

# STAFF MEMO

## The housing market in the pandemic year 2020

NO. 6 | 2021

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NORGES BANK

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*Despite the pandemic, house price inflation was high during much of 2020. Lower lending rates, changes in housing preferences and a limited supply of new housing have contributed to increased price pressures, especially in Oslo. Our analysis based on registered housing transactions recorded by the Norwegian Mapping Authority points to a shift in demand from larger flats to detached houses after strict measures to contain the Covid pandemic were introduced in March 2020. This shift is particularly evident in the capital and coincides with higher house price inflation in the area surrounding Oslo than in Oslo proper. The findings indicate that the pandemic may have changed people's housing preferences somewhat and increased the attractiveness of living in larger dwellings farther from the city centre.*

Key words: housing market, Covid pandemic, microdata.

## 1. High house price inflation during the pandemic year

When the Covid pandemic hit Norway and strict measures to contain it were introduced in March, most market analysts projected that house prices would fall.<sup>2</sup> House price inflation was low during the initial lockdown period, but picked up quickly again (Chart 1). Between April 2020 and March 2021, the 12-month rise in house prices increased markedly, with a particularly pronounced price rise in Oslo. In recent months, house price inflation has slowed somewhat.

The sharp rise in house prices during the pandemic is not a uniquely Norwegian phenomenon. House prices have also risen considerably in a number of European countries and in countries outside Europe, such as the US, Canada and Australia.<sup>3</sup>

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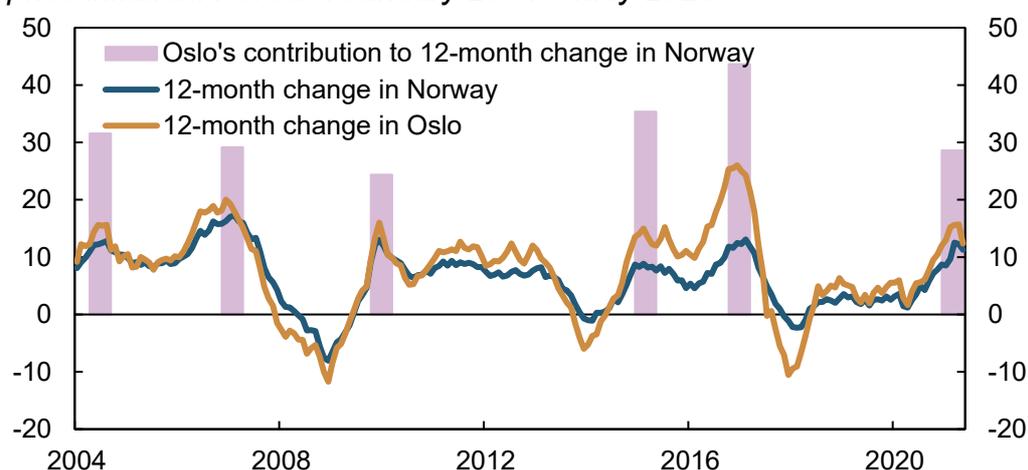
<sup>1</sup> The views and conclusions expressed in this publication are the authors' own and do not necessarily reflect those of Norges Bank. This paper should not be reported as representing the views of Norges Bank. The authors would like to thank Nina Larsson Midthjell and Torbjørn Hægeland for useful input and comments. We would also like to thank John Henrik Mulelid and Lasse Ragnar Torkildsen for their kind assistance with data and charts.

<sup>2</sup> See eg the discussion of the housing market in [Monetary Policy Update May 2020](#).

<sup>3</sup> See eg the article "[Our house-price forecast expects the global rally to lose steam](#)" in *The Economist*, 10 April 2021 and [Monetary Policy Report 4/20](#).

A faster price rise in Oslo than in the rest of Norway is not unusual in periods of high house price inflation. The bars in Chart 1 show the estimated contribution of Oslo to the national rise in house prices.<sup>4</sup> The estimates depend on the volume of existing home sales and on the rate of house price inflation in Oslo compared with the rest of the country. The last time house price inflation was high and rising was in 2016, when Oslo's contribution to the total rise in house prices was above 40 percent. By comparison, Oslo accounts for around 30 percent of the total rise in prices over the past year, which is consistent with its contribution during earlier periods of high house price inflation. In other words, Oslo's contribution to the total rise in house prices has not been unusually high during the Covid pandemic compared with previous upswings.

*Chart 1 House prices and Oslo's contribution in periods of high house price inflation. Percent. January 2004 – May 2021*



Sources: Eiendomsverdi, Finn.no, Real Estate Norway and Norges Bank

In this paper, we examine more closely a number of factors that we believe are important for understanding house price developments in Oslo and in the rest of the country during the pandemic. Both Norges Bank and other market analysts have pointed to low interest rates and homebuyers' likely preference for spending a larger share of income on housing, among other reasons because of increased use of remote working, as important drivers of high house price inflation. The primary purpose of this paper is to investigate whether housing preferences have changed during the pandemic.

<sup>4</sup> The estimations are based on the six months surrounding each peak in the 12-month change in house prices in Norway. Oslo's contribution is estimated with the aid of the 12-month change in house prices in Oslo and the number of existing homes sold in Oslo relative to the rest of the country. We use home sales since Real Estate Norway's price index is based on sales data. Existing home sales in Oslo is high relative to the housing stock compared with the rest of Norway. In isolation, this pulls up Oslo's contribution to the total rise in house prices compared with a price index based on the housing stock.

Our analyses are largely based on registered transactions for dwellings sold on the open market recorded by the Norwegian Mapping Authority. The transaction registrations contain such information as the type of property sold, price, area in square metres and postal code. Housing transactions are registered after the actual sale/purchase.<sup>5</sup> We reckon with an average lag of two months between the sale/purchase and the registration date.<sup>6</sup> Note also that the increase/decrease in average prices based on Norwegian Mapping Authority data<sup>7</sup> does not necessarily coincide with the price increase/decrease from published price indexes. For example, Real Estate Norway's house price statistics, shown in Chart 1, are based on hedonic price indexes that correct for various compositional effects. However, a comparison of average prices based on Norwegian Mapping Authority data and Real Estate Norway's hedonic price index shows that price developments in 2020 in Oslo and the rest of Norway are fairly similar for the two price measures.<sup>8</sup>

In the remainder of this paper, we begin in Section 2 by assessing the effect of interest rate cuts and residential construction on house prices in Oslo and the rest of Norway. Empirical models indicate that a lower lending rate has been an important contributor to the rise in house prices during the pandemic, while a lower lending rate may help explain the particularly high house price inflation in the capital. In Section 3, we analyse housing market developments by dwelling type and find considerable difference in price changes and turnover growth. The findings indicate a shift in demand from flats to detached houses, especially in Oslo. We also examine price developments in and around Oslo in Section 4 and show that house price inflation has been particularly high in the areas surrounding the capital. Dwellings outside of Oslo are typically larger than those in Oslo, and the findings indicate that the Covid pandemic may have led to a shift in demand towards larger dwellings.

