

The condominium market

Are we witnessing a housing bubble?

Based on all the input, we can conclude the following:

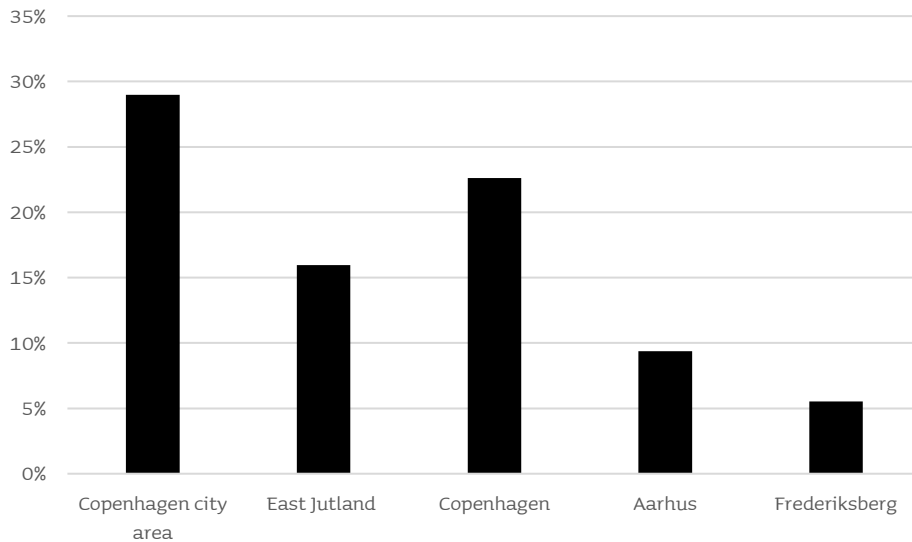
- Condominium prices have been rising relatively sharply for quite some time now, but considering the economic factors, most of this can actually be explained by economic theory.
- A combination of low interest rates, rising incomes, limited available housing and population growth supports rising condominium prices.
- Looking at the total cost of owning a condominium– as a percentage of income, this is also lower than we saw in the '00s.
- Needless to say, a situation where condominium prices continue to rise faster than incomes is untenable, but so far we see no signs of a bubble if we solely consider the economic factors.
- This does not mean that housing prices could not fall if interest rates were to increase, however. But it reduces the likelihood of a sharp decrease in house prices.
- Structural factors in the housing market mean that the spectre of a housing bubble will loom for a long time, going forward, despite various regulatory measures, since – all other factors being equal – demographic shifts will squeeze demand in relation to the short-term, and thus rigid, supply.
- Regulatory measures and future property tax packages can decelerate the condominium market in the short term.

The condominium market

The section below provides an overview of the current situation on the condominium market. What is the forecast for condominium-price trends in major cities, how long will it take to sell a condominium, etc.?

According to Statistics Denmark, there are roughly one million homes in multi-storey buildings in Denmark. Of these, 300,000 can be presumed to be owner-occupied homes/condominiums (private individuals, including partnerships). Looking at Copenhagen, the municipality itself accounts for slightly more than one-fifth of the condominiums, whereas the Copenhagen city area accounts for almost one-third. See Figure 1.

Figure 1: Percentage of the total stock of condominiums



Source: Statistics Denmark and own calculations

Copenhagen's housing stock comprises a wide variety of homes. According to Statistics Denmark, there are around 394,000 homes on the Copenhagen housing market (Copenhagen city area). This housing stock breaks down into condominiums, cooperative housing, social housing, private rental housing, etc. According to Table 1, showing the various types of housing, it is possible to see that more than 21% of the homes in the Copenhagen city area can be assumed to be condominiums. The largest stock of units comprises private cooperative housing, constituting almost 30%.

