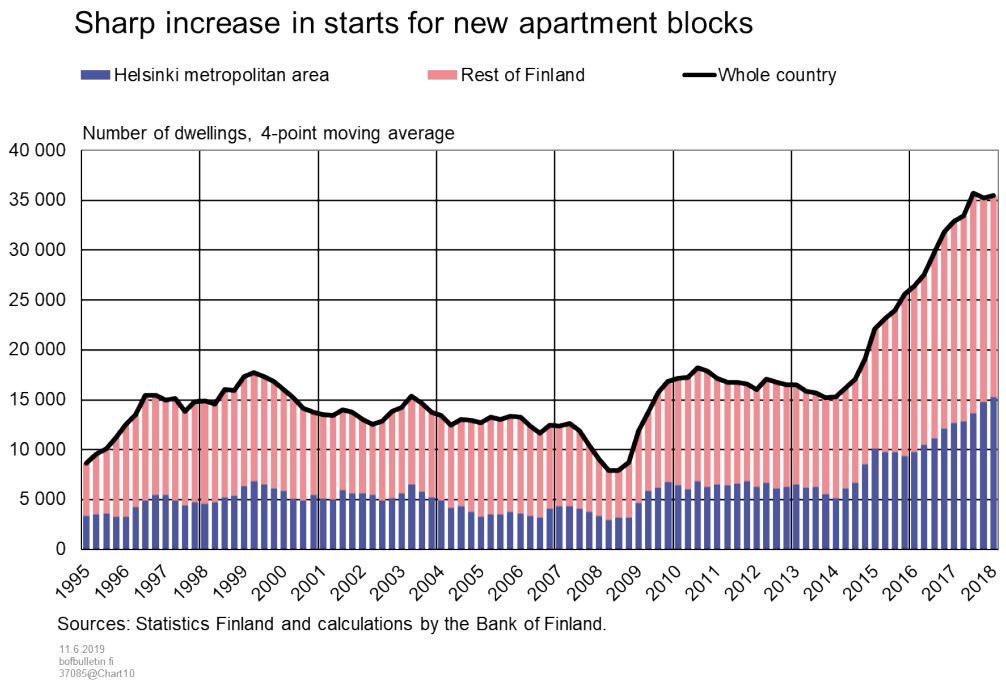
Table 2.

Examples of demand-side and supply-side factors

Demand-side factors	Supply-side factors
Demographic change	Zoning and availability of building land
Macroprudential policy	Building codes
Financing conditions	Financing conditions
Tax/fiscal policy (e.g. interest expense deductions, transfer tax)	Fiscal policy (i.e. increasing interest subsidy loans and taxing building land)
Expectations concerning the economic outlook and appreciation of housing (e.g. investor demand)	Availability of skilled labour in the construction sector (e.g. training, flow of labour across regions and countries)
	Construction sector competition
	Construction sector productivity

Several different factors can be identified that influence supply and demand, some of which are easier to observe than others (Table 2). Moreover, some of these factors may influence both supply and demand at the same time. Such factors include general financing conditions, for example the availability of finance and interest rate levels. According to the European Commission's Construction Confidence Indicator, supply-side factors have recently proven a larger bottleneck in the construction sector than demand-side factors.

Chart 3.



Labour shortages point to a tightening housing market

Residential investment is highly affected by municipal zoning rules and changes in the availability of building land. For example, municipalities may choose to expand their residential zones – if suitable land is available – and in this way support the construction of new homes. Changing building regulations and taxing land suitable for construction may have effects that increase or reduce supply. In addition, interest rate levels and the availability of finance also effect the decisions of consumers and companies alike. Bottlenecks in the availability of labour may slow down the construction of new homes. Similarly, productivity changes in the construction sector may influence the production of housing, especially over the long term. Increasing competition in the construction sector, in turn, reins in house prices and boosts production. Fiscal policy can also be used to influence the attractiveness of new-build construction, for example by changing the interest subsidy system.