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<sup>5</sup> Transaction registration is not obligatory in Norway, which means that some housing transactions are not captured in our data set. However, the vast majority of housing transactions are registered and more dwellings are registered than are sold through the web portal Finn.no. Our data set therefore contains more transactions than the transaction volume reported in the statistics from Real Estate Norway, Eiendomsverdi and Finn.no.

<sup>6</sup> Transaction data from Real Estate Norway, Eiendomsverdi and Finn.no are based on the date of the sale/purchase. Developments in Norwegian Mapping Authority data track fairly closely the number of sold dwellings and prices through 2020, only with a two-month lag. Statistics Norway has previously compared similar data and found a lag of two to three months based on housing transactions in 2016.

<sup>7</sup> We define price change as the increase/decrease in the average purchase price, ie the price the purchaser paid for the dwelling as reported to the Norwegian Mapping Authority.

<sup>8</sup> While month-to-month price changes vary over the two price measures, the differences are smoothed when analysing developments over somewhat longer horizons. Between 2015 and 2020, house prices rose by 34 percent according to Real Estate Norway's hedonic price index and by 33 percent according to average prices based on Norwegian Mapping Authority data.

## 2. Low interest rates and residential construction explain much of the rise in house prices

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When the Covid pandemic hit Norway and strict measures were implemented to contain it, the policy rate was 1.5 percent. Norges Bank reduced the policy rate in three steps, and since May 2020, the policy rate has been zero percent. As a result, the average residential mortgage rate fell from 3.0 percent in 2020 Q1 to 1.9 percent in 2020 Q4. Lower interest rates make servicing mortgage debt less expensive, while reducing the return on some alternative investments. A low interest rate level makes owning a home more attractive and therefore contributes to higher house price inflation.

A number of empirical studies find a stronger effect of interest rate changes in Oslo than in the rest of Norway (see eg Hov (2021) and Midtgaard (2019)). In an analysis from Norges Bank, the effect of interest rate changes on house prices is estimated in a SVAR model.<sup>9</sup> Its findings show that a temporary 1.5 percentage point reduction in the policy rate will increase house prices nationally by around 9 percent in the course of a year. If the house price in the model is replaced by house prices in Oslo rather than house prices in Norway as a whole, the effect increases to 12 percent.<sup>10</sup> If we start with the 12-month change in house prices in March 2021, this exercise implies in slightly simplified terms that the interest rate reduction can explain about  $\frac{3}{4}$  of the price rise both in Oslo and on a nationwide basis. This indicates that the difference in house price inflation between Oslo and Norway as a whole through the Covid pandemic is approximately as expected based on the interest rate reduction and differences in interest rate sensitivity.

There may be several reasons why house prices in Oslo react more strongly to a lower interest rate than house prices in the rest of Norway. One possible explanation is the homeowners in Oslo hold more debt and thus see a greater reduction in interest payments when the lending rate is lowered. This can be illustrated by a simple calculation. Tax data from 2018 show that on average, homeowners in Oslo held nearly NOK 600 000 more in mortgage debt than in the rest of the country (Table 1). A 1.1 percentage point reduction in the lending rate means a

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<sup>9</sup> See box on page 42 of [Monetary Policy Report 2/21](#) which presents an updated SVAR analysis based on Robstad (2018).

<sup>10</sup> The analysis was performed by Ørjan Robstad.

reduction in interest payments for homeowners in the capital that is NOK 6 000 more than for homeowners in the rest of the country.

At the same time as interest payments have fallen the most for homeowners in Oslo, the average house price has also risen by around NOK 130 000 more in Oslo than in the rest of Norway. If we assume that this entire price increase is debt-financed, the price increase only implies an increase in interest payments of around NOK 2 500. In sum, it can be assumed that homebuyers in Oslo have receive a net reduction in interest payments relative to the rest of the country, compared with an unchanged lending rate and house price.<sup>11</sup>

*Table 1 Debt (excluding student loans) held by homeowners in 2018 and estimated reduction in interest payments. In NOK rounded to the nearest thousand*

	Oslo	Rest of Norway	Difference
Average debt	2 304 000	1 731 000	573 000
Reduction in interest payments from a 1.1 percentage point lower lending rate	25 000	19 000	6 000

Sources: Statistics Norway and Norges Bank

Price rises in Oslo may be higher given increased demand owing to a less flexible supply of new housing, due, for example, to more limited availability of building lots or stricter regulation, in addition to higher mortgage debt.<sup>12</sup> Furthermore, a higher investor share in Oslo might help amplify the interest rate effect on house prices, if buy-to-let investors are more interest rate-sensitive than other homebuyers.

A low level of residential construction alone may have been an important reason for the rapid rise in house prices in Oslo. Since 2005, fewer housing units have been built in Oslo than the increase in household formation (see Mæhlum, Pettersen and Xu (2018)). This suggests a construction shortfall, which has likely contributed to the rapid rise in house prices over a longer period. Higher house prices normally lead to an increased housing supply, since residential construction becomes more profitable. However, historically there has been a negative correlation between house price inflation and the

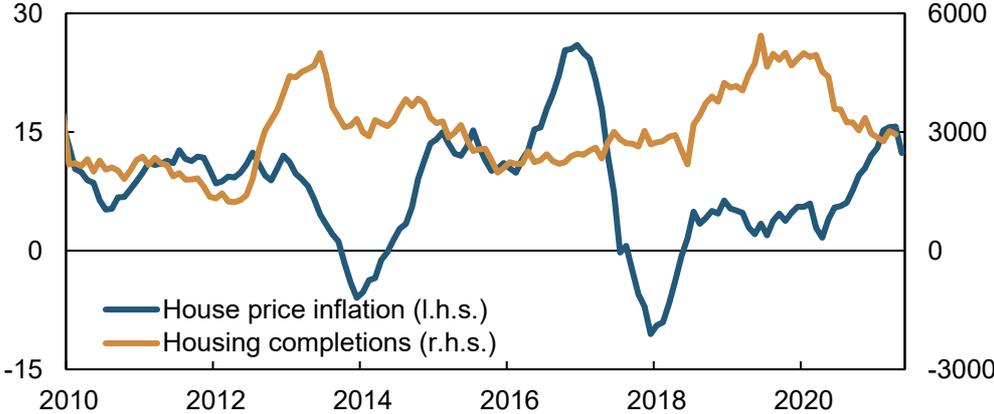
<sup>11</sup> This simple calculation exercise does not take account of factors such as the tax deductibility of interest payments or the fact that the lending rate is expected to rise ahead.