Table 1: Percentage of the housing stock, Copenhagen city area

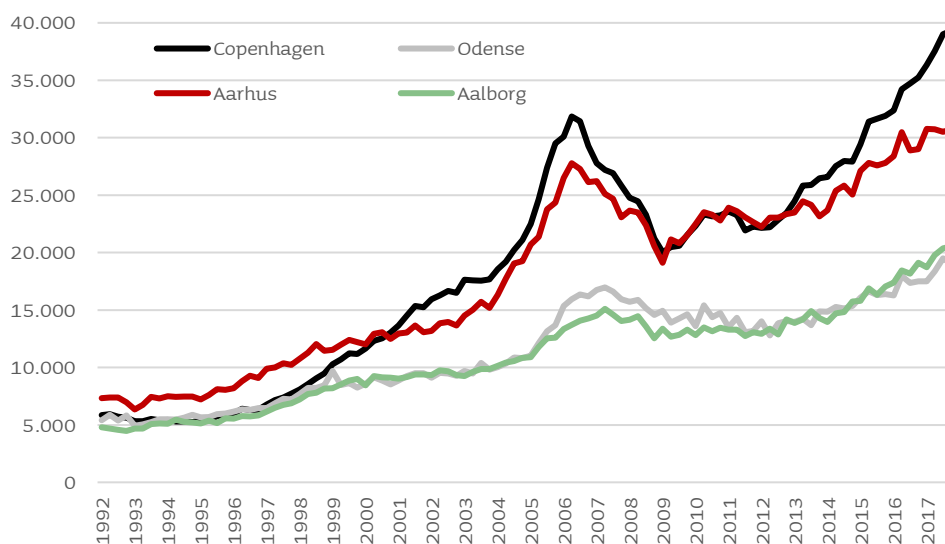
	Single-family houses	Homes in multi-storey buildings	Residential facilities for students	Other
Private individuals, including partnerships	8.3%	21.7%	0.1%	0.1%
Non-profit housing associations	0.7%	18.2%	0.1%	0.0%
Public limited companies, private limited companies and other undertakings	0.2%	11.5%	0.5%	0.1%
Private cooperative housing associations	0.2%	28.8%	0.0%	0.0%
Public authority	0.2%	1.3%	0.2%	0.1%
Other or unspecified	0.3%	5.6%	1.6%	0.1%

Source: Statistics Denmark and in-house calculations

Price trends for condominiums

For quite some time now, condominium prices have been rising relatively sharply, particularly driven by trends in the larger cities. According to Finance Denmark's housing-market statistics, condominium prices have risen by almost 12% in Copenhagen, 6% in Aarhus and 9% and 8% in Odense and Aalborg respectively over the past year. Although price trends have indeed risen relatively sharply in recent years, the current trends are still far less dramatic than in the '00s. Back then, condominium prices rose nationwide by 188% over an eight-year period. Making this same calculation today, condominium prices have 'only' risen by 50%. Considering Copenhagen alone, prices peaked at almost 300% over an eight-year period, whereas Copenhagen condominium prices have only risen roughly 80% over an equivalent number of years.

