



2023 Housing market outlook

Price dip and interest rate peak ahead. Significantly higher prices likely in the long term. Refurbishment costs are taken into account

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The boom is over. House prices are falling. Some indices show significant price declines, others are very restrained. The price expectations of potential buyers and sellers diverge. The number of transactions is very low.

At current financing costs, prices would probably have to fall by about 20% from their peak to return to positive cash flow. However, five key arguments lead us to expect only a price dip. Negative real interest rates, inflation protection through real estate, rising rental growth and most importantly a high fundamental supply shortage. In addition, real house prices have already fallen very sharply due to the surge in inflation.

Well-known price indices probably send different signals mainly due to different methods (monthly or annual basis, moving averages, and hedonic indices). The non-hedonic indices fall more sharply than the hedonic ones. Obviously, more properties in need of refurbishment have been changing hands in recent months.

Housing remains in short supply. The interest rate shock is dampening new construction. The wave of refugees from Ukraine and the structurally high influx, which again exceeds 300,000 people per year as before the pandemic, are increasing demand.

Fundamental supply shortages in the eleven metropolitan areas: Our projects suggest an end to the bottlenecks in Bremen and Nuremberg. Interest rate sensitivity is also likely to be relatively high there. In Düsseldorf and Hamburg, the bottlenecks will end in the next few years. In Berlin, Frankfurt, Hanover, Heidelberg, Cologne, Leipzig, Stuttgart, and Munich, on the other hand, they will likely continue to exist for many years to come.

Monetary policy is currently influenced by two arguments that provide contradictory implications, at least in the short term. Persistently high inflation, which suggests interest rate hikes, increasing macroprudential risks in the short term. We expect the interest rate peak later this year. This could be the starting signal for higher prices again.

Politically and socially, CO₂ emissions from buildings are increasingly coming into focus. In recent quarters, prices have already diverged between properties with low and high emissions. As the supply of energy-efficient buildings is likely to remain scarce, but demand is rising due to both regulatory requirements and increasing social significance, we expect even greater price divergence in the long term.



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1. Overview of all analyses

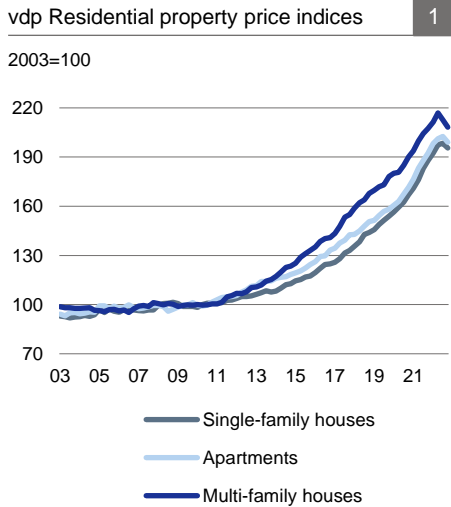
In this annual outlook, we discuss the current house price dip. To this end, we analyse key price indices and compare house prices, rents and ancillary costs in German cities with European and global cities. We also analyse the fundamental supply shortage for both the German housing market and the German regions. We then present our interest rate outlook. Last but not least we look at the increasing importance of climate policy and CO₂ emissions.

2. Historical and national, absolute and relative price comparisons

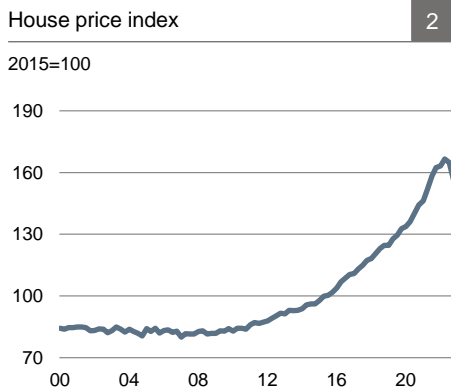
2.1 National price indices with inconsistent developments, methodological differences to be considered

Over the boom period, all price indices pointed in the same direction. Since early 2022, however, their signals have been inconsistent. Due to the price bump in 2022, the year-on-year growth rates continued to indicate further price increases for some time. For example, the press releases of the Federal Statistical Office reported further price increases until the third quarter, although the price index had already passed its peak. It was not until the fourth quarter that the price index of the Federal Statistical Office fell by 3.6% year-on-year and by as much as 5% compared with the previous quarter. The bulwiengesa data also indicated a further rise in prices, as the annual data published on December 10 are annual averages and the quarterly data are rolling four-quarter averages. In addition, transactions are only indirectly included in the time series via analysts. Higher-frequency and transaction-based time series are therefore more in focus. The monthly Europace index, for example, has been falling since the spring of 2022. From peak to trough, prices for existing homes fell by around 12%, and the index for apartments by as much as 15%. However, prices for new homes initially ran sideways and then recently picked up again. In February 2023, the most recent data point, new home prices even increased strongly by more than 2% from the previous month. All three price indices are also published as hedonic indices, which factor out differences in quality. Since the spring of 2022, these have recorded an increase of almost 5% for new houses, and a drop of more than 8% for existing houses and apartments. The hedonic price indices are thus rising more strongly or falling less. The sharp price declines in the non-hedonic price indices are evidently also due to the fact that it is primarily properties of lower quality that are changing hands. The vdp indices which are calculated exclusively on a hedonic basis confirm this statement. These indices which are published quarterly only began to fall in the second half of the year. In the metropolitan areas (A cities), apartments, single-family houses and multi-family houses fell by around 3% from their high point in the second quarter. Nationwide, prices for both single-family houses and condominiums were down by only around 1 ½%. These indices thus also support our expectation that prices will ease only slightly.

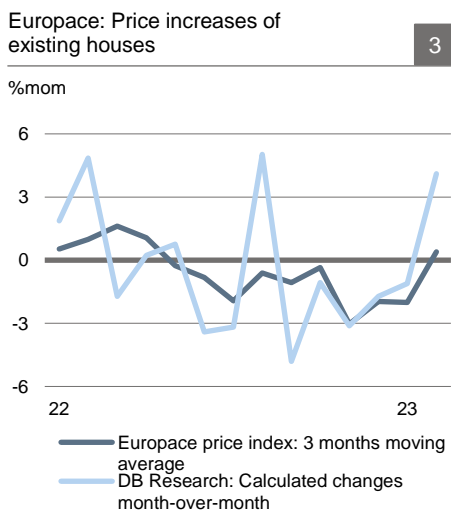
In the course of 2023, the focus is likely to be on the transaction-based indices of Europace and vdp. The hedonic indices are likely to provide a better basis for assessing developments in the coming months. In the case of the Europace indices, another methodological detail is important. They are based on moving averages. For example, the value in March is an average of transactions from January to March. If the individual monthly values are excluded, the individual



Sources: Deutsche Bank Research, vdp



Sources: Deutsche Bank Research, Federal Statistical Office



Sources: Hypoport, Deutsche Bank Research



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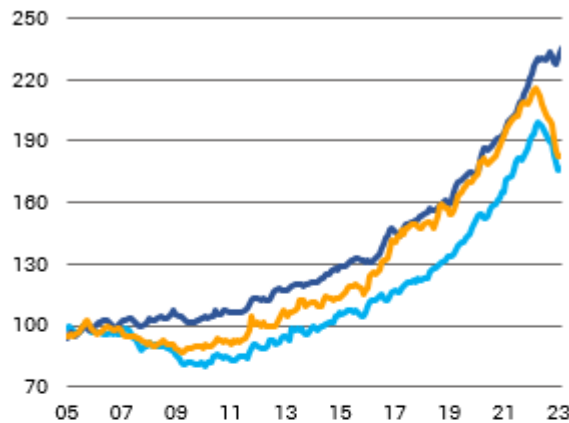
time series show strong zigzag movements, which underlines the volatile market situation.