<sup>12</sup> Aastveit and Anundsen (2017) have shown that interest rate cuts in the US result in a greater increase in house prices in areas where housing supply is limited than in other areas. Housing supply is typically limited in cities because they are already densely built-up and/or geographical conditions and regulation limit residential construction.

number of housing completions in Oslo (Chart 2).<sup>13</sup> This may be because it takes time, usually several years, between the time a homebuilder finds a suitable lot and completion. A shortfall of new housing in one period may thus help push up house prices before residential construction activity eventually picks up. After the sharp rise in house prices in 2016, residential construction in Oslo increased, while the number of housing completions did not peak until 2019. House price inflation had then been low for a couple of years, and there were fewer housing starts in this period. Through 2020, the number of housing completions fell substantially, which has likely contributed to the increased price pressures in the capital.

In the rest of Norway the number of housing completions also fell through 2020, but the decline was clearly less pronounced than in Oslo. The supply of new housing therefore helps explain why house price inflation has been higher in the capital than in the rest of the country.

Chart 2 House prices (12-month change) and number of housing completions (total past 12 months). Oslo. Percent. January 2010 – May 2021



Sources: Eiendomsverdi, Finn.no, Real Estate Norway and Statistics Norway

<sup>13</sup> The correlation between the two series is -0.3 in the period between 2004 and 2020.

### 3. Higher demand for larger dwellings

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The effects of low interest rates and housing construction can vary not only across regions, but also by dwelling type. The same applies to the effects unique to the Covid pandemic. The lockdowns and Covid-related restrictions, the numerous public support schemes and changes in consumption patterns may have had effects that differed across segments of the housing market. In this section, we examine more closely developments in the housing market by dwelling type. We divide the housing stock into three types<sup>14</sup>:

- Flats (in blocks of flats)
- Small dwellings (terraced houses, semi-detached houses)
- Detached houses

Flats account for the largest share of the housing stock and turnover in the largest cities, while small dwellings and detached houses predominate in smaller cities and less urbanised areas. In Norway as a whole excluding Oslo, detached houses account for the largest share of the housing stock. In Oslo, flats account for over 75 percent of the housing stock and 87 percent of the turnover.

In order to better understand housing market developments during the pandemic year 2020, we define two time periods:

- i) Lockdown: comprises registrations in the Norwegian Mapping Authority data over the months May–July. The registrations are assumed to cover transactions during the initial months after strict containment measures were introduced in March 2020.
- ii) Recovery: comprises registrations in the Norwegian Mapping Authority data over the months from August to the end of 2020. The registrations are assumed to cover transactions from June, ie after the first lockdown, when the most far-reaching Covid-related restrictions were lifted and the housing market showed a renewed rapid rise.

Because the housing market is characterised by seasonal variation through the year, in this analysis, we examine developments through the pandemic year 2020 compared with the same period in 2019.

As discussed in Section 1, house prices in Oslo as a whole fell during the lockdown period. Flats account for most of the housing transactions

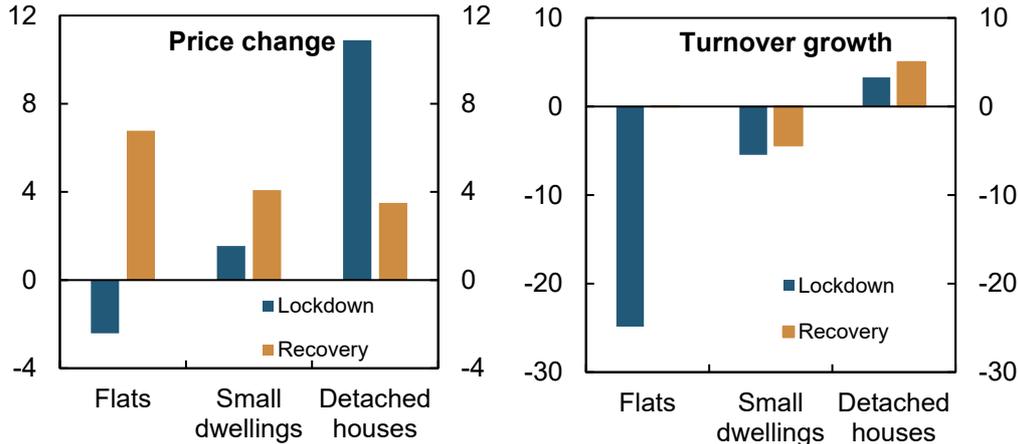
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<sup>14</sup> Dwellings in collective housing, in other building types such as commercial buildings and dwellings where dwelling type is not reported have been excluded. These dwellings account for 2 percent of all dwellings in Oslo and close to 5 percent in the rest of Norway.

in Oslo and dominate overall house price developments. Prices for flats fell considerably, while prices for small dwellings and especially detached houses rose compared with the same period the previous year (Chart 3a).<sup>15</sup> Turnover growth during lockdown supports the observation that the market was particularly weak for flats and somewhat positive for detached houses (Chart 3b).

During the recovery period, there were smaller differences in price changes by dwelling type. The price fall for flats during lockdown was followed by a fairly solid rise, while the rise in prices for detached houses was more moderate during the recovery period. However, turnover continued to increase for detached houses, while for flats, turnover during the recovery period was unchanged from the same period in 2019. For 2020 as a whole, the rise in prices was highest for small dwellings and detached houses and lowest for flats.