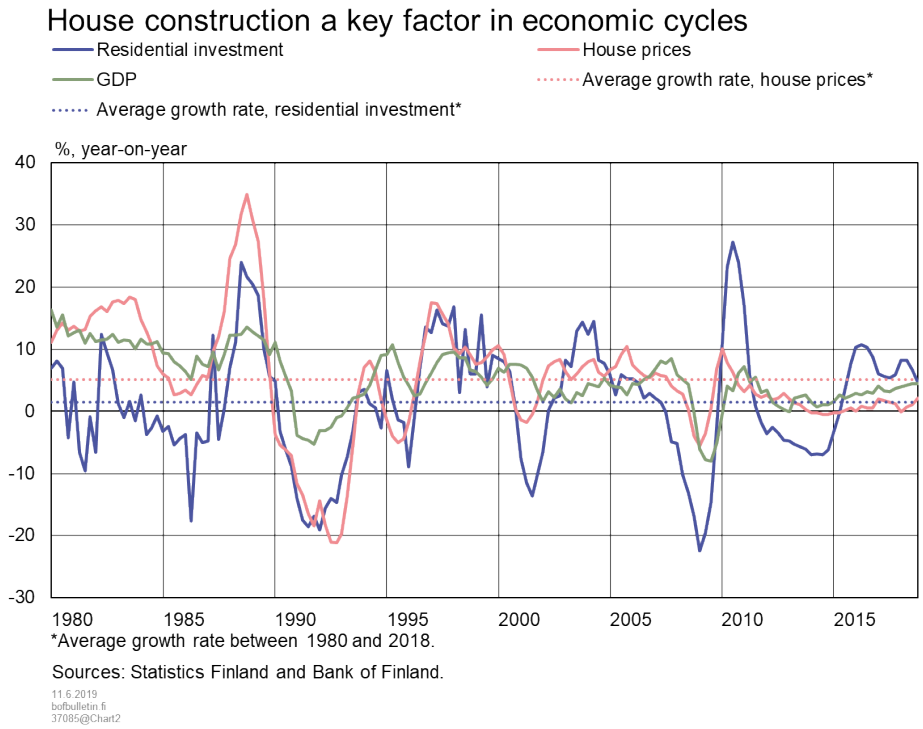
Several supply-side factors in particular have a significant bearing on building costs, which in turn influence the price level of housing and its development. Weak productivity raises the costs of construction, which eventually also results in higher purchase prices for new homes. Likewise, stricter building regulations raise the costs of construction and ultimately affect the prices of new housing. Full employment in the construction sector and labour shortages increase wage drift,

thereby raising construction costs. These additional costs risk being passed on to homebuyers as higher house prices.

The aforementioned effects do not imply that the construction costs of any given new-build unit will materially affect its sales price – which is in fact determined by the market's prevailing price level. Instead, construction costs influence which of the many potential building projects are profitable at the prevailing price level. Accordingly, as construction costs influence the volume of housing production over time, they also ultimately affect the prevailing price level.

The impact of different supply factors can in part be gauged with the European Commission's Construction Confidence Indicator, which is based on a survey where builders may specify factors limiting production. In recent times, supply-side constraints have become increasingly important, especially as labour shortage problems intensify. On the other hand, issues in the availability of labour together with the construction sector's high employment level and large number of housing starts all point towards a building industry in robust health. The labour squeeze can be expected to ease going forward, as employment growth in the construction industry and approvals of construction permits have begun to decline. Financial factors have not been a significant constraint on supply in recent times. Overall, the supply of housing is characterised by a degree of rigidity, which is to say that supply-side factors are slower to affect the housing market than demand-side factors. For instance, improving the availability of skilled workers can take several years, effectively the entire duration of a training programme.