Figure 2: Condominium price trends, m²



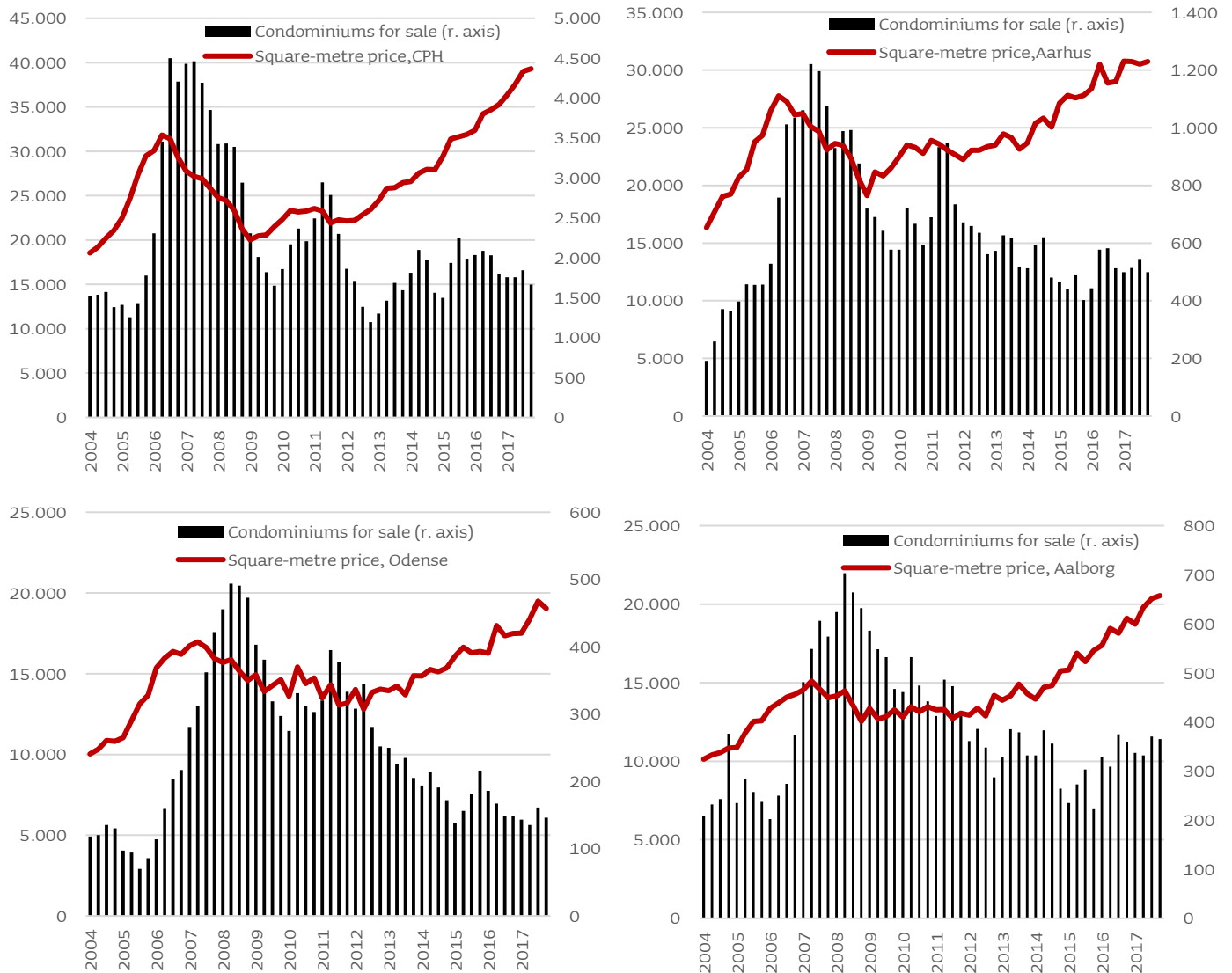
Source: Finance Denmark

Available condominiums on the market

According to Finance Denmark, there were 6,031 condominiums for sale throughout Denmark in Q4 2017. Of this number, 28% were in the City of Copenhagen, 8% in the City of Aarhus, 2% in Odense and 6% in Aalborg. In other words, approximately 2% of the aggregate stock of condominiums are currently for sale. Looking at the Copenhagen condominium market, almost 3% of the existing condominiums were for sale in Q4 2017.

The historical trend in the biggest cities in Denmark from 2004 onwards shows that the period when the highest percentage of condominiums were for sale was 2007–2008, and that this percentage has been falling ever since. It is worth mentioning, however, that these statistics have only been kept since 2004. Therefore, they are still relatively new and untested in a number of different of market-trend situations. Accordingly, the financial crisis and the trends relating to this constitute the only crisis ever covered by the statistics.

Figure 3: Correlation between condominiums for sale and square-metre prices (Copenhagen, Aarhus, Odense and Aalborg)



Source: Finance Denmark

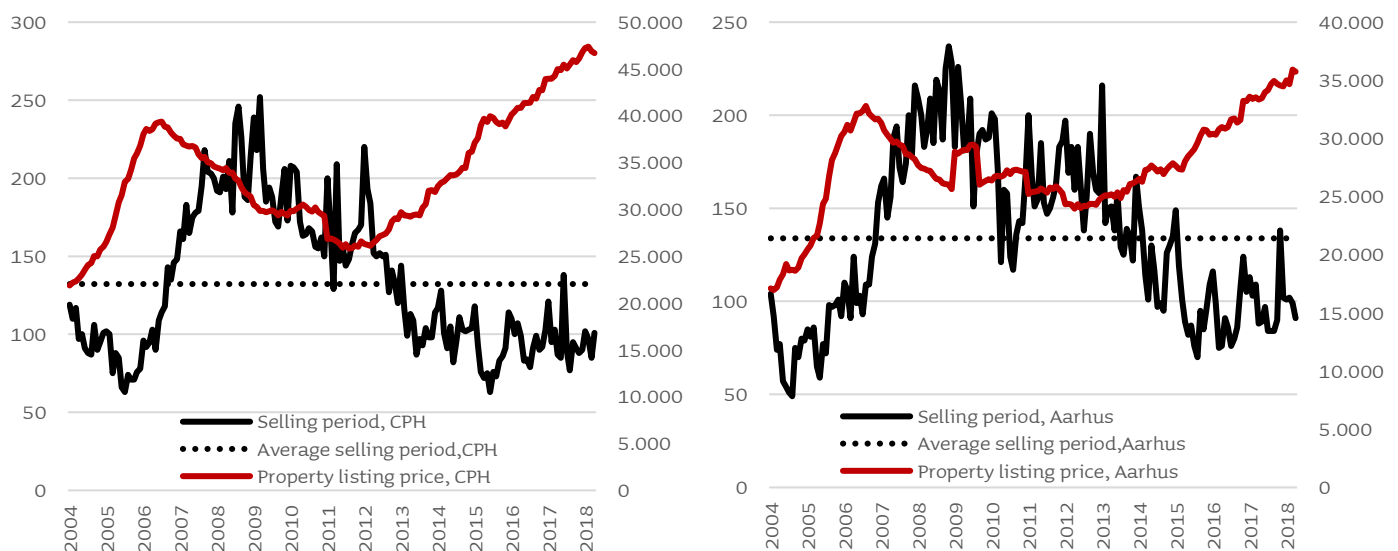
Comparing the available stock of condominiums for sale with square-metre price trends for condominiums, there is a correlation between price and supply. When many condominiums are for sale, prices fall and, conversely, when fewer condominiums are for sale on the market, an upward trend is seen. This is consistent with the classic economic theory of supply and demand. All other factors being equal, a smaller selection of homes would contribute to rising prices, and vice versa. As the current number of condominiums for sale is not very high – and below the historical average in Copenhagen and Aarhus – this