Chart 3a and b Change in average price (purchase price) and turnover growth between 2019 and 2020 by dwelling type. Oslo. Percent



Sources: Norwegian Mapping Authority and Norges Bank

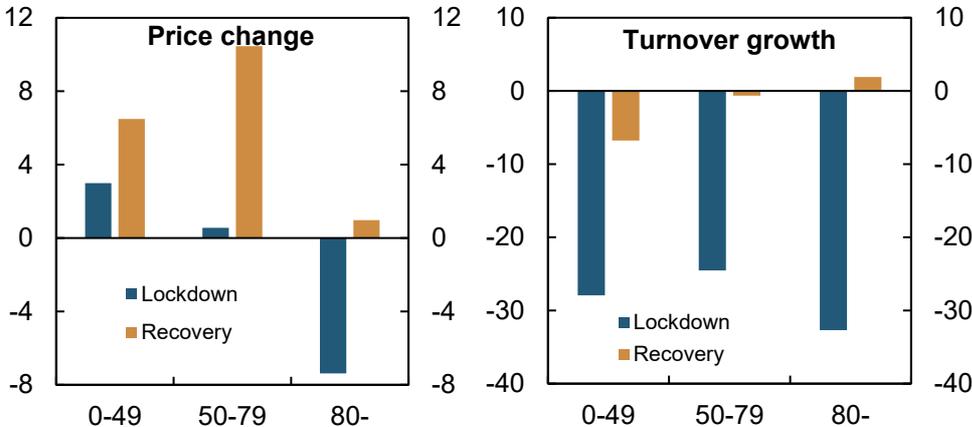
When we look more closely at flats by size, we also find considerable differences in price changes during lockdown (Chart 4a). While the price change was positive for the smallest and medium-sized flats, there was a marked price fall for the largest flats of over 80 square metres. The largest flats also showed a virtually zero price change during the recovery period, while the smallest flats showed a solid price rise. As a result, the average price of the largest flats in 2020 as a whole fell, while the average price of smaller flats rose. The fall in

<sup>15</sup> We define price change as the increase in the average purchase price, ie the price reported to the Norwegian Mapping Authority that the purchaser paid for the dwelling. We have also performed analyses based on the increase in the average price per square metre. The findings are very similar, but the rise in prices for detached houses turns out somewhat less pronounced when adjusted for the number of square metres. This is due to an increase in the average size of detached houses sold in 2020.

turnover was also most pronounced for flats over 80 square metres, even though the differences here were smaller (Chart 4b).

Developments in prices and turnover point to a shift in demand from flats to detached houses in the capital, where there has been a marked preference for detached houses over larger flats. There was a decline in demand for the largest flats in all age groups, but the decline was especially pronounced among older homebuyers.<sup>16</sup> Older homebuyers may have been most likely to prefer maintaining social distancing during the pandemic and thus to have deferred a home purchase.<sup>17</sup>

*Chart 4a and b Change in average price (purchase price) and turnover growth between 2019 and 2020 by size of flats. Oslo. Percent*



Sources: Norwegian Mapping Authority and Norges Bank

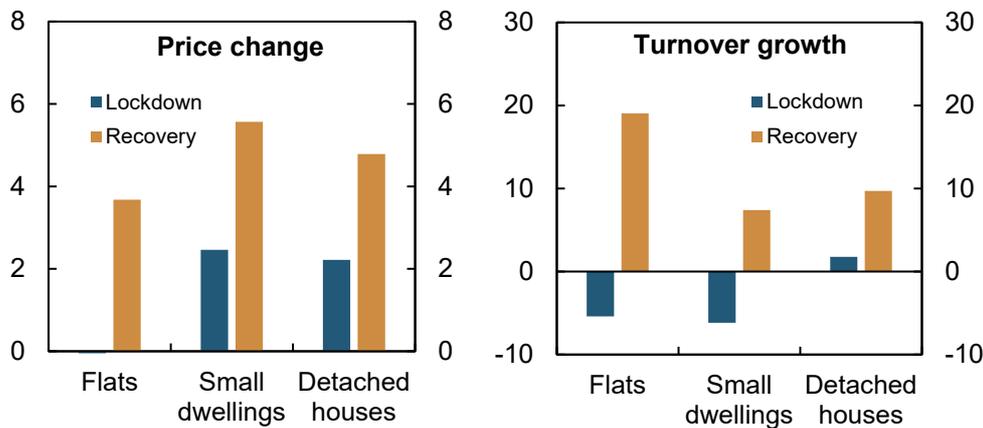
We observe some shift towards larger dwellings in the rest of Norway as well, but the shift is less distinct than in the capital. The differences in price changes by dwelling type are clearly smaller outside of Oslo (Chart 5a). For flats, the price change is close to zero during the lockdown, while the price change for detached houses is positive. During the recovery phase, price changes are fairly similar across the three dwelling types. Also with regard to turnover growth, there are smaller differences in Norway excluding Oslo, but also there, turnover for flats fell and rose for detached houses during lockdown (Chart 5b).

In Norway excluding Oslo, flats account for a considerably smaller share of the housing stock, and developments across flat sizes differ from those in the capital. The price change for the largest flats was positive during lockdown and somewhat higher than the price change for small and medium-sized flats. This may be because large flats are

<sup>16</sup> While homebuyers under age 50 gave greater priority to size and purchased large flats during the pandemic year, homebuyers over age 50 purchased large flats to a lesser extent.  
<sup>17</sup> Early in the pandemic it became clear that older persons were particularly at risk of serious illness and death. In particular, the risk of transmission in connection with showings, relocating etc may have influenced older homebuyers to defer a purchase.

less of a substitute for detached houses outside of Oslo or because the shifts owing to the Covid pandemic are, on average, more pronounced in Oslo than in the rest of Norway.