Hedonic and non-hedonic indices of Europe

4

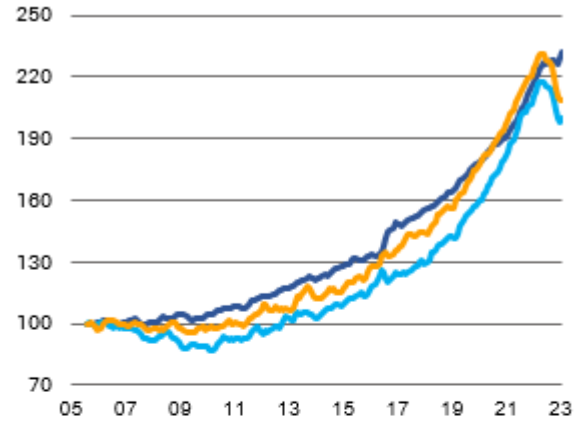
Non-hedonic indices

2005=100



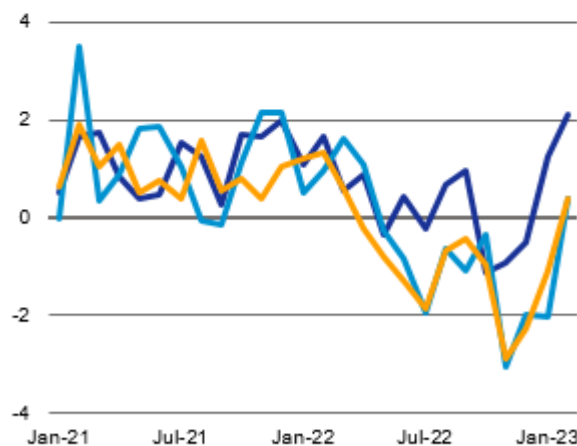
Hedonic Indices

2005=100



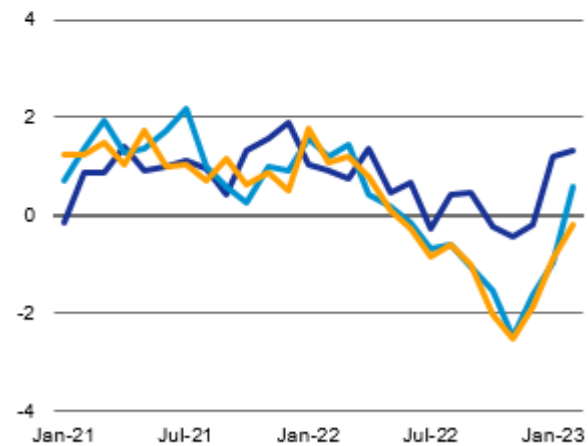
Non-hedonic indices

% mom



Hedonic indices

% mom



— New houses

— Existing houses

— Apartments

Sources: Deutsche Bank Research, Hypoport

Historically, there have been a number of market corrections, especially after long upswings. For example, according to the OECD which uses data from the Federal Statistical Office nominal house prices fell by almost 4% from peak to trough after the boom years of the 1970s. After the reunification boom in the housing market from 1995 to 2007, there was a drop of 8%. So the current market correction of 3.6% is not unusual. However, this statement does not apply to real house prices. The very high inflation in 2022 caused house prices to plunge by more than 11% yoy, the sharpest real price decline in the entire time series. House prices also fell much more sharply than real wages, which declined by 3.1% in 2022.



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Rents of multi-family houses

5



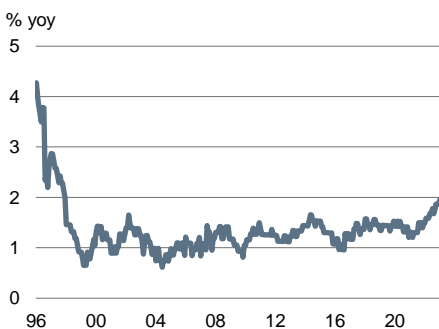
Sources: Deutsche Bank Research, vdp

Rents could rise strongly despite the strict regulatory environment

The rental housing market has received additional demand impetus both via a higher population and through the redirection of potential buyers into the rental market. According to the vdp, new contract rents for multi-family homes rose by around 6 ½% year-on-year in the fourth quarter both in the major cities and nationwide, the highest increase since the start of the series in 2004. Existing rents could also show a higher dynamic in future than in the past. For example, the difference between new leases and existing rents widened in the boom, which could increase the pressure. In addition, rents for index-linked leases rose automatically due to high inflation. Their share of all leases is likely to be small, but due to the bottlenecks analysed below, landlords are likely to be able to enforce them increasingly. Politicians are discussing capping index-linked rents. However, this discussion has only recently flared up, and there is no agreement on this in the coalition agreement. According to consumer price statistics, existing rents in March 2023 were already up 2.0% on the previous year, the highest figure since 1998 (median of the time series: 1.3%). In addition, the share of short-term rentals and furnished apartments that are not regulated by rent brakes and caps is increasing, which means that rents can rise more strongly. We therefore believe it is likely that existing rents could rise strongly on a sustained basis, at least if inflation remains structurally high.

Consumer prices: Rents

6



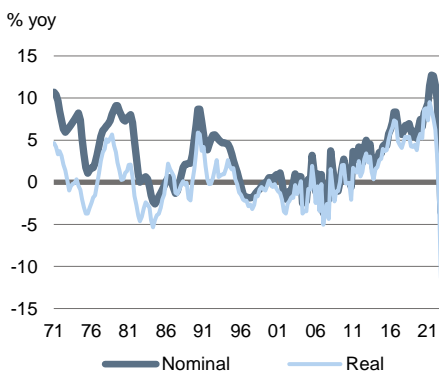
Sources: Deutsche Bank Research, Federal Statistical Office

2.2 International comparison of prices, rents, and utility costs

According to data from Numbeo Doo Munich was once again Germany's most expensive city in February 2023, at around EUR 9,300, measured by prices per square meter outside the city centre, and the fourth most expensive city in Europe. This is a drop of around EUR 400 per square meter compared with December 2021. Munich also drops somewhat in global rank. After ranking seventh, Munich is now ninth after Hong Kong, Geneva, Zurich, Seoul, Lausanne, Tel Aviv-Yafo, San Francisco and Singapore. The second most expensive German city, Frankfurt am Main, is ranked ninth in Europe and 33rd globally. Düsseldorf, Berlin, Stuttgart, Hamburg, Berlin, Heidelberg and Nuremberg are ranked 15th to 27th in Europe and 38th to 60th globally, giving these cities similar ranks to December 2021. Several other German cities are currently not listed in the database, but were in 2022. Erlangen, Hanover, Karlsruhe were ranked near 40th in Europe and near 80th globally. Nuremberg and Mannheim were ranked around 50 in Europe and were still in the top 100 globally. Dresden, Aachen and Leipzig were ranked around 90th in Europe and around 150th globally. Since average prices changed only slightly both globally and in Germany, these cities would probably be ranked similarly today.

Germany: House prices

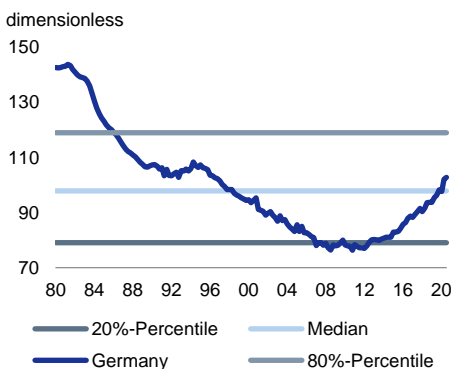
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Sources: Deutsche Bank Research, OECD

1980-2022 Price-to-income percentiles based on OECD countries

8



Sources: Deutsche Bank Research, OECD

German rents tend to be low in an international comparison, ancillary costs high

In the global ranking of the 90 cities with the highest rents, only Munich is found, in 75th place, where one has to pay almost EUR 2,000 per month for a 3-room apartment outside the city centre. This is roughly equivalent to new contract rents in other databases. More expensive cities are mainly in Anglo-Saxon countries, where rents are often low or unregulated. However, there are also a few exceptions in continental Europe, for example a number of Swiss cities such as Geneva, Zug, Zurich, Lausanne, Basel, but also Luxembourg with rents of up to EUR 3,000, and also Amsterdam, Copenhagen, and Paris with around EUR 2,000 per month. In German cities such as Berlin, Frankfurt, Freiburg, Hamburg, Düsseldorf, Heidelberg, and Darmstadt, around EUR 1,400 per month must be paid and in Stuttgart, Karlsruhe, Cologne, and Mannheim around EUR 1,200 per month. Overall, German rents can be classified as rather low in a European comparison. In contrast, utility costs for electricity, heating, cooling, water, and