is one of several factors that helps exert upward pressure on prices. This effect must be deemed particularly significant in periods of rising population growth.

Selling periods and property listing prices

The selling periods describe the average time it takes to sell a condominium in the month concerned. The statistics from Finance Denmark show that in April (2018) it took 101 days to sell a condominium in Copenhagen, whereas it took 91 days in Aarhus. The selling periods for condominiums in both Copenhagen and Aarhus are thus below the historical average which is 132 days for Copenhagen and 134 days for condominiums in Aarhus. It should be noted, however, that these figures can fluctuate from one month to the next.

Figure 4: Correlation between selling periods and property listing prices (Copenhagen, Aarhus)



Source: Finance Denmark and in-house calculations

Figure 4 shows that selling periods are closely correlated with property listing prices, i.e. the price that an estate agent estimates that a condominium can be sold for. When property listing prices rise, the selling period is shorter, whereas in the period of declining property listing prices, it generally took longer to sell one's condominium. Offhand, it makes sense that in times of rising prices, there is a faster turnover of condominiums on the market. As rising property listing prices are usually a sign of market optimism, i.e. more people are possibly inclined to buy a home; this could make it easier to sell one's condominium.

Financial factors

Housing prices are affected by the economic environment. In the short term, housing prices are affected by factors such as interest rate, unemployment, and average income. Besides the interest rate, which is uniform regardless of where you live in Denmark, other factors can differ from one region to the next. In

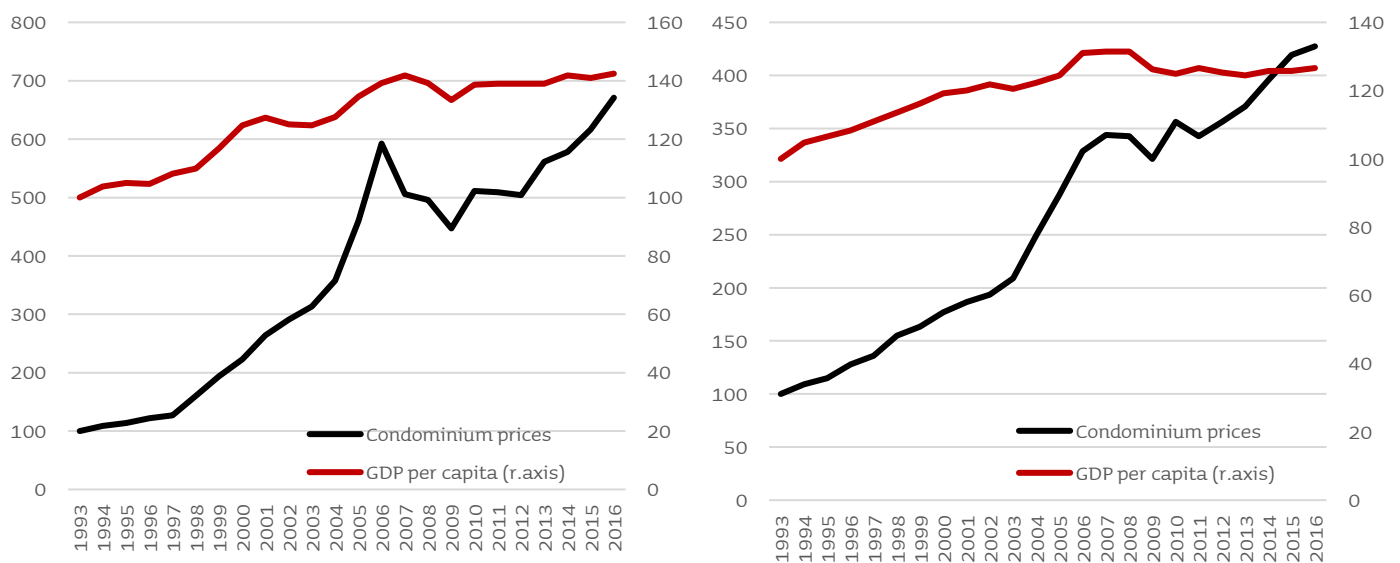
addition, housing prices are affected by long-term factors such as demographic trends and the available housing stock. Accordingly, the following sections focus on condominium price trends and compare them to financial factors in the areas concerned.