*Chart 5a and b Change in average price (purchase price) and turnover growth between 2019 and 2020 by dwelling type. Norway excluding Oslo. Percent*



Sources: Norwegian Mapping Authority and Norges Bank

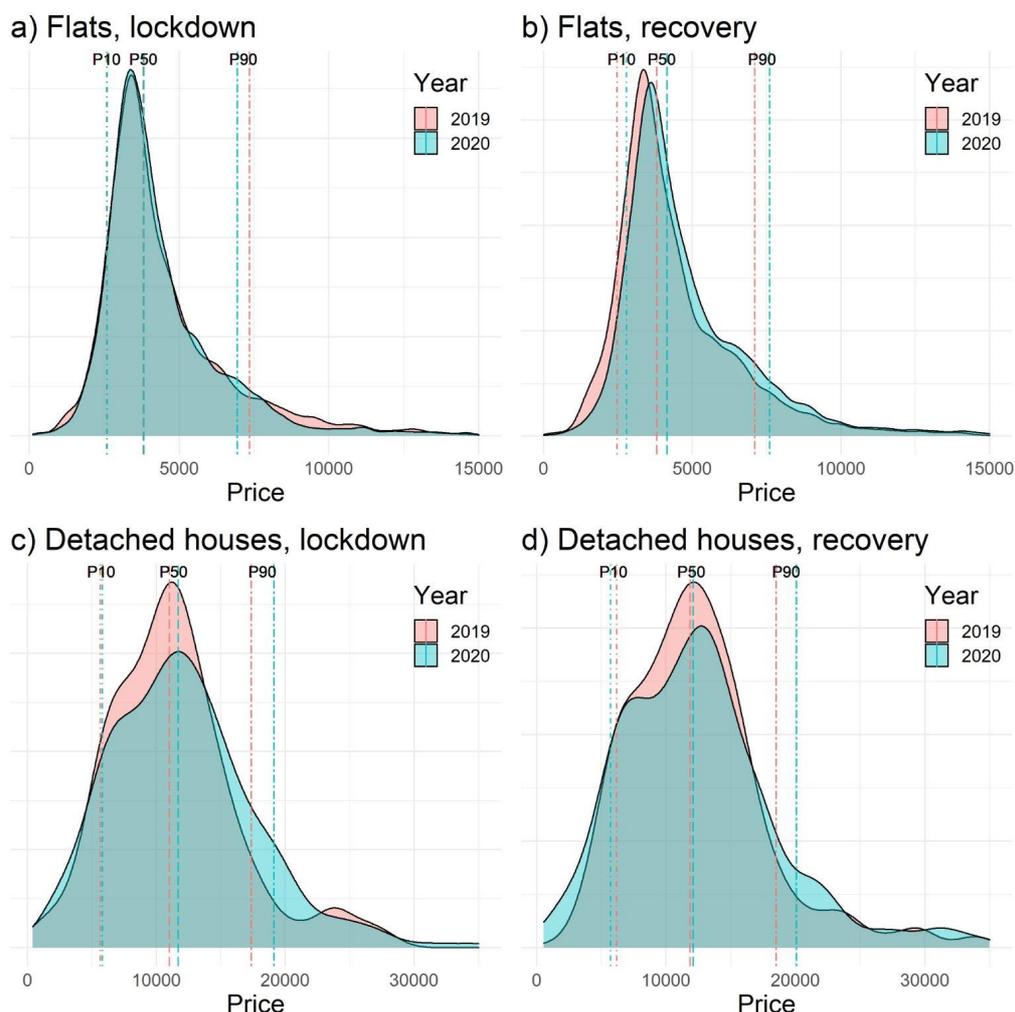
So far, we have only looked at average prices, but the distribution of prices can shed further light on the shift in demand from flats to detached houses in Oslo. Chart 6 shows the distribution of prices in 2019 and 2020 for flats and detached houses during lockdown and recovery periods. From left to right, the broken vertical lines mark the price of the dwelling at the top of the 10% least expensive (10th percentile), the price of the dwelling at the midpoint of the distribution (50th percentile or median) and the price of the dwelling at the bottom of 10% most expensive (90th percentile).

As we have mentioned earlier, the average price for the largest flats in Oslo fell during lockdown, and the largest flats are typically the most expensive. This is reflected in Chart 6a, where the 90th percentile in the period between 2019 and 2020 falls markedly, while the 10th and 50th percentiles remain unchanged. During the recovery period, however, there is a general shift to the right in the price distribution for flats (Chart 6b). In this period, the 10th, 50th and 90th percentiles increase, and flats in all price segments thus contribute to a faster rise in prices. Turnover for flats is high, and the change in the distribution of flats in the period between 2019 and 2020 therefore indicates a shift for a large number of dwellings.

For detached houses, much of the change in prices is driven by expensive houses in both lockdown and recovery periods (Charts 6c

and 6d).<sup>18</sup> During lockdown, the 10th percentile remains unchanged while the median increases moderately. However, the 90th percentile increases by almost NOK 2 million. In other words, expensive detached houses make a strong contribution to the sharp rise in prices for detached houses in this period. The more expensive houses also drive up prices in the recovery period. While the 10th and 50th percentile fall or remain approximately unchanged, the 90th percentile continues to increase.

Chart 6a, b, c and d Price distribution (purchase price) for different periods in 2019 and 2020. Oslo. In thousands of NOK



Sources: Norwegian Mapping Authority and Norges Bank

Price and turnover developments across dwelling types indicate a shift in demand from large flats to detached houses, which is consistent with the hypothesis that the Covid pandemic may have changed people's housing preferences. Extensive use of remote working can lead to an increased need for more space, while living farther from the workplace

<sup>18</sup> Turnover is far higher for flats than for detached houses, which makes the change in volume between 2019 and 2020 distributions not directly comparable across housing types.

is perceived as less of a disadvantage. Reduced consumption opportunities may have also freed up more income for housing, and Covid-related restrictions in the form of closed restaurants, shops, cinemas etc may have made areas in the city centre less attractive during the pandemic.

The shifts in demand towards larger dwellings may be part of a long-term trend or may reflect more cyclical factors, such as homebuyers' propensity to buy larger dwellings when housing market activity is particularly high. There is little evidence to suggest that the shifts reflect a long-term trend. Over the past ten years, the total rise in prices for detached houses and for flats has been fairly similar, while the rise in turnover has been highest for flats in both Oslo and the rest of Norway.<sup>19</sup> To investigate whether the shifts also reflect more cyclical factors, we make a comparison with the previous housing market upturn. We see some of the same developments in 2016 as now in the form of low net migration to Oslo and a relatively rapid rise in prices for detached houses in the capital. However, out-migration from Oslo is stronger now, and the shift in demand from large flats to detached houses is more pronounced.<sup>20</sup> It therefore appears likely that the Covid pandemic has contributed to a change in housing preferences by making larger dwellings more attractive.

## 4. Fastest rise in prices in areas surrounding Oslo

Our findings so far point to a shift in demand towards larger dwellings during the pandemic. This applies particularly in Oslo, but also in the rest of Norway. In this section, we wish to examine whether there are also shifts in where people prefer to live.