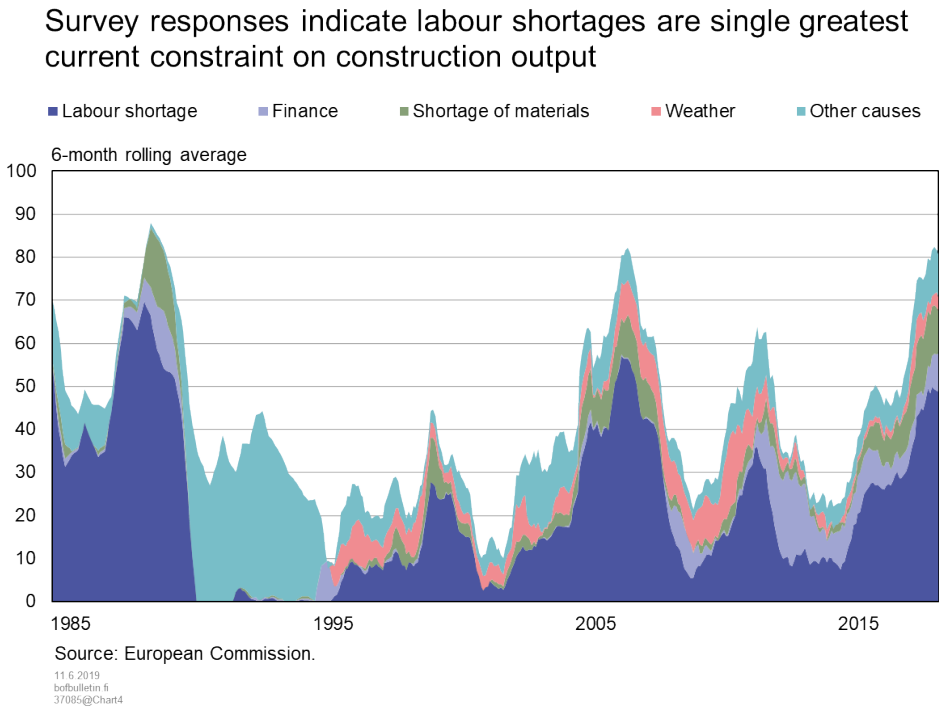
Chart 4.



Demographic change key in shaping future demand

Several demand-side factors that influence the housing market can also be identified. Demographic change – in particular over the long term – not only shapes the aggregate demand for housing but also influences the type of housing option preferred. For example, population ageing may increase demand for small houses and flats in favour of larger dwellings, especially farther away from services. On the other hand, growth in the working-age population (20 to 64-year-olds) bolsters housing demand. In the Helsinki metropolitan area this cohort is expected to continue to grow through the next decade (Chart 5). Migration changes regional demand and has led to a clear divergence between Helsinki and the rest of Finland: the working-age population outside the greater Helsinki area will continue to decline even at the end of the 2020s.[3] Thus, demographic change will continue to raise demand for housing in the Helsinki metropolitan area, as well as in other growth centres, also through the next decade.

Chart 5.

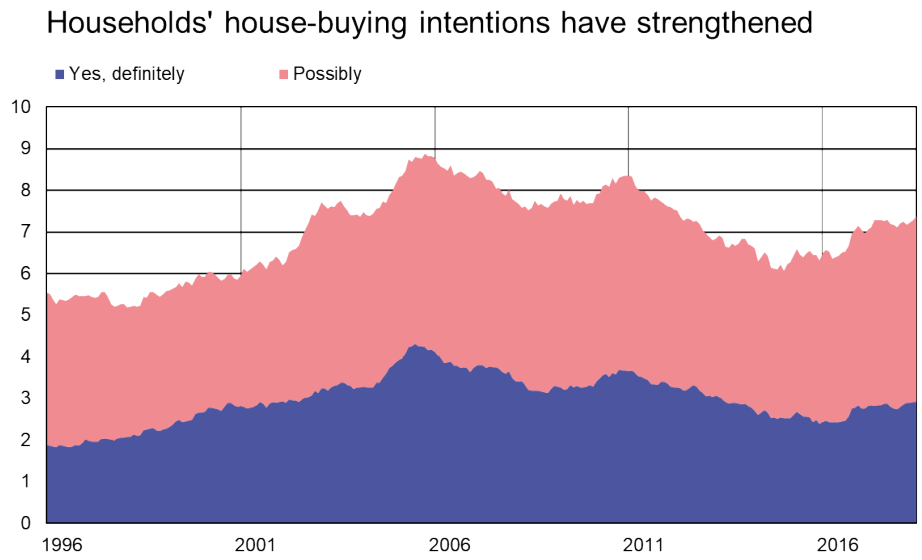


Monetary policy, housing loan reference rates, and other conditions attached to a housing loan affect housing demand by changing the cost of borrowing for house purchase. In recent years, housing market demand has been buoyed by low borrowing costs. Interest rates are expected to remain low in the near future, strengthening the demand outlook. In addition, taxation can be used to influence the housing market. For instance, home mortgage deductions or transfer taxes may be adjusted. For example, a transfer tax will raise the transaction costs associated with moving house and thus reduce housing demand.