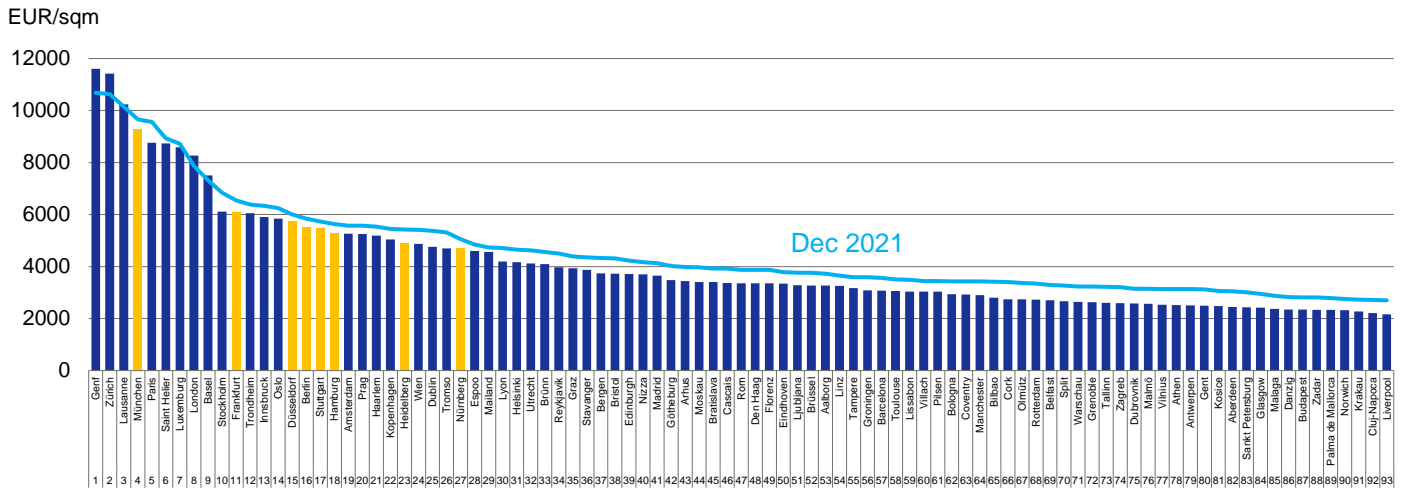


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garbage are rather high. For an apartment with 85 square meters, around EUR 300 per month must be paid in Frankfurt, Berlin, and Munich, which, according to Numbeo Doo, is only exceeded by Villach in Austria. In many other European cities, utility costs are significantly lower.

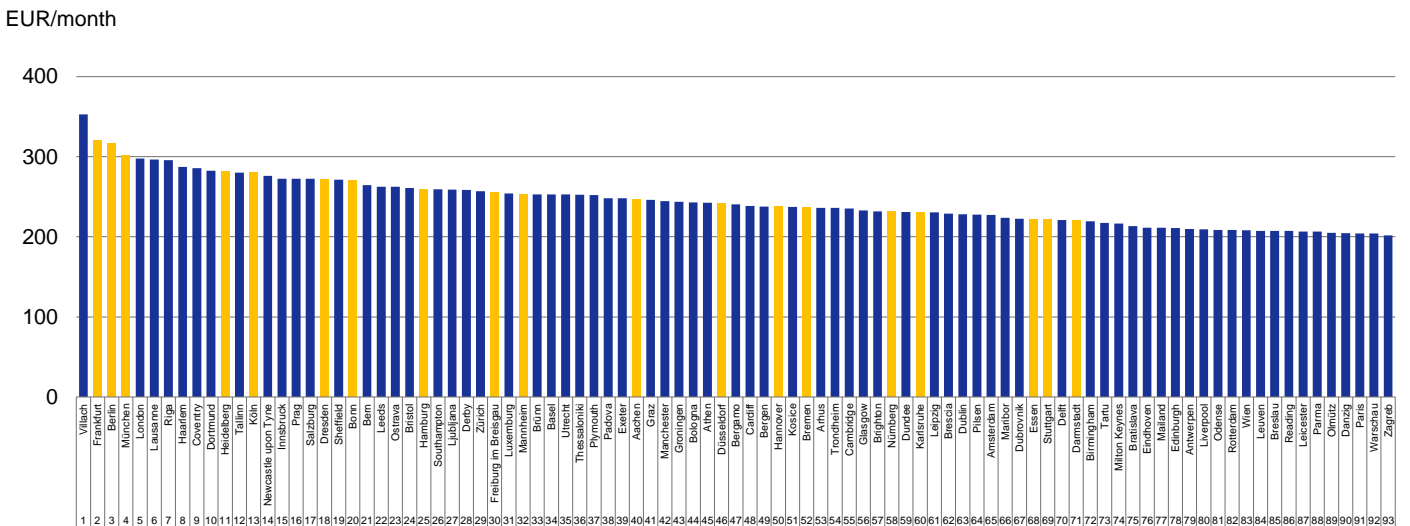
Europe Top 93: Apartment prices outside of the city centre

9



Europe Top 93: Rent of a 3-bedroom apartment outside of the city centre

10

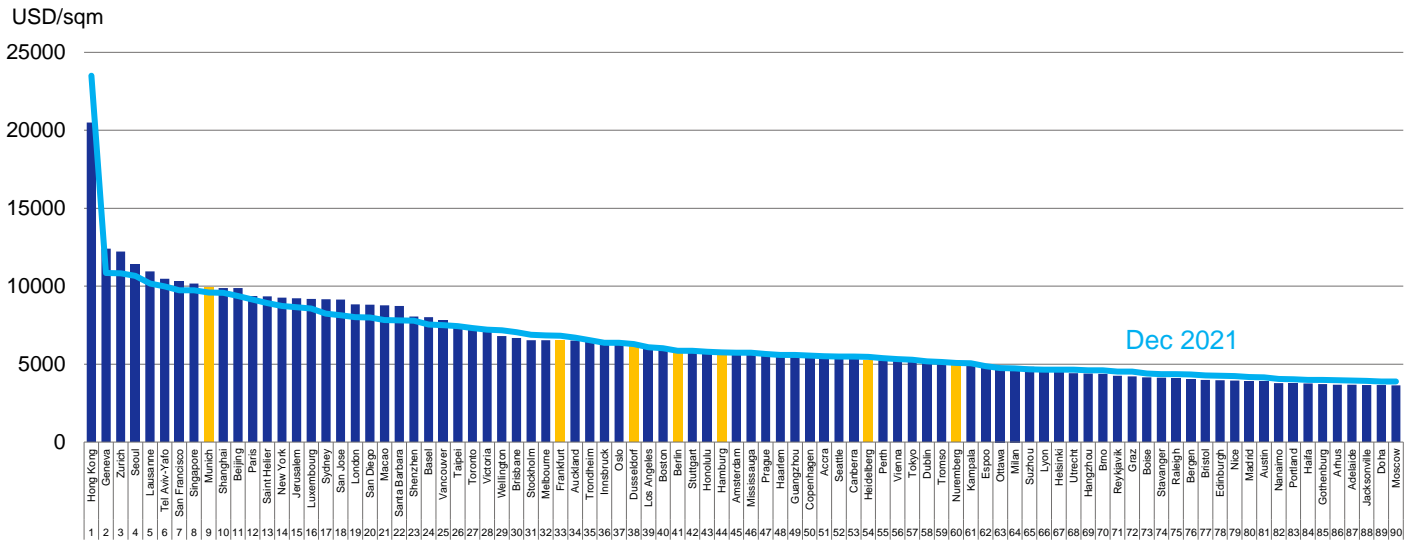




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Top 90 Global: Apartment prices outside of the city centre