In 2020, there was a clear change in the migration pattern in Oslo, with net out-migration occurring for the first time in 20 years (Chart 7). Net out-migration from Oslo was 1 800 persons in 2020, compared with average annual net in-migration of approximately 4 500 persons over

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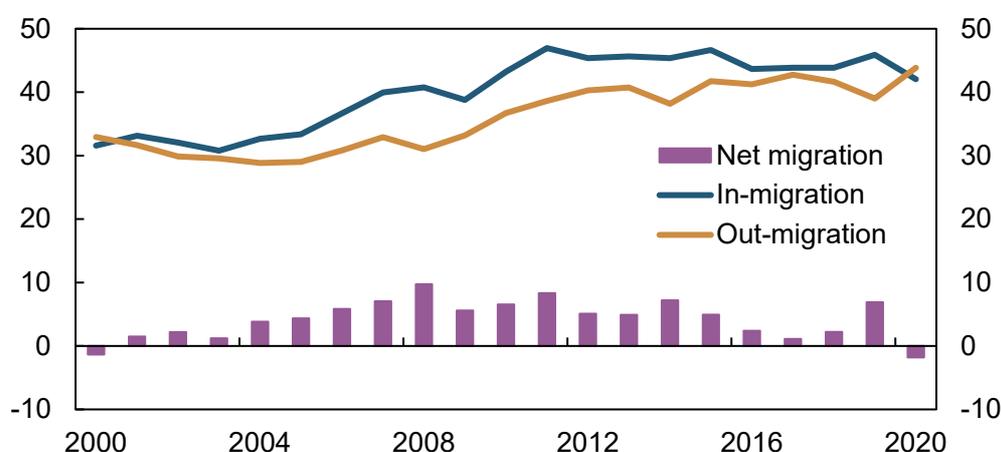
<sup>19</sup> House prices in Oslo have roughly doubled in the period between 2010 and 2020 for all housing types (flats, small dwellings and detached houses), although the rise in prices has been approximately 65 percent in the same period for all housing types elsewhere in Norway. In the same period, turnover has increased most for flats, followed by small dwellings and then detached houses. The growth in turnover partly reflects the fact that more flats than detached houses were built over the period. At the same time, the number of sales relative to the housing stock (turnover rate) increased for most housing types both in and outside of Oslo. The exception is detached houses in Oslo, where the turnover rate has followed a downward trend from 2012 but an increase in 2020 brought the turnover rate back up to the 2010 level.

<sup>20</sup> In 2016, the rise in prices for detached houses was somewhat faster than the rise in prices for flats, although the difference was fairly modest. Turnover growth was negative for both detached houses and flats. The rise in prices for large flats was approximately the same as for small flats, and the change in the number of sales was close to zero. During the "lockdown period" in 2016, ie transactions likely made in the period between March and April, price and turnover developments were the weakest for the smallest flats.

the past 20 years. The change in 2020 reflects both lower in-migration and higher out-migration compared with recent years and the level of out-migration was particularly high towards the end of 2020. At the same time, approximately 40 percent of out-migrants from Oslo relocate to neighbouring municipalities, with a further almost 25 percent moving to other municipalities in Viken.<sup>21</sup>

The higher out-migration from Oslo proper is expected to have a particular impact on the housing market in the capital and nearby areas. In this section, we therefore focus on the housing market in the Oslo area.

Chart 7 Net migration to Oslo. In thousands of people. 2000 – 2020



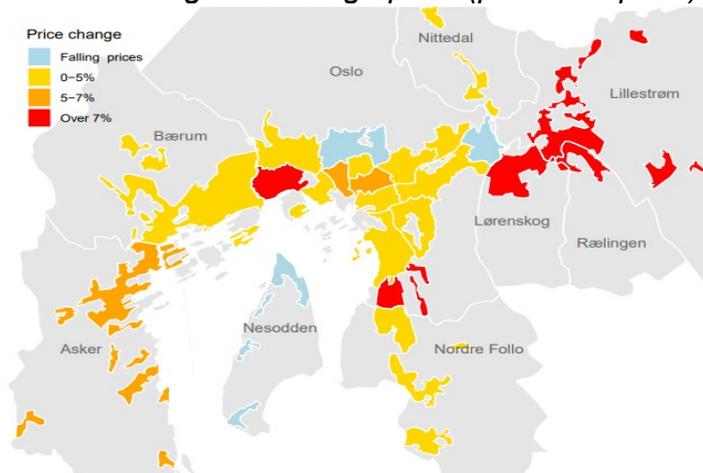
Source: Statistics Norway

Charts 8 and 9 show the rise in prices and turnover in densely built-up areas<sup>22</sup> around Bunnefjorden by municipality and by urban districts of Oslo proper. There are substantial differences in both turnover growth and the rise in prices, within both Oslo proper and the Oslo area. In 2020, turnover growth was particularly high in Nesodden, Lørenskog, Bærum and Nittedal. Turnover growth was also strong in Lillestrøm and northwestern Oslo. At the same time, the number of dwellings sold fell in several urban districts in Oslo and in Asker. On the other hand, the rise in prices was fastest in Søndre Nordstrand, Lillestrøm, Lørenskog and Rælingen. The combination of rapid rises in prices and turnover in areas such as Lørenskog and Lillestrøm suggests increased housing demand in those areas.

<sup>21</sup> Data from Statistics Norway show that approximately 40 percent of out-migrants from Oslo that move elsewhere in Norway relocate to the neighbouring municipalities Rælingen, Lillestrøm, Nordre Follo, Lørenskog, Nesodden, Nittedal, Asker and Bærum. This share has been fairly stable over the past few years.

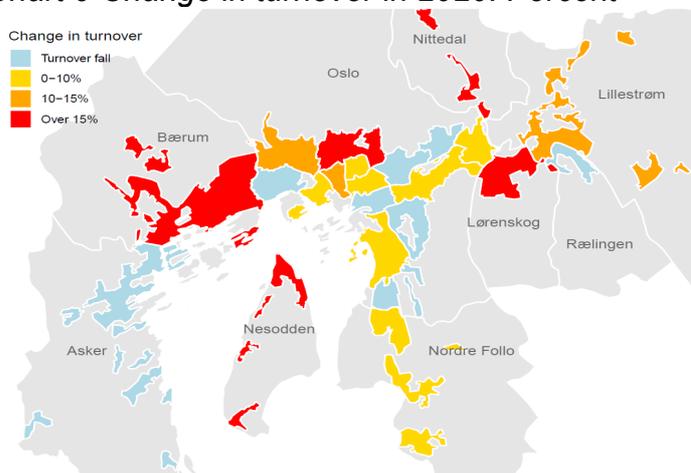
<sup>22</sup> Densely built-up areas are defined as residential areas where the distance between dwellings does not exceed 50 metres.