Macroprudential policy has been tooled to rein in excessive household borrowing after the financial crisis, with effect on housing demand. The loan-to-value cap on housing loans was lowered to 85% for non-first time buyers as of summer 2018.[4]

Demand-side bottlenecks can be assessed, for example, by looking at Statistics Finland's Consumer Confidence Indicators. As part of the Indicator's underlying survey, consumers are asked to describe their intentions of buying a home within the next twelve months (Chart 6). Over the past few years the number of households inclined towards buying a home has grown, although these figures have not yet matched their pre-crisis levels. This complements the responses to the Construction Confidence Indicator, according to which demand has not constrained property investment in recent years.

Chart 6.



Favourable responses towards buying a home over the next 12 months (% of households) in the Questionnaire of the Finnish Consumer Survey.

Source: Statistics Finland.

11.6.2019
bofbulletin.fi
37085@Chart6

Housing market dynamics can be assessed with time series modelling

The complex interplay between supply and demand on the housing market can be analysed using time series models. Informed estimates can thus be made regarding the relative effects of different supply and demand factors in determining movements in house prices and residential investment.[5] Because both supply factors and demand factors affect the housing market simultaneously, evaluating their relative effects without a model framework is difficult. To address this, a structural vector autoregressive (SVAR) model is used.[6] In the model, supply and demand factors are separated with sign restrictions, i.e. the direction in which supply and demand factors affect house prices and residential investment is defined in advance.

The sign restrictions are determined by how we expect supply and demand to influence house prices and construction volumes. Demand factors lead to positive co-movement between house prices and construction. This means that an increase in demand – because of, say, lower interest rates – raises both house prices and the volume of construction. Declining demand, in turn, lowers house prices and reduces construction. Correspondingly, supply factors lead to negative co-movement. Raising supply, say by expanding residential zoning, weakens price growth but raises production. On the other hand, reducing supply raises prices, which results in lower demand. The

sign restrictions are illustrated in Table 3.

Table 3.

Supply and demand factors have different effects on prices and construction

The structural VAR model's sign restrictions		
	Price	**Volume**
Demand shock	+	+
Supply shock	–	+
Sign restrictions in effect for four annual quarters.		

This type of decomposition only allows for a cursory inspection of demand and supply shocks, as the shocks encompass a broad range of different possible factors, as outlined earlier. Nevertheless, the model provides insight into the significance and relative impact of supply and demand factors in determining house price movements and residential investment flows at different periods of time.

In this article, a two-variable model is used: residential investment and the prices of existing homes. The models are estimated over data ranging from the first annual quarter of 1980 to the last quarter of 2018. The variables represent year-on-year deviations from their long-term averages. In other words, in the case of house prices, this means subtracting the historical average growth rate from the growth rates obtained for each individual year during the data period. House prices have increased at an average annual rate of 5.1% and residential investment at a corresponding rate of 1.4%.

The model's sign restrictions are valid for four annual quarters, which means that demand shocks are shocks whose sum effect on prices and volumes is unilateral for one year. Supply shocks are defined as shocks which result in negative co-movement in price and volume developments for one year.[7]

There are many indicators that track changes in construction, but because of their strong seasonality and other unpredictable elements residential investment is instead used to represent the flow of new housing in this analysis. Residential investment includes not only new-build construction but also renovation work, but the latter’s growth in Finland has remained balanced.

Residential investment cycles are largely driven by the fluctuations in new-build construction. Because of a lack of a housing price index which also includes prices of new homes, the analysis is based on a price index for existing housing.[8] As a result, the analysis is based on the implicit assumption of positive co-movement in the growth of new and old homes.