Income

When investing in a home, income is a significant factor, which is why it makes sense that these are correlated. According to Statistics Denmark, the Copenhagen area is one of the geographical areas in Denmark with the highest income-growth rate, measured in terms of per capita GDP. Generally speaking, it makes sense for prices to rise the most sharply in areas with the highest income growth. It seems healthy and natural. The higher the income, the more one can pay for a home, which will result in a higher turnover of homes. At the same time, the higher the income, the higher the housing quality that will be sought on the market. Accordingly, the investment in housing stock will be the greatest in areas where incomes are highest. In itself, this will prompt higher housing prices. As mentioned, housing-price statistics are not adjusted for the quality of the homes concerned. The correlations described here are also verified by the Danish Central Bank, which writes in its Quarterly Review no. 4 in 2016 that those who were approved for the purchase of a home in a major city also had the highest income growth. This correlation will presumably intensify in the years ahead, as a result of macroprudential initiatives.

In cities such as Copenhagen and Aarhus, it will even be underestimated in such a context, as there are relatively many residents of major cities who do not contribute to the combined production (income). The percentage of people who cannot be approved to buy a home is simply greater, as students, etc., will usually not be approved to purchase a home based on a student grant and/or loan.

Figure 5: Correlation between income and condominium prices (Copenhagen city area, East Jutland)



Source: Statistics Denmark and in-house calculations

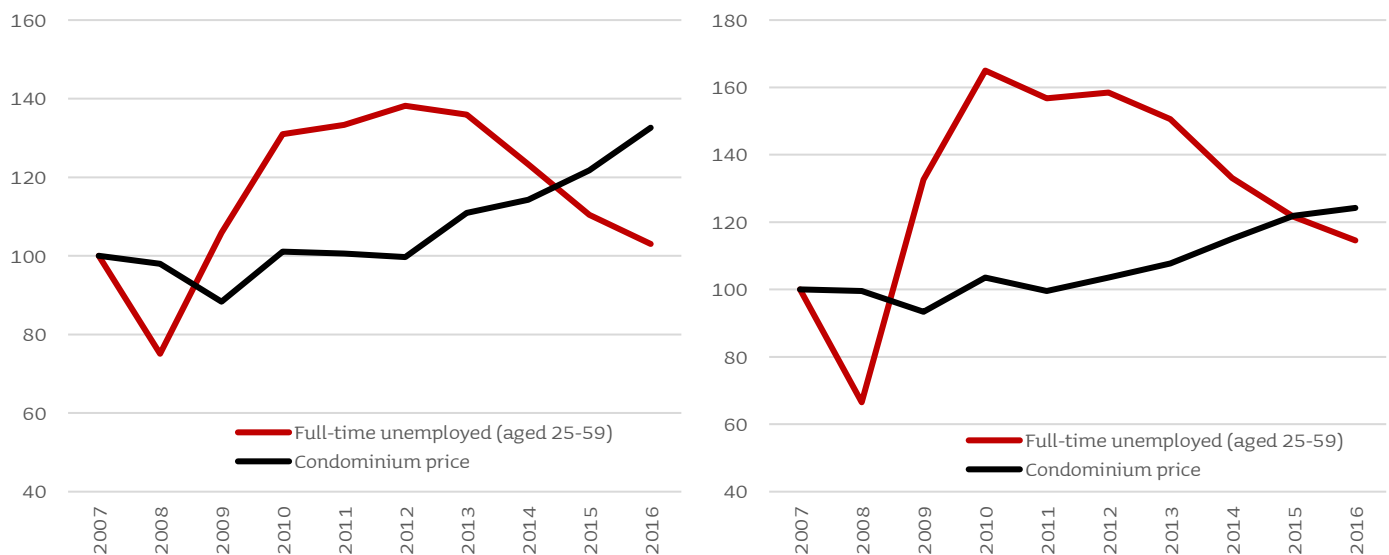
Condominium prices are closely correlated with prosperity measured in terms of per capita GDP, and this also supports rising condominium prices. However, condominium prices have risen at a faster rate than incomes. Thus, income growth explains only some of the condominium price increase (see Figure 5).