Chart 8 Change in average price (purchase price) in 2020. Percent



Sources: Norwegian Mapping Authority and Norges Bank

Chart 9 Change in turnover in 2020. Percent



Sources: Norwegian Mapping Authority and Norges Bank

Overall, we find that both the change in house prices and turnover growth in 2020 were more pronounced outside of Oslo than in Oslo proper. In 2020, the overall rise in prices in the areas surrounding Oslo was 5.5 percent, compared with 4.3 percent in Oslo proper.<sup>23</sup> At the same time, turnover in the areas outside Oslo increased by 7 percent, while falling by approximately 4 percent in Oslo proper. Since dwellings are typically larger outside Oslo than in Oslo proper, the shifts in home purchases and migration patterns may indicate a growing desire for more space.

To better understand the factors behind the overall growth in average house prices in the Oslo area, we examine how price changes in an area have impacted the overall rise in prices (price effect) and how changes in turnover in an area have impacted the overall rise in prices

<sup>23</sup> The areas surrounding Oslo comprise Rælingen, Lillestrøm, Nordre Follo, Lørenskog, Nesodden, Nittedal, Asker and Bærum municipalities (Charts 8 and 9).

(compositional effect).<sup>24</sup> The effects of changes in turnover depend on both the change in turnover and the level of house prices in the area, and the effect will be pronounced in expensive areas with high turnover growth and in less expensive areas with low turnover growth.

The rapid rise in prices in Lillestrøm made the strongest contribution to the increase in total increase in the average house price in the Oslo area in 2020 (Chart 10). If the rise in prices in Lillestrøm had been equal to the average rise in prices, the total rise in prices would have been 0.5 percentage point lower. However, the contribution to the overall rise in prices is pulled down by about 0.2 percentage point because prices in Lillestrøm are relatively low while turnover growth was high (compositional effect).<sup>25</sup>

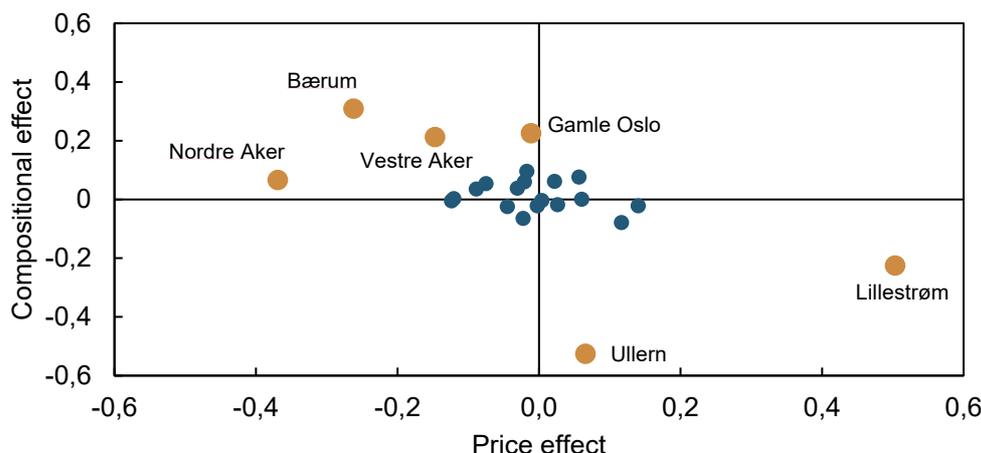
The rise in prices in Bærum and Vestre Aker was slower than the average for the Oslo area, but higher turnover growth and a high price level in these areas helped lift the overall rise in prices. Gamle Oslo also contributed to pushing up the rise in prices somewhat, although due to a combination of low turnover growth and low prices. Turnover growth in Ullern was also low, but the high price level here pulled down the total rise in prices. Nordre Aker also contributed to pulling down the overall rise in prices, but this was due to a slower-than-average rise in prices. The other urban districts and municipalities (blue dots in Chart 9) made less of a contribution to the overall rise in prices, whether by pushing it up or pulling it down.

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<sup>24</sup> We examine overall growth in average purchase price based on the figures behind Chart 8. The price effect is defined as the change in the total rise in prices when the rise in prices in a geographical subdivision is set equal to the wider average rise in prices. The price effect will be highest for large areas showing a rapid rise in prices. Correspondingly, we define the compositional effect as the change in the total rise in prices when turnover growth in a geographical subdivision is set equal to the wider average growth in turnover. The compositional effect will be high in expensive areas with high turnover and in more reasonably priced areas with low turnover growth.

<sup>25</sup> The sum of price and compositional effects in an area is approximately equal to an area's overall contribution to the total rise in prices in the Oslo area. However, deviations may occur as a result of interactions between the two.

Chart 10 Different areas' contribution to the overall change in the average price in the Oslo area in 2020.<sup>1</sup> Percentage points



<sup>1</sup> The sum of price and compositional effects determines whether an area's contribution to the overall rise in prices is positive or negative.

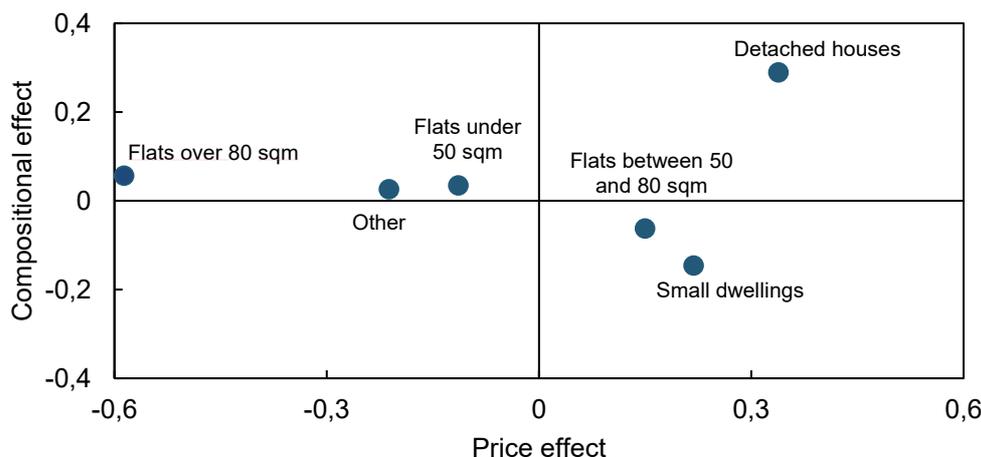
Sources: Norwegian Mapping Authority and Norges Bank

In other words, nearly all areas contribute to the rapid rise in house prices in the Oslo area. However, the most significant contributions to the rise in prices come from moderately priced areas less close to the city centre such as Lillestrøm, Søndre Nordstrand and Rælingen, reflecting the rapid rise in prices in those areas. However, relatively expensive areas less close to the city centre, such as Bærum and Vestre Aker also make positive contributions owing to strong turnover growth.