11

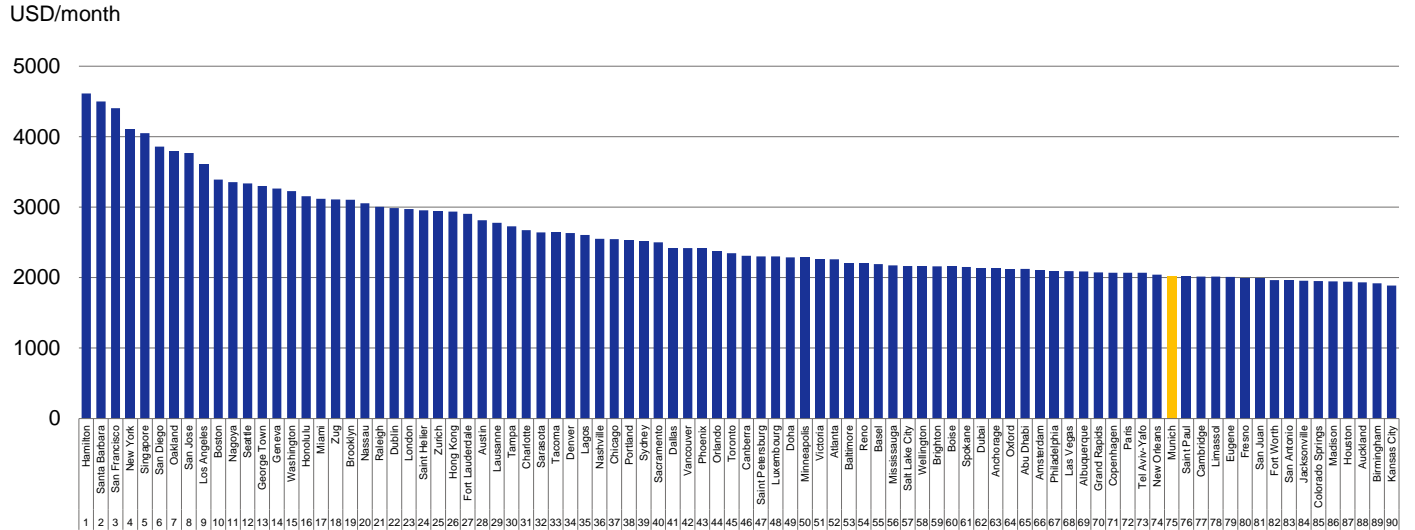


Download of numbeo.com as of February 20, 2023

Sources: Numbeo Doo, Deutsche Bank Research

Top 90 Global: Rents for 3-bedroom apartment outside of the city centre

12



Download from numbeo.com as of February 20, 2023

Sources: Deutsche Bank Research, Numbeo Doo

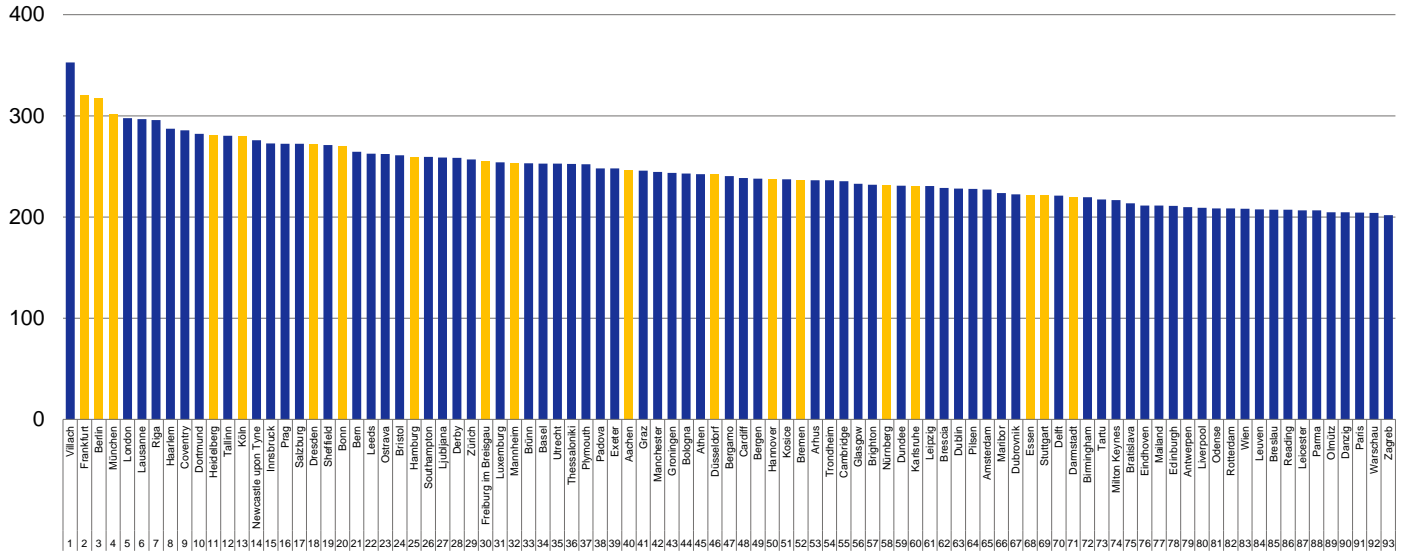


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Europe Top 93: Utilities outside of the city centre

13

EUR/month



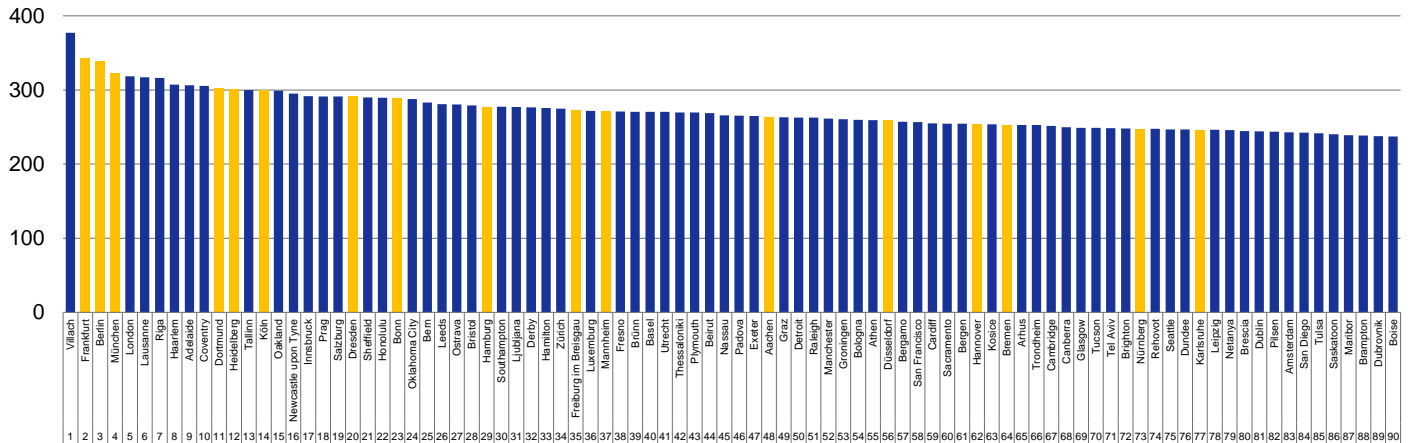
Download from numbeo.com as of February 20, 2023

Sources: Deutsche Bank Research, Numbeo Doo

Global Top 90: Utilities for 85 sqm apartment

14

EUR/month



Download from numbeo.com as of February 20, 2023

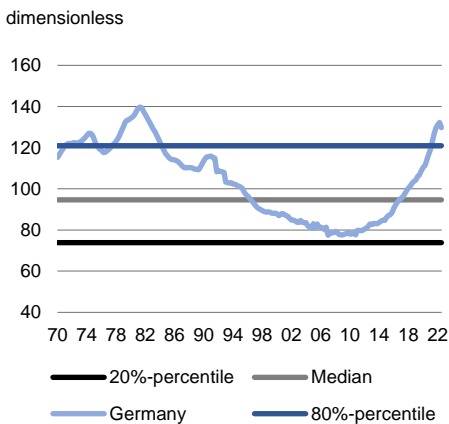
Sources: Deutsche Bank Research, Numbeo Doo



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1970-2022 Price-to-rent percentiles based on OECD countries

15



Sources: Deutsche Bank Research, OECD

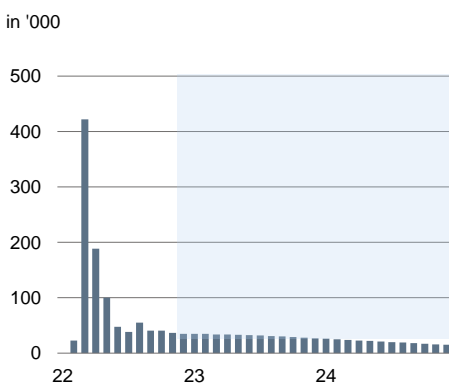
2.3 Affordability indices fall

In the following, we compare Germany's price-to-income ratio with that of 21 other OECD countries from 1980 to 2022. Germany's affordability indicator calculated in this way currently stands at 110 index points, with the long-term average normalized to 100. The high point was reached at 115 index points at the end of 2021. The price-to-rent ratio currently stands at 131 index points, also slightly below the high point of 133 index points. In past housing market outlooks, we defined reaching the 80% percentile, which is around 120 index points for both indices, as a point of reference for a potential end to the house price cycle. In principle, this rule of thumb has proved helpful. The OECD database also allows the length of house price cycles to be calculated. Based on inflation-adjusted price indices, the cycle lasted 53 quarters from the second quarter of 2009 to the second quarter of 2022. Adjusted for inflation, German house prices increased by 62% and by 103% in nominal terms. According to our methodology, the German cycle was the ninth longest cycle in the OECD database.