It should be mentioned, however, that the income data available via Statistics Denmark leaves something to be desired, as the data are updated relatively slowly. As Figure 5 shows, the most recent statistics available are from 2016, which is why we must assume that current incomes are higher. This assertion is supported by the data on which the Danish Central Bank bases its analysis in its quarterly reviews, which show that income of condominium buyers in the City of Copenhagen is above the average income.

Unemployment

Looking at unemployment trends, the rate is declining (see Figure 6). This makes sense, as the per capita GDP is rising. Declining unemployment means that more people are finding work, which results in higher incomes and thus greater prosperity. All other factors being equal, this must mean that more people can afford/have the option of being approved to purchase a home.

Figure 6: Correlation between unemployment and condominium prices (Copenhagen city area, East Jutland)



Source: Statistics Denmark and in-house calculations

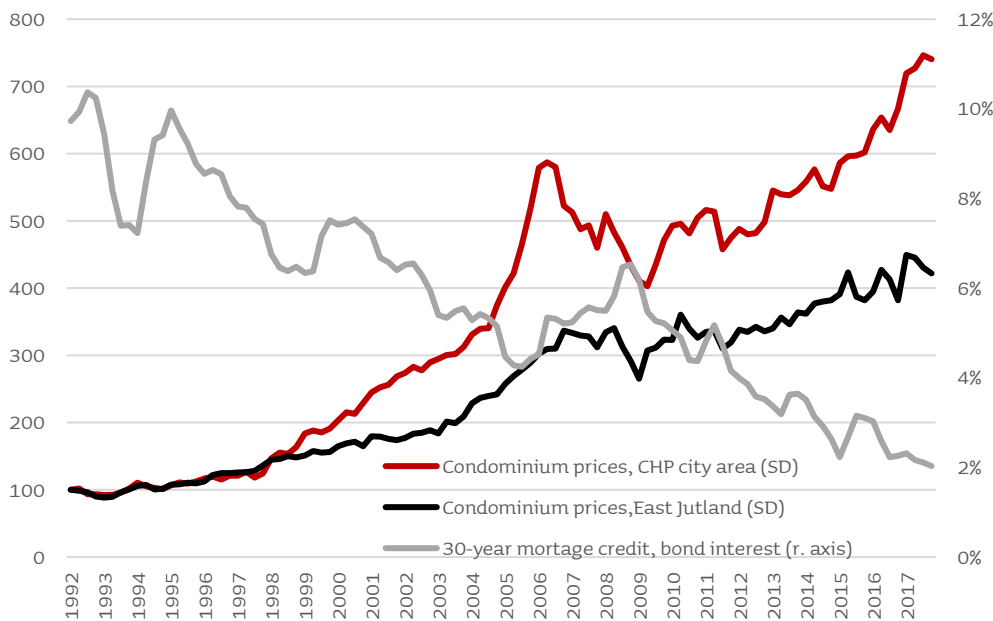
This intensifies the demand for housing, which exerts upward pressure on the prices of the available housing stock. This explains why declining unemployment underpins rising prices. Declining unemployment is mirrored in rising employment. In this context, it is interesting that Copenhagen is the only place in Denmark where the employment rate is higher than it was before the financial crisis. This could be a decisive explanation of why housing prices have risen sharply here.

Interest rates

Generally, there is a short-term financial correlation between interest rates and housing prices. When interest rates increase, housing prices decline, as, all other factors being equal, it becomes more expensive to borrow money to buy a home. Conversely, when the interest rate declines, this exerts upward pressure on housing prices.

Comparing the 30-year mortgage-credit interestrate trends with condominiumprice trends from Copenhagen city area and East Jutland Province, we see this exact same general correlation (see Figure 7). This means that the current low rate of interest exerts upward pressure on prices and becomes one of the causes of the rising condominium prices we are currently witnessing.

Figure 7: Correlation between interest rates and condominium prices (1992 K1=100)