Demand an important driver of the housing market

Our modelling suggests that demand factors have played a prominent role in driving movements on the Finnish housing market. The relative impact of both supply and demand in influencing residential investment and house prices are illustrated in Charts 7 and 8. The annual growth in prices and investment has been decomposed into their demand and supply elements for each annual quarter, the sum of which equals aggregate growth.

In the chart, aggregate growth is denoted in terms of its deviation from the historical average rate, i.e. the negative annual growth observable in house prices in recent years in fact describes slower-than-average price growth. Residential investment, in turn, has grown at an above-average annual rate in recent years.

In Chart 7 and 8, we can see how demand factors significantly boosted both house prices and investment towards end of the 1980s. The liberalisation of capital markets during this period had a profound impact on raising demand on the housing market. Correspondingly, the fall in demand during Finland's recession in the early 1990s significantly dragged down prices and investment. The model suggests that the recovery from the recession was largely driven by a pick-up in demand, reflected in both house prices and investment.

In the midst of the financial crisis in 2008–2009, weak demand weighed on prices and investment, but faltering supply also cushioned the decline in prices. The recovery of supply and demand in the aftermath of the crisis led to a sharp rise in investment when viewed at a national level. Price growth was slower than average, as price developments were dampened by increased supply. Weak economic growth in the 2010s weighed most especially on demand, reducing investment and pushing down prices.

Since 2015, both supply and demand have seen favourable developments on the national level. This has resulted in a strong rise in investment but slower than average price growth. The pick-up in demand corresponds with both the Consumer Confidence Indicator, which revealed greater house-buying intentions (Chart 6), as well as the construction barometer, according to which demand has not proven a constraint on construction investment in recent years.

Looked at historically, the rise in aggregate demand for housing has only had a moderate impact on

house prices. Moreover, the effects of demand have been overshadowed by the effects of supply. Indeed, the increase in supply has substantially curbed house price growth. Without the influence of supply factors from the second quarter of 2015 onwards, residential investment would have been 10% lower and the house price index some 30% higher by the fourth quarter of 2018.

Overall, it is fair to say that the comparatively weak growth of house prices after the financial crisis has been driven by a combination of weak demand and strong supply. At the end of the recessions, or immediately afterwards, investments have often received support from supply factors, which may well reflect the effect of fiscal accommodation, among other factors. The low interest rate environment has, for its part, bolstered both supply and demand, and will presumably continue to do so for the foreseeable future.

Chart 7.