3. Fundamental supply shortage in Germany and in our 126 cities is declining

2022-2024 Migration per months from Ukraine

16



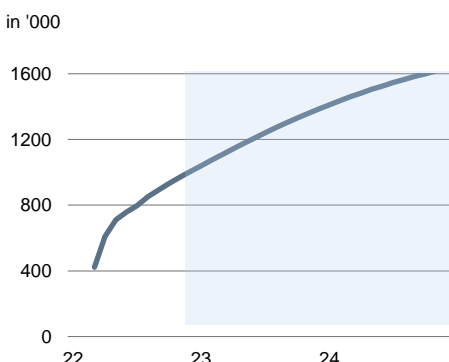
Sources: Deutsche Bank Research, Federal Statistical Office

3.1 High additional demand due to immigration

The influx of war refugees has increased Germany's population to 84.3 million. Ukrainians are very attached to their homeland. Nevertheless, we believe a high permanent influx is likely. The borders are likely to remain open even if the war ends soon, Ukrainian GDP collapsed by 35% in 2022 according to the IMF, it is likely to shrink again this year, and the per capita income gap between Ukraine and Germany was already about one in ten before the war. In addition to these push factors, pull factors are also likely to be at work. For example, Ukraine's membership in the EU or closer ties to the EU are under discussion. German entrepreneurs are likely to actively try to keep workers here or recruit new ones. The incentives for Ukrainian refugees to remain in Germany or at least to return here again and again are correspondingly high. According to the Federal Statistical Office, 1.01 million Ukrainians will have immigrated by the end of 2022, significantly fewer than the 1.3 million we expected. However, we continue to assume an immigration of 1.6 million refugees and expect an influx of 380,000 persons in 2023 and a plus of 258,000 persons in 2024. Added to this is regular immigration from other countries. If 1.6 million Ukrainians stay here permanently and immigration is permanently above 300,000 people per year, the population in 2030 will be almost 86 million. Here we have assumed negative natural population growth as in 2021 of 220,000 persons per year.

2022-2024 Migration from Ukraine cumulated

17



Sources: Deutsche Bank Research, Federal Statistical Office

2022 and 2023: Supply decline, we expect only a moderate recovery

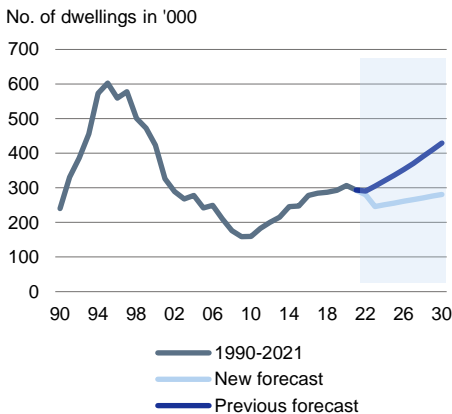
Due to the interest rate shock, developers and home builders put construction projects on hold or cancelled them. According to ifo, the share of construction companies affected by cancellations was over 14% in February 2023, down from the peak of almost 16% in 2022 but still at a high level. For residential construction, we forecast a decline in the number of building permits and completions in 2023, with the number of permits expected to fall to 303,200 and the number of completed homes expected to fall to just 246,000. Material costs



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1990-2030 Completions

18



Sources: bulwiengesa, Deutsche Bank Research, Federal Statistical Office

are expected to fall in 2023, but labor costs and therefore overall construction costs are expected to continue to rise. According to our models, these statements apply to both the shell and the finishing work. We also expect a moderate rise in interest rates. Construction will therefore remain very expensive. We expect a very modest recovery in new construction. We believe that an increase of 5,000 completed housing units per year is possible, which would mean that only 281,000 housing units would be completed in 2030. This estimate is not based on a model, highly uncertain, and depends crucially on interest rate levels, regulatory requirements, and potential future depreciation, tax breaks, and subsidies. Over the past decade, the additional housing supply per year has been about 93% of the number of housing units completed. Demolitions and statistical corrections account for the difference. Under these assumptions, the housing stock increases from 43.1 million in 2021 to 45.3 million in 2030. Consequently, the average household size would shrink from 1.94 to 1.90 persons per dwelling.

Simple methodology for estimating fundamental supply shortage for 126 cities with more than 30 million inhabitants

19

Goal: Calculation of supply shortage

Assumption: Supply and demand balanced in 2011. Why 2011? In our view, the start of the cycle occurred with the end of the financial crisis in 2009. However, due to the massive correction of the number of inhabitants and the housing stock in the course of the 2011 census, a comparison only makes sense in 2011.

Detailed calculation: Annual comparison of cumulative supply and cumulative demand per person from 2011 to 2030.

Calculate cumulative demand for each of the 126 cities

- For each city percent increase in population according to projected statewide population growth to 86 million persons and assuming that 41% of the population growth is accounted for by the 126 cities.
- From 2011 to each year, sum the increased population.

Calculate the cumulative supply for each of the 126 cities

- For each city percent increase in completions according to projected nationwide completions and assuming that A, B, C, and D cities' share of nationwide completions remains constant at 35.6% as in 2021.
- Extrapolation of the average annual decline in persons per household for the 2011-2019 period carried forward to the 2021-2030 period.
- For each year, multiply housing completions by the average number of persons per household in each city.
- From 2011 to each year, sum up the persons who can move into new housing.

Cumulative supply minus cumulative demand = annual housing need/surplus in number of persons

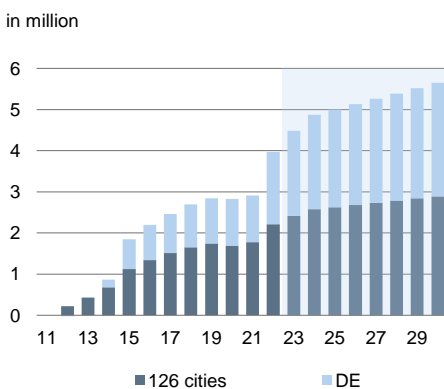
Negative result = supply shortage, **positive result** = supply surplus

Source: Deutsche Bank Research

3.2 Projection of fundamental supply shortage for 126 cities until 2030

2011-2030: Cumulated increase in the number of population

20



Sources: Deutsche Bank Research, Federal Statistical Office

Here, we use a simple methodology to estimate the fundamental supply shortage over the next few years. To do this, we cumulatively compare the development of completions with population growth since 2011, taking into account household size (for details, see Chart 19). We would like to take other factors into account, such as vacancies and demolitions. However, we do not have these data in disaggregated form. As we have shown for the German housing stock as a whole, demolitions are negligible for Germany. Vacancy data makes it easier to define market equilibria. As a proxy we assume that equilibrium existed in 2011. For most cities this is probably reasonable. Exceptions are certainly some large metropolises, especially Munich with very low vacancy rates already at the beginning of the cycle. From an analytical point of view, a better time to define an equilibrium is the start of the cycle in 2009, but due to the strong correction of the population by the 2011 census, we choose 2011 as the starting point.

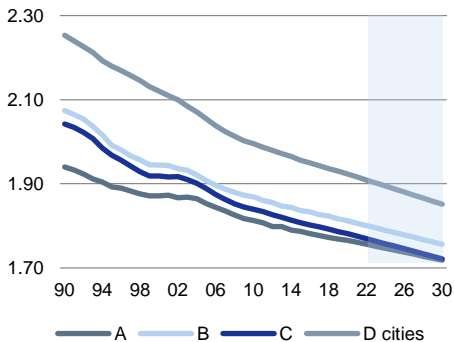


2023 Housing market outlook

1990-2030 Household size

21

Persons per household



Sources: bulwiengesa, Deutsche Bank Research

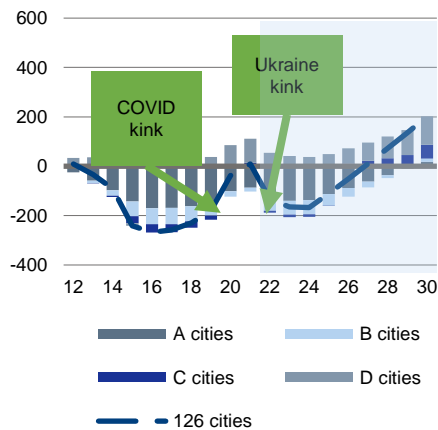
The nationwide population has increased by around 4 million since 2011. Slightly more than half of this increase was attributable to the 126 cities that are regularly in focus. These cities are likely to continue to grow through immigration and domestic migration. In view of the scarcity of housing, however, their share of nationwide population growth is likely to be lower in the future. We assume a share of just over 40%. As a result, the population of the 126 cities would increase from around 30 million in 2021 to over 31 million in 2030.

The number of housing units completed in the 126 cities increased to more than 1 million between 2011 and 2021. By 2030, we expect a further increase of 850,000 housing units, i.e. an increase of around 94,000 housing units in the year. This estimate is in line with our nationwide forecast. To this end, we have extrapolated the share of the 126 cities in new construction nationwide, which in the past was just over one-third, to 2030.