Source: Statistics Denmark, the Danish Central Bank and in-house calculations

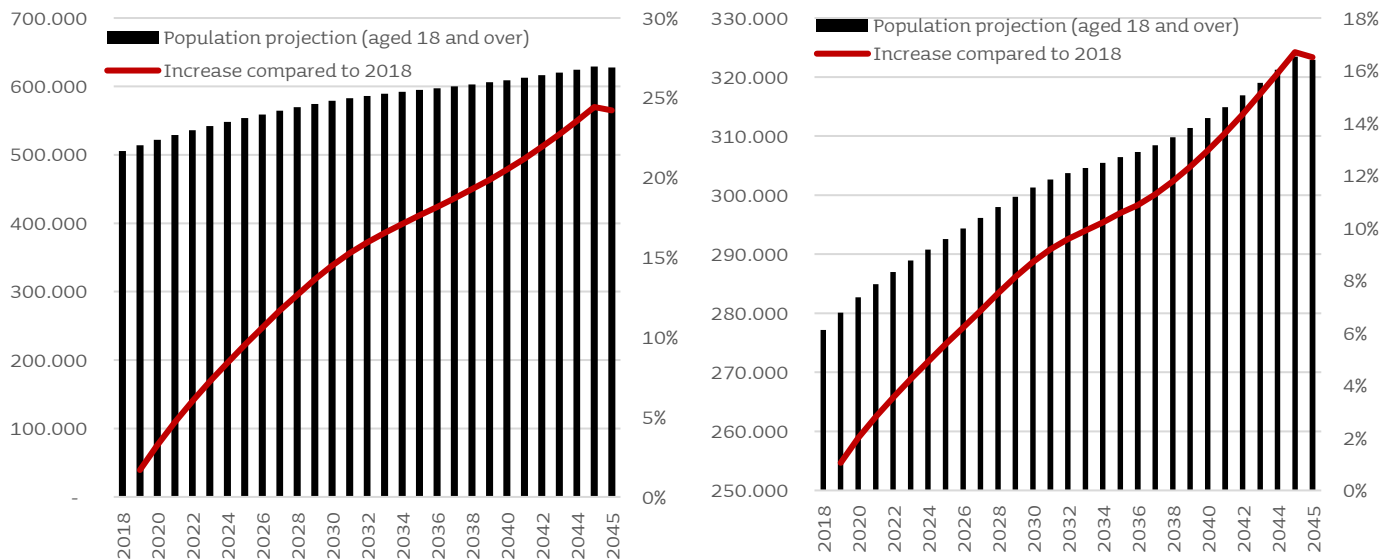
Demography

Demographic trends also affect condominium prices in the long term. The higher the population, the greater the need for housing. According to population projections from Statistics Denmark, the population of larger cities in Denmark will continue to grow. Thus, demographic trends will increase the demand for housing in the larger cities for many years ahead.

For instance, Copenhagen’s adult population (aged 18 and older, Figure 8), will increase by more than 60,000 over the next decade. Looking all the way forward to 2045, which is the extent of Statistics Denmark’s projections, the population will increase by 24% compared to 2018.

Population growth will increase the demand for housing, which will exert structurally upward pressure on prices compared to the existing housing stock.

Figure 8: Population projection (Copenhagen, Aarhus)



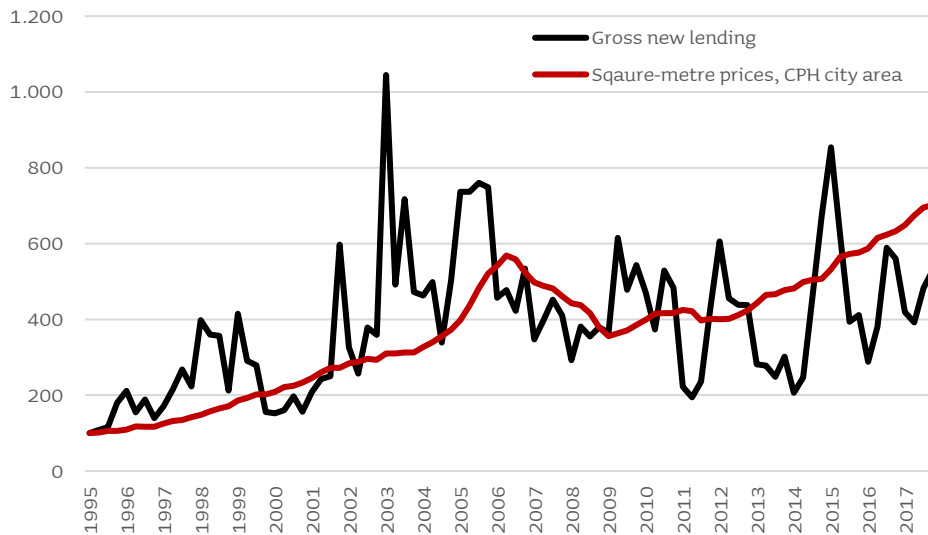
Note: The population projection is based on historical data concerning population make-up in terms of gender, age and national origin, as well as fertility, mortality rate, emigration and immigration and relocation.