Our findings are consistent with the desire for more space during the Covid pandemic, which may have resulted in greater willingness to live somewhat further from the city centre. Alternatively, it is conceivable that high out-migration from Oslo is the result of the rapid rise in prices, as net migration to Oslo was low during the previous housing market upturn in 2016. Nevertheless, out-migration is now clearly more pronounced. At the same time, the rise in house prices in 2016 was higher in Oslo proper than in the surrounding areas.

Finally, we decompose the rise in prices by dwelling type and buyer group. When we look at dwelling types, including flats by size, the largest contribution to the overall rise in prices in the Oslo area comes from detached houses (Chart 11). Detached houses contribute to the overall rise in prices because of the rapid rise in prices (price effect) and the combination of strong turnover growth and high price levels (compositional effect). In isolation, the largest flats of more than 80 square metres pull down the rise in prices because of the slow rise in prices for these flats. These findings are consistent with the shift in demand from large flats to detached houses in Oslo, as shown in Section 3.

Chart 11 Different types of dwellings' contribution to the overall change in the average price in the Oslo area in 2020.<sup>1</sup> Percentage points



<sup>1</sup> The sum of price and compositional effects determine whether an area's contribution to the overall rise in prices is positive or negative.

Sources: Norwegian Mapping Authority and Norges Bank

When we look at buyer groups, we investigate which age groups make the greatest contribution to the rise in prices and the extent to which corporate purchases contribute to the rise. We assume that corporate entities purchase dwellings primarily for investment purposes. Investment may also be the purpose of some home purchases registered under private individuals, although for most personal purchases the purpose is likely to live in the home.

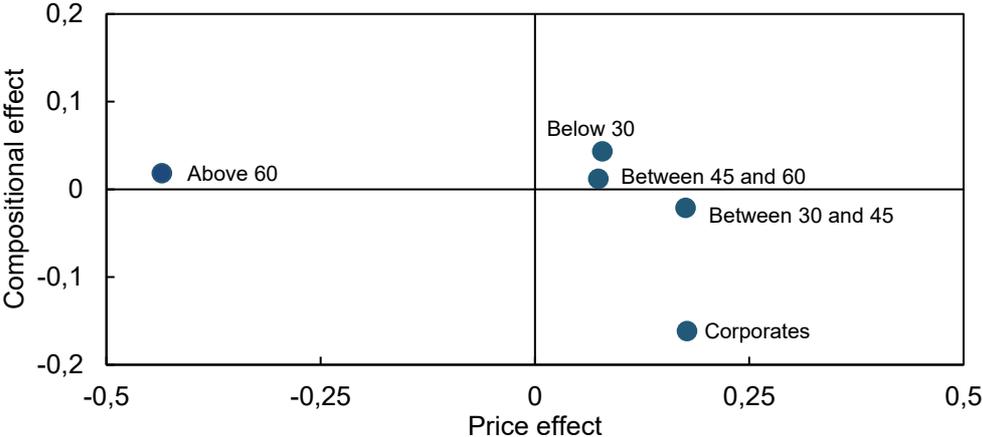
Home purchases by households aged between 30 and 45 account for the largest contribution to the rise in prices, reflecting a sharp rise in the average price for these purchases in 2020 compared with purchases by the same age group in 2019 (Chart 12). This must be viewed in the light of a rapid rise in prices for detached houses, which are purchased by this age group to a greater extent than by the youngest and oldest households. This age group is probably also particularly influenced by the need for more space owing to extensive use of remote working, while the opening hours of daycare centres and schools have been shortened during the Covid pandemic.

Dwellings purchased by buyers aged over 60 contribute to pulling down the overall rise in prices. This reflects a slow rise in the average price for these home purchases in 2020 compared with the home purchases made by the same age group in 2019 (Chart 12). The over-60s purchase large flats to a greater extent than younger age groups do. A decline in this age group's purchase prices is therefore consistent with a weak rise in prices for large flats.

In 2020, the overall contribution of corporate purchases was neither a faster nor slower rise in house prices in the Oslo area. In isolation,

corporate entities pushed up the rise in prices owing to the sharp increase in the average price for their purchases in 2020. At the same time, corporate entities purchased fewer dwellings in 2020 than in 2019, which pulled down the overall rise in prices since corporate entities typically purchase dwellings that are more expensive than the average. All told, their contribution to the overall rise in prices is small, which suggests that investors were not an abnormally large factor in fuelling the hot housing market in the Oslo area in 2020.<sup>26</sup>

*Chart 12 Different buyer groups' contribution to overall change in the average price in the Oslo area in 2020.<sup>1</sup> Percentage points*



<sup>1</sup> The sum of price and compositional effects determine whether an area's contribution to the overall rise in prices is positive or negative.  
 Sources: Norwegian Mapping Authority and Norges Bank

<sup>26</sup> Private individuals can also purchase dwellings for investment purposes. However, the data do not include information on the purpose of the home purchase.

## 5. Conclusion

Lower lending rates and a reduced supply of new housing have contributed to high house price inflation through the pandemic year 2020 and may also have helped explain why house price inflation has been especially high in Oslo. Analyses based on registered property transactions recorded by the Norwegian Mapping Authority point to reduced demand for larger flats and increased demand for detached houses. This shift in demand is particularly evident in and around Oslo. At the same time, the rise in prices has been faster in the areas surrounding Oslo than in Oslo proper, and there has been net out-migration from Oslo for the first time in 20 years. Our findings indicate that the Covid pandemic may have changed housing preferences somewhat and increased demand for larger dwellings and dwellings in areas less close to the city centre.

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