2012-2030 Residential supply vs. demand

22

No. of dwellings in '000



Sources: bulwiengesa, Deutsche Bank Research, Federal Statistical Office

The number of persons per household on a population-weighted basis across our 126 cities was 1.86 in 2011, declining very steadily to 1.80 persons in 2021. We continue this trend, causing the average household size to fall to 1.75 persons in 2030. The ratio is particularly low in A and C cities. There it is 1.72 persons. Similarly, it is significantly lower in eastern Germany at 1.8 than in the west at 2.3. This is probably mainly due to the relatively high vacancy rates in many eastern German cities.

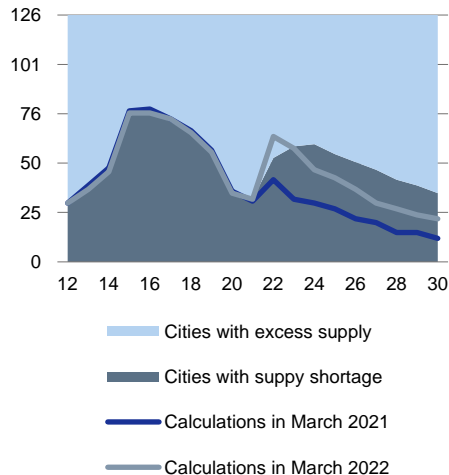
The fundamental supply shortage derived from these three variables (completions, population, household size) was 133,800 apartments in 2022. It should increase to 167,500 by 2024 and then gradually decrease. From 2027 the supply shortage is eliminated in the 126 cities. By 2030 the cumulative housing surplus will continue to increase, but even in 2030 according to our calculations there will still be a supply shortage in 35 cities. In our housing market outlook for 2021 and 2022 this was the case in only 12 and 22 cities, respectively. The high supply shortage in these 35 cities is thus likely to influence the political and social debate over the entire decade, which is also likely to have an impact at state and federal level.

New developments could also change our calculations in the future. In particular, the publication of the data from the 2022 census could influence our estimates. It will be interesting to see to what extent there will be another sharp correction in the population figures or the housing stock as in 2011. In particular, there could be corrections due to the high number of refugees. In the past the relocation and departure of these residents often took place without official deregistration.

2012-2030 Residential new supply vs. new demand

23

No. of cities



Sources: bulwiengesa, Deutsche Bank Research, Federal Statistical Office

3.3 In most D cities, the supply shortage has been eliminated

The fundamental supply shortage aggregated across our 126 cities ends in 2027 according to our new projection, but there are large regional differences, especially between large and small cities. A cumulative supply surplus in the A cities would persist until 2030, in the B cities until 2029 and in the C cities until 2026. In the 83 D cities, according to our methodology, there is already no longer a housing shortage in aggregate in recent years, but the surplus falls from almost 100,000 in 2021 to less than 40,000 in 2024. However, even in this group there are 32 cities with a housing shortage in 2023. In the other 51 D cities the housing market is already relatively buyer- and tenant-friendly, especially relative to metropolitan areas and larger cities.

There are also major differences across the German metropolitan regions. For example, the supply shortage in the metropolitan areas of Berlin, Cologne, Frankfurt, Hanover, Leipzig, and Stuttgart is not expected to end until after 2030, in Heidelberg in 2028 and in Düsseldorf, Hamburg, and Munich in 2025. By contrast, there is no shortage in Bremen and Nuremberg. For cities such as



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Munich, which already had a very low vacancy rate in 2011, this implies at best a gradual easing of the market in 2025 according to our calculations. But cities such as Bremen and Nuremberg had significantly higher vacancy rates at the

2030: Comparison of housing supply and demand in eleven metropolitan regions

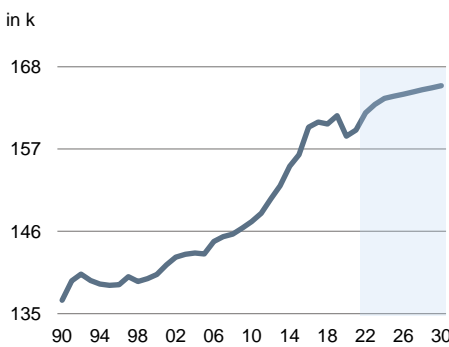
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Metropolis	Shortage ends in	Metropolitan Region including Metropolis	Shortage ends in	Metropolitan Region excluding Metropolis	Shortage ends in
Berlin	2030	Berlin/Brandenburg	2030	Berlin/Brandenburg	2011
Bremen	2019	Northwest	2018	Northwest	2015
Dusseldorf/Cologne	2030	Rhine-Ruhr	2030	Rhine-Ruhr	2027
Frankfurt	2030	Rhine-Main	2026	Rhine-Main	2025
Hamburg	2025	Hamburg	2025	Hamburg	2019
Hanover	2030	HBGW	2027	HBGW	2019
Heidelberg	2028	Rhine-Neckar	2028	Rhine-Neckar	2028
Leipzig	2030	Central Germany	2030	Central Germany	2016
Munich	2025	Munich	2020	Munich	2020
Nuremberg	2020	Nuremberg	2019	Nuremberg	2019
Stuttgart	2030	Stuttgart	2030	Stuttgart	2020

Note Dusseldorf and Cologne have very different supply-demand balances. Based on our approach, Cologne exhibits a very large supply shortage whereas Dusseldorf a much smaller one. HBGW = Hanover-Brunswick-Göttingen-Wolfsburg. "2030" implies the fundamental supply shortage still exists in 2030.

1990-2030: Population in Heidelberg

25



Sources: bulwiengesa, Deutsche Bank Research

Source: Deutsche Bank Research

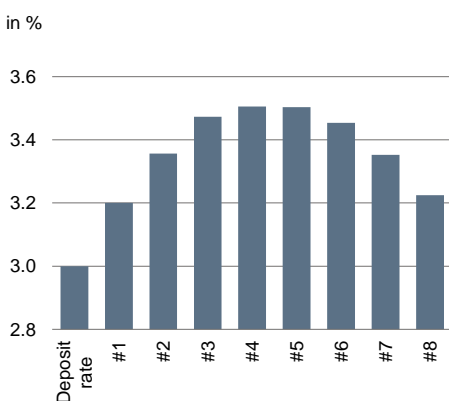
time, and tenants and buyers there will often be able to choose between several offers.

In order to correctly classify our projections, it is also helpful to take a look at the city of Heidelberg. There the number of inhabitants was on a roller coaster ride due to the pandemic. This is probably due to the large number of students and university employees who moved away from Heidelberg during the pandemic. In 2020, the number of inhabitants shrank by around 1.8% from 161,500 to just 158,700. From 2021 onwards, the number of inhabitants picked up again and, according to our calculations, reached a new all-time high in 2022. As a result, we expected bottlenecks to end in 2028 in both our current and 2021 housing market outlooks, and in the interim in 2022 our methodology indicated no bottlenecks. However, we considered a rapid resurgence of shortages after the pandemic which has now been confirmed.

4. Interest rate and loan outlook: Interest rates up, credit volumes down

Rate expectations of markets for next 8 ECB governing council meetings

26



Sources: Deutsche Bank Research, Haver Analytics Inc.

4.1 ECB: Further interest rate steps very likely

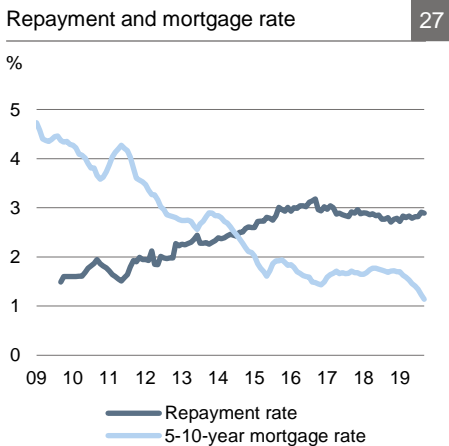
Currently, the deposit rate is at 3.0%. Further interest rate steps could follow. According to our forecast, the deposit rate will reach 3.75% after three 25 basis point hikes in May, June, and July. We do not expect a rate cut in 2023. This will only likely be on the agenda if inflation falls below 2% again. However, the markets are in part pricing in fewer interest rate steps and earlier interest rate declines.