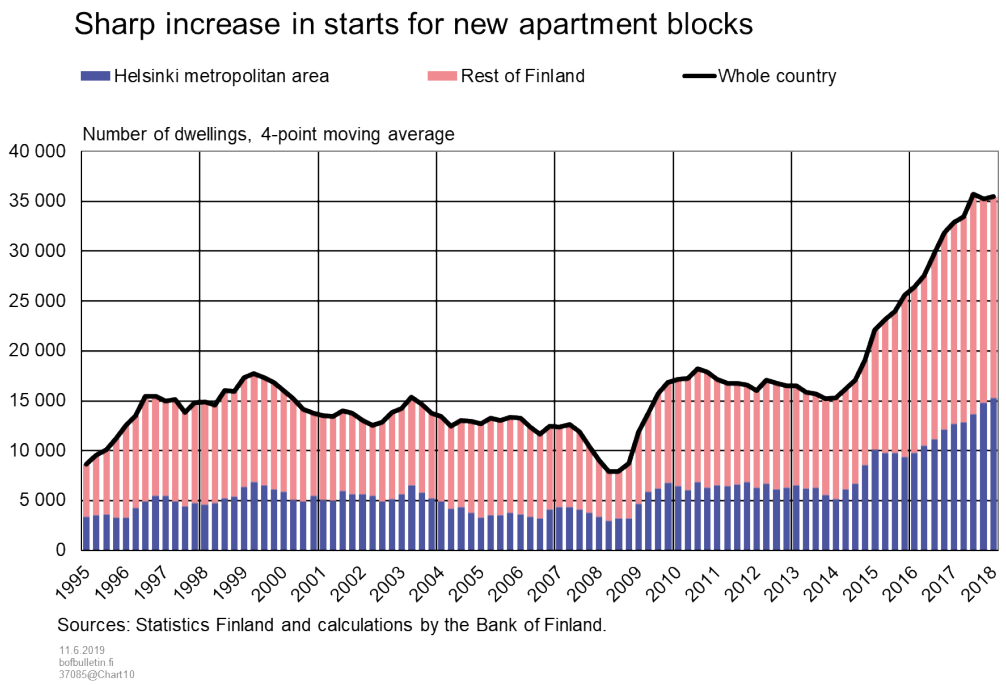
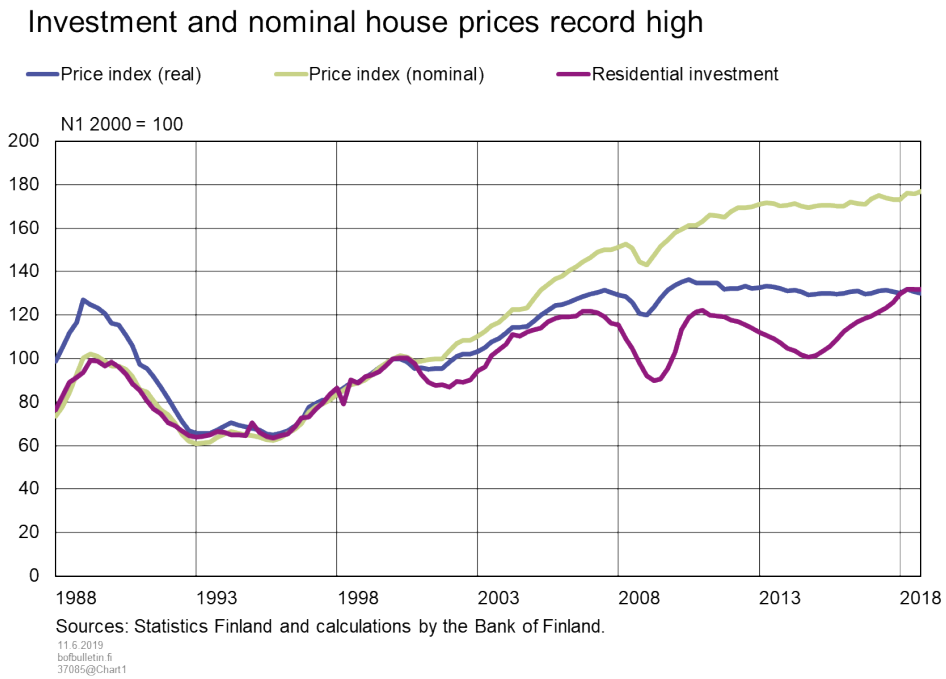


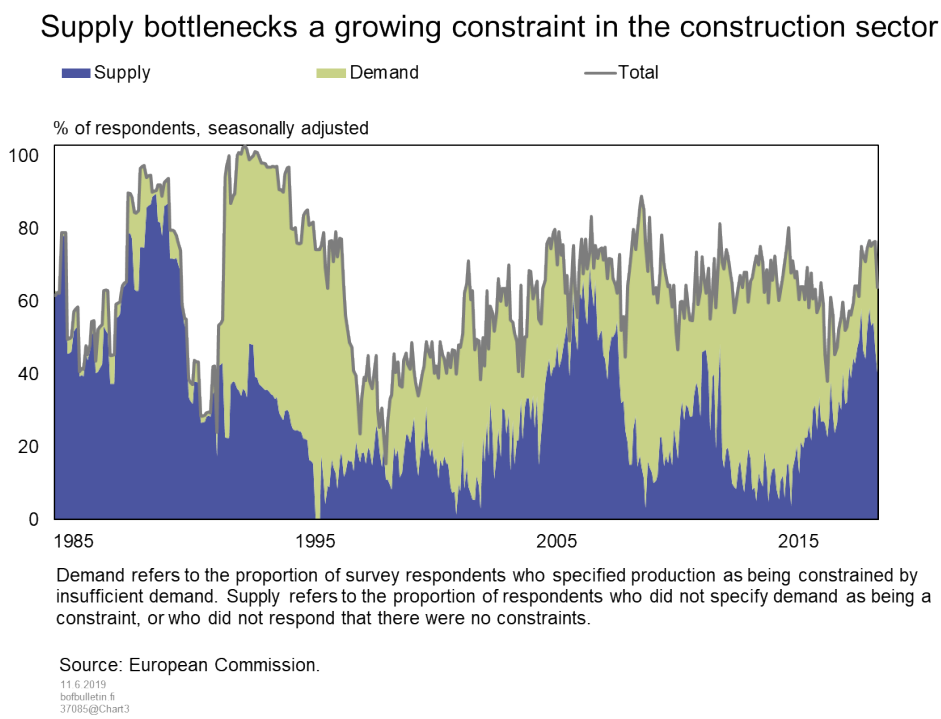
Chart 8.