Source: Statistics Denmark and in-house calculations

Lending growth

Another parameter worth including in determining whether a bubble exists is the growth of loans. Comparing lending trends with condominium price trends provides insight into whether a credit bubble exists. It is worth mentioning that the statistic for gross new lending comprises both new loans and converted loans. This means that in periods when it is advantageous to convert loans, there will presumably be a sharp rise in lending. Thus, a gross-lending increase is not only synonymous with housing owners borrowing more money due to rising housing prices. Lending that increases more sharply than housing prices over an extended period is a point that requires special attention, however.

Figure 8: Correlation between gross lending and Square-metre prices



Source: Finance Denmark and in-house calculations

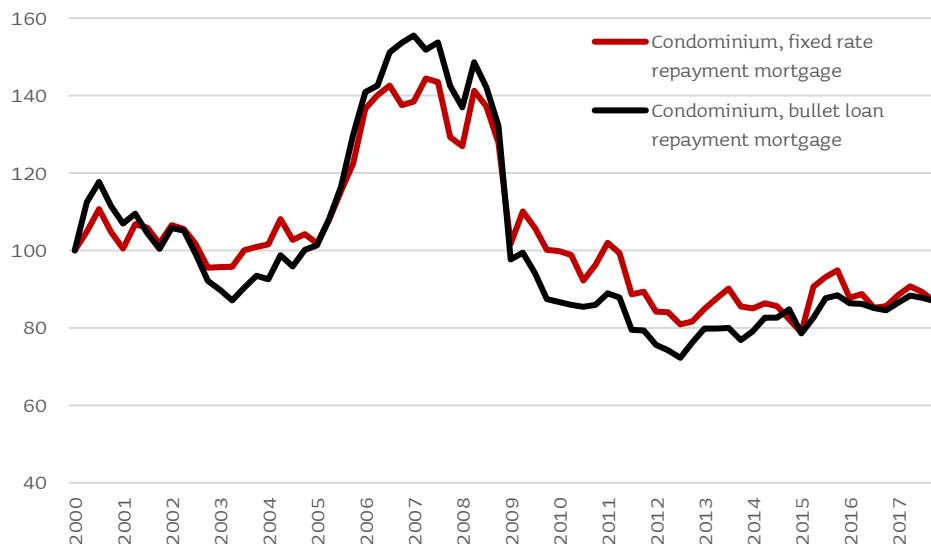
That said, we have just been enriched by new research based on microdata collected by mortgage-credit institutions. The research shows that when homeowners increase their debt, it is relatively quickly reduced afterwards and generally has little effect on consumer spending, for example. Higher household debt is typically explainable by the consumption of more costly durable consumer goods, which explains the close correlation between household debt with car sales, for instance. In the long term, consumer spending levels off, as households do not need a new car every year, which means a higher rate of borrowing cannot explain the decline in consumer spending after a crisis such as the financial crisis.

Recommended reading: Household Debt and Spending During the Financial Crisis: Evidence from Danish Micro Data*, <https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxhc2dlcmxhdWFuZGVyc2VufGd4OjFIMTc2MGZjMDVzMzlwMTU>

Percentage of household income spent on housing

Looking at the percentage of households’ disposable income for housing payments, i.e. interest and taxes, this percentage is far lower today than it was in the ’00s (see Figure 10). This is explained by factors such as declining interest, which has made it less expensive to fund a home purchase. Likewise, incomes have increased. Last but not least, condominium prices have not risen as sharply as they did in the ’00s.

Figure 10: Housing-payment percentage for condominiums throughout Denmark (2000K1=100)



Note: The housing-payment percentage indicates the amount of households' disposable income used for housing payments, e.g. interest and taxes, for an average home and based on a fixed-rate loan with instalments. The statistic is based on an average condominium of 90 m². In addition, it presumes that the LTV is 100% mortgage credit.

Source: Statistics Denmark, Finance Denmark, the Danish Central Bank and in-house calculations

Macroprudential initiatives and a new property-tax package

Several macroprudential regulations have been implemented in the past few years. The initiatives are intended to protect against any bubbles forming on the housing market and to minimise the number of deeply indebted borrowers, to reduce vulnerability to interest-rate increases and possible declines in housing prices. The initiatives can have a transitory inhibiting effect on the housing market, as they set limitations to what customers may borrow and which type of loan they may choose.

Property-tax package

The new property-tax package bases property taxes on new property valuations and taxation rates from 2021. This means that almost anyone who buys a condominium after 2020 will incur a higher property tax than today. This is due to the fact that the property tax for condominiums has previously been assessed at a very low level, and the new rules pave the way for a sharp increase in the land value. Thus, higher property taxes could exert downward pressure on apartment prices after 2021, particularly at the upper end of the market. This is also emphasised in a new analysis from Danish Central Bank: 'Property-tax agreement will stabilise housing prices' (September 2017).

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