Credit risks for banks probably manageable

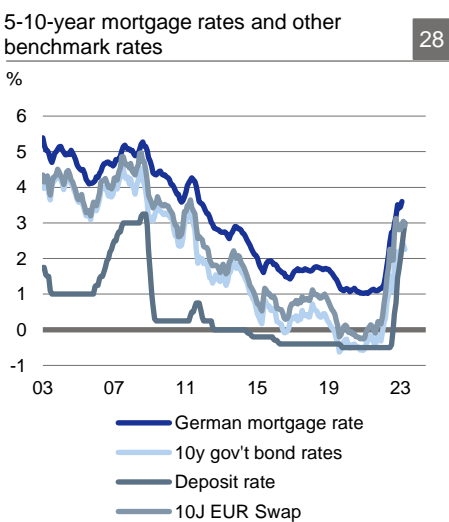
According to the Bundesbank, the share of new loans with a fixed interest rate of less than one year has been around 10% in recent years. The share of loans with a fixed interest rate of one to five years was another 10%. As interest rates



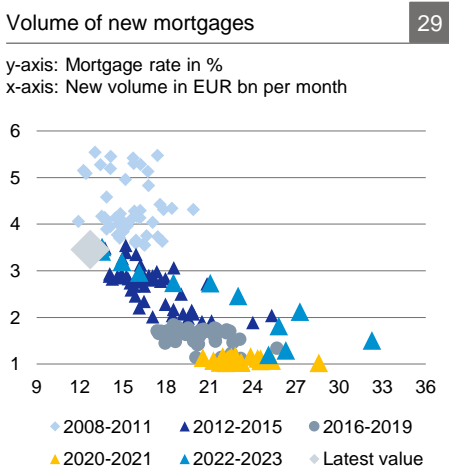
2023 Housing market outlook



Sources: ECB, Dr. Klein, Deutsche Bank Research



Sources: ECB, Deutsche Bank Research



Sources: Bundesbank, Deutsche Bank Research

continued to fall, both shares declined in recent years as borrowers tended to lock in low rates for the long term. The share of variable-rate financing with additional interest rate hedging, which is not recorded to our knowledge, is probably considerable. Repayment rates also increased substantially over the past decade from around 1.5% per year at the beginning of the cycle to up to 3% per year. Overall, the risks for the financial sector from both short-term loans (interest rate risk) and overall (income risk) should be manageable. This is all the more true as the labor market is extremely robust. Loan defaults are therefore likely to increase only slightly at most. However, individual institutions with a high risk appetite and a high share of 100% and 110% financing may have to absorb one or two write-downs.

4.2 Base scenario 2023: Capital market interest rates trend slightly upward

80% of German residential real estate is financed with loan terms of more than five years. Accordingly, long-term benchmark interest rates such as 10-year Bund yields are also relevant for mortgage loans. In the course of 2023, in the absence of further supply shocks, the high energy and commodity prices of 2022 will have a diminishing impact on inflation. Therefore, price pressures are likely to subside. However, inflation is likely to remain above the 2% target for some time. Therefore, the ECB started to reduce its nearly EUR 5,000 billion bond holdings as of March 2023. Initially, however, this is likely to raise capital market rates only slightly, as the holdings will be reduced by only EUR 15 billion per month from March to June. The ECB is therefore acting very cautiously. Consequently, the pressure on Bund yields is relatively low in our base scenario. We expect Bund yields to peak at 2.85% in the course of the year and at 2.65% at year-end. Consequently, mortgage rates are also likely to rise somewhat. Once the interest rate peak is foreseeable, uncertainty and the risk premium should fall. From 2003 to 2014, the spread between 10-year Bund yields and 5-10-year mortgage rates averaged 105 basis points. As long as the ECB bought bonds and their yields fell, spreads (risk premium) increased. In 2015 to 2022, the spread was almost 140 basis points. Presumably, premiums for future interest rate increases were factored in during this phase. There is also discussion about whether the sectoral systemic risk buffer for residential real estate, which increases banks' capital costs, could be removed again. This was introduced in the boom phase to prevent overheating, but now makes lending more expensive and weighs on construction. Due to slightly higher interest rates, but at the same time falling risk premiums, we do not expect 5-10 year mortgage rates to rise further. In February 2023, the interest rate level was 3.6% and this is also our forecast for year-end 2023. However, the high volatility in Bund yields in recent months is likely to persist and could also be transmitted to mortgage rates in the future. We expect a level of 3.8% at year-end 2024.

Mortgage lending: New business with only moderate recovery

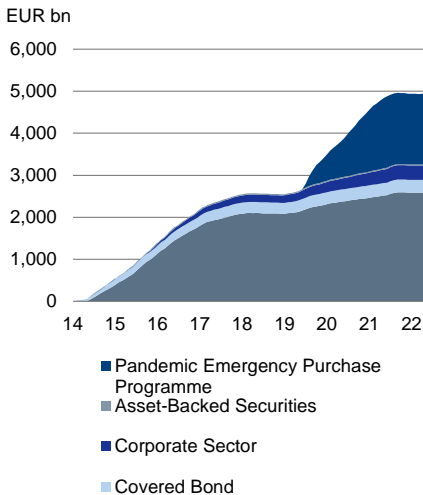
New lending business amounted to around EUR 260 billion in 2022, with the two half-years showing very different trends. In the first banks lend slightly more than EUR 160 billion and after the interest rate shock in the second half of the year less than EUR 100 billion. Our estimation model attributes this decline almost entirely to the rise in interest rates. Consequently, the high economic and political uncertainty had hardly any effect in 2023. Based on our interest rate forecast, we expect new lending of EUR 180 billion in 2023, which would be a year-on-year decline of around 30% and the lowest level since 2008.



2023 Housing market outlook

ECB Asset purchases

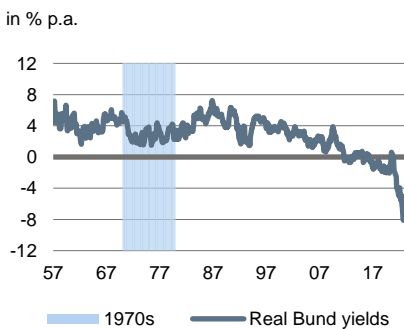
30



Sources: Deutsche Bank Research, Haver Analytics LP

1957-2023: Inflation-adjusted Bund yields

31

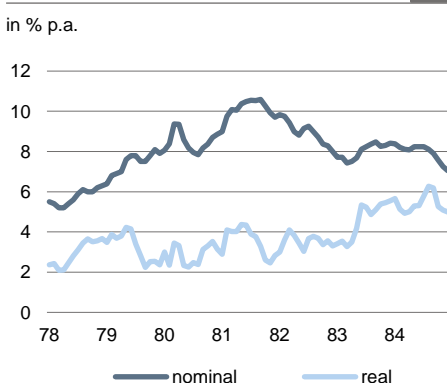


Calculation: Current Bund yield minus current inflation. This implies backward-looking inflation-adjusted yields.

Sources: Deutsche Bank Research, IMF

1978-1985 Bund yields pre, during and post Volcker shock

32



Sources: Deutsche Bank Research, IMF

4.3 Negative real Bund yields likely for some time to come

Relatively independently of nominal interest rates, we expect negative real Bund yields for the foreseeable future. They were negative in the wake of the euro crisis and the ECB's extensive bond purchases. The pandemic and then to an even greater extent the inflation shock in 2021 and 2022 caused them to fall further. In 2022 they slipped to almost -8%, in our chart the lowest value since 1957 and probably the lowest value since hyperinflation in 1923. Although real interest rates should be significantly higher in the course of 2023, they are likely to remain negative.

4.4 How can investors respond to these developments?

The following consequences are likely to result from an environment with structurally high inflation, a tendency toward somewhat higher nominal interest rates and negative real interest rates. First, prices will probably remain under pressure until the end of the interest rate hikes. Second, highly leveraged projects are significantly riskier than in the past decade, which should put the brakes on risk-taking investors. This scenario would therefore continue to allow risk-averse, long-term investors to achieve decent returns.

4.5 Risk scenario for 2023 and later: Structurally high inflation

There are two main reasons why inflation could continue to spike upward. First, tax revenues bubble up when inflation rates are high. This allows for a very loose fiscal policy and boosts inflation, again. Second, a labor market in full employment and an acute shortage of labor and skilled workers raises wages. This is particularly true due to the impending wave of retirements, which is likely to increase demand for workers. Strong interest rate hikes increase the risk of recession and the risks to financial market stability. Therefore, central banks may tend to raise interest rates only tentatively. However, the history from the 1970s and the interest rate shock in the early 1980s teaches us that when inflation is structurally high, these risks are eventually accepted in order to bring inflation back under control. Bund yields rose from 5.2% in 1978 to 10.6% in September 1981, then fell again but remained above 7% until 1985. The first interest rate shock from December 2021 to today could thus be followed by a second one in the long run if inflation remains high. House and apartment prices could consequently fall sharply. In this scenario, risky financing would again lose out. Fixing interest rates via long-term loans or hedging would be an effective means of surviving such a market phase unscathed.