Effects of supply and demand similar across regions

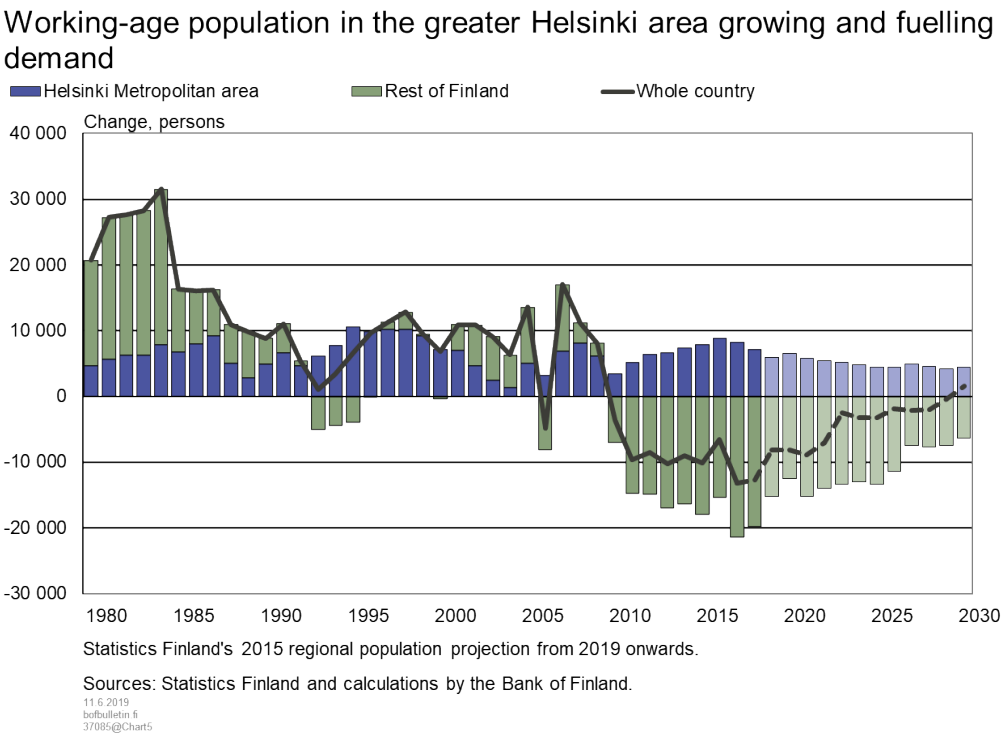
Regional disparities on the housing market between growth centres and other regions can be stark. For example, in recent years the development of prices for existing homes in the Helsinki metropolitan area[9] has diverged from that in the rest of the country (Chart 8).[10] Prices have continued to increase in the greater Helsinki area, while having levelled out elsewhere in Finland. Looking at the number of housing starts reveals that starts for new blocks of flats have been on the rise in the whole of Finland since 2015 (Chart 9). Accordingly, this article gives the greater Helsinki area and the rest of Finland separate treatment in examining the effects of supply and demand factors on house prices and housing starts.[11]

Chart 9.



Since the global financial crisis, housing starts for new blocks of flats have risen substantially above their pre-crisis levels. In the Helsinki metropolitan area, housing starts for apartment blocks have been supported by positive developments in both demand and supply factors in recent years, with demand factors becoming increasingly prominent in the past year. Price growth has been at around its average pace – pushed upwards, on one hand, by demand factors, and weighed down, on the other, by supply factors. Supply factors have lowered prices elsewhere in Finland, too, since 2015, while demand factors have moderated this decline.

Chart 10.



Housing starts, in turn, have increased at an above-average pace, having been bolstered by both supply and demand factors. However, a softening of demand in late 2018 took its toll on prices and housing starts outside the greater Helsinki area. The regional divergence in price growth is largely explained by favourable longer-term developments on the supply side of housing market, and in particular by the weak growth of demand outside the greater Helsinki area over the past year. In light of Statistics Finland's population projection (Chart 5), demand factors are likely to prove a drag on the housing market, except for growth centres, in the immediate years to come.

Increased supply has constrained price growth

Housing market cycles are influenced by both supply and demand factors, which include financing conditions, macroprudential policy, fiscal policy, building industry competition, and zoning rules. Without a time series model, however, it is difficult to disentangle the relative importance of supply and demand on movements in house prices and residential investment.

In particular, the time series model estimated from house prices and residential investment highlights the importance of demand in driving housing market developments. In the past few years demand has begun to pick up again. This has encouraged residential investment and the growth of house prices. However, a simultaneous rise in supply has curbed price developments significantly. This has resulted in slower-than-average price growth, but a strong increase in

residential investment.

The divergence of prices between the Helsinki metropolitan area and the rest of Finland is explained by favourable longer-term developments on the supply side of the housing market, and in particular by the weak growth of demand outside the greater Helsinki area over the past year. This has depressed prices much more in the rest of the country than it has done in the Helsinki area.

References

Lütkepohl, H. (2005). New introduction to multiple time series analysis. Springer Science & Business Media.

Kilian, L. (2011). Structural vector autoregressions.

Uhlig, H. (2005). What are the effects of monetary policy on output? Results from an agnostic identification procedure. Journal of Monetary Economics, 52(2), 381–419.

Fry, R., & Pagan, A. (2011). Sign restrictions in structural vector autoregressions: A critical review. Journal of Economic Literature, 49(4), 938–960.

Notes

1. This article uses nominal prices unless otherwise specified. ↑
2. Statistics Finland's real price index, where the nominal price index is divided by the consumer price index. ↑
3. The working-age population is also projected to grow in other growth centres such as Oulu, Tampere and Turku. Demographic projections for the rest of Finland have not been analysed in detail. Regional differences are thus possible. ↑
4. Further information on macroprudential decisions can be found on the FIN-FSA website. ↑
5. A similar model-based approach is used in the ECB article: The state of the housing market in the euro area. ↑
6. Structural Vector Autoregressive (SVAR) model. For further detail on SVAR models see e.g. Lütkepohl (2005) and Kilian (2011), and on sign restrictions e.g. Uhlig (2005) and Fry & Pagan (2011). ↑
7. The structural vector autoregressive (SVAR) model contains two lags. 10,000 models are estimated from the panel and a representative model is selected. The representative model is the model closest to the median of the impulse responses of all the approved models. ↑
8. The conclusions remain effectively unchanged if real prices are examined instead of the nominal price index. As expected, fluctuations on the housing market are driven by the same factors, irrespective of whether prices are measured in nominal or real terms. ↑

9. Helsinki, Espoo, Vantaa and Kauniainen. ↑
10. Regional disparities are large, especially for the rest of Finland. ↑
11. The number of housing starts has been chosen as a variable for housing production. Because of the large fluctuations in the number of housing starts, the variables are adjusted by taking their variable annual sums. Both the prices and the number of housing starts are for flats. With regional variables, the estimates are calculated from 1995 onwards, as this is the earliest period with available housing start data. ↑

Keywords

construction, house prices, housing markets