5. The impact of climate policy on the German housing market

5.1 Climate targets require conversion of the building stock

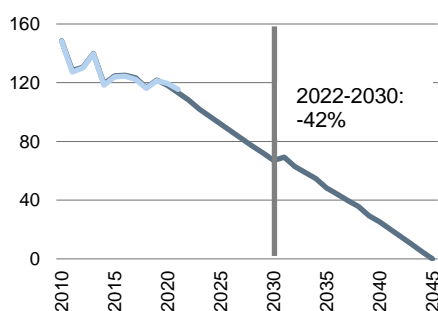
CO₂ emissions in the building sector are several years above the target path. In addition, the trend in recent years suggests a significant target shortfall for the year 2030. For example, CO₂ emissions in the building sector fell by 9% from 2011 to 2021. Now they should fall by 42% until 2030. Legislators are under pressure to act. In mid-March, the European Parliament passed a draft law on the Energy Performance of Buildings Directive, with the aim of increasing renovation rates and reducing energy consumption and emissions. The bill contains a flood of rules and regulations. For example, new buildings are to be emission-free and have a photovoltaic system from 2028. In addition, emissions are to be calculated over the life cycle for new buildings. For renovations, photovoltaic systems are to be mandatory from 2032. Oil and gas heating systems are to be replaced in major renovations.

The recently presented national bill to amend the Building Energy Act pursues similar goals. From 2024, heating systems in new buildings and renovations are to be based on 65% renewable energies. In addition, the German government plans to make it mandatory to replace heating systems that are 30 years old. The 2014 Energy Saving Ordinance already contained a similar provision, and since 2015 there has been an obligation to replace constant-temperature boilers. The modern boilers significantly reduced consumption, which often made the investment worthwhile. With the replacement now required in favor of a heat pump or a district heating, rapid amortization is likely to be difficult. An exchange obligation without generous national support might meet substantial resistances.

2010-2045 Greenhouse gases: Actuals building sector

33

in million t CO₂-equivalent



Source: Federal Environmental Agency

Often, however, little attention is paid to the numerous exceptions in both the European and the national draft legislation. The European text allows exceptions for listed buildings, and national governments can also make exceptions to the obligation to install photovoltaic systems. In addition, there are several formulations such as “if this is technically and economically feasible”. The national draft law contains the word “if possible”. So there should be exceptions. Owners over 80 years of age can stick with fossil-fuel heating systems when replacing their heating systems. In addition, the legislation provides for hardship provisions and funding opportunities. These details show that the legislator is aware of the enormous challenge. The “Modernization Package for Climate Protection and Planning Acceleration” passed at the end of March also takes this into account. Greater openness to technology was agreed. For example, not only heat pumps are to be permitted, but also infrared and hybrid heating systems, such as a bivalent heat pump with a gas condensing boiler. In the long term, hydrogen will also remain an option. CO₂ emissions are now to be taken into account to a greater extent in aggregated form across all sectors. Since emissions reductions in the building sector are relatively expensive, a missed target is more likely to be accepted here than in other sectors. According to the modernization package, however, the sector targets remain in place. The long-term target of a climate-neutral building stock in 2045 was also confirmed. Thus, only temporarily too high CO₂ emissions may be accepted. Consequently, the pressure to refurbish remains high.



5.2 Expansion targets for district heating and heat pumps require substantial conversion of existing buildings

The government-commissioned study "Building Strategy Climate Neutrality 2045," published in 2022, describes the steps needed to achieve climate goals. According to the study, a climate-neutral building stock requires an increase in the number of district heating connections in residential buildings from over 6 million in 2020 to around 9 million in 2030. Roughly, from 2015 to 2020, the number of connections increased by 100,000 annually, so it will take roughly a threefold increase in annual output, most of which will come from civil engineering. There is a major shortage of labor and skilled workers there. The vacancy time of open positions doubled from 2015 to 2022 to about 200 working days. Since this technology has been tried and tested over decades, the goal could still be achieved. The low number of working days required to connect buildings to the district heating network is equally optimistic. Typically, four working days are needed for single-family homes and six for multi-family buildings. High political and social pressure on cities and municipalities to meet the district heating target is also likely to divert many resources to this area.

The number of heat pumps is even expected to quadruple, from around 1.5 million at present to around 6 million by 2030. This is also particularly ambitious because the installation of a heat pump in a single-family house currently typically takes two weeks. According to the estimates made in the study, achieving the heat pump targets will require the working time of around 50,000 full-time equivalents. In 2022, there were about 190,000 employees subject to social insurance contributions working in the plumbing, heating, and air conditioning industry, according to the Labor Department's 2010 occupational classification. Almost all of them work full-time and 180,000 are skilled workers. The number of skilled workers in the heating sector alone cannot be determined from the occupational classification. Assuming 100,000 skilled workers in the heating sector, about half of the employees would have to install heat pumps in the future. To retrain every second employee on a new technology would undoubtedly be challenging.

One argument against achieving the 6 million target is that not everyone can or wants to be retrained. Particularly among employees over 55 years of age, whose share according to occupational classification is around 19%, willingness could be limited. Likewise, about one-sixth of the 180,000 skilled workers had no training at all. In this group, too, retraining could not be a foregone conclusion. In addition, the already high shortage of skilled workers must be taken into account. From 2012 to 2022, vacancy times for open positions in the plumbing, heating, and air-conditioning trades have risen from around 100 days to almost 240 days. The upcoming wave of retirements is expected to further exacerbate the situation. Likewise, there may be construction obstacles to heat pump installation. However, there are also a number of pro-arguments. For example, the learning curve for the new technology is likely to be steep. The number of workdays to install a heat pump could drop. Likewise, manufacturers could improve heat pump efficiency. The high level of political will, the high and long-term growth in demand and the provision of billions in subsidies give manufacturers planning security and also make research and further development attractive. The annual coefficient of performance, which measures the ratio of thermal energy to electrical energy, could increase significantly. In practice, many heat pumps currently have an annual performance factor of around 3. In the future, modern heat pumps could have significantly higher values. Furthermore, the shortage of skilled workers and numerous countermeasures are discussed intensively in the study "Building Strategy Climate Neutrality 2045". These range from education and training to increasing the quota of women, which is currently less than 1%, to targeted immigration. The planned immigration law based on the Canadian model could be an

Working time for installation of heaters

34

in days	SFH	MFH
Air-Water-HP	14.5	27.8
Brine-Water-HP	18.3	34.1
Gas	5.0	6.9
Biomass	8.0	12.4
District heating	4.0	6.2

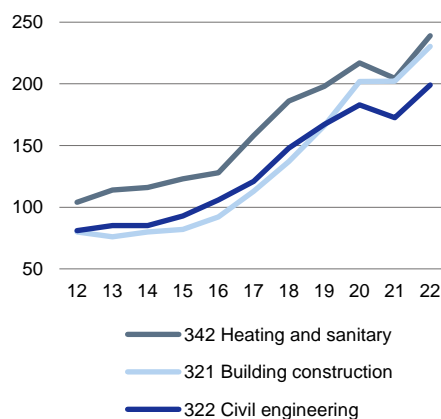
SFH=Single house, MFH=Multi-family house, HP=Heating pump

Source: ITG, Klimaneutraler Gebäudebestand 2045

Labour market: Rising lack of employees

35

Duration of vacant positions in days

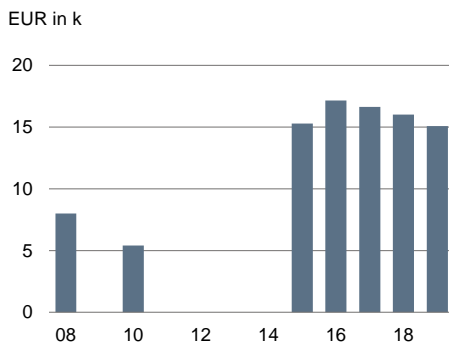


Source: Federal Employment Agency



2023 Housing market outlook

Market prices for air-to-water heat pump with 10 kW



Sources: Deutsche Bank Research, MAP-Förderfälle; BAFA

important building block here. In addition, a federal support program started in April 2023. Over a period of 30 months, more than 40,000 craftsmen and energy consultants are to learn how to master the new technology. Several hundred euros per training or coaching session and a maximum of EUR 5,000 per applicant will be made available for this. In addition, the German Heat Pump Association considers the targets to be feasible, which is particularly positive in view of its overly cautious sales forecasts in the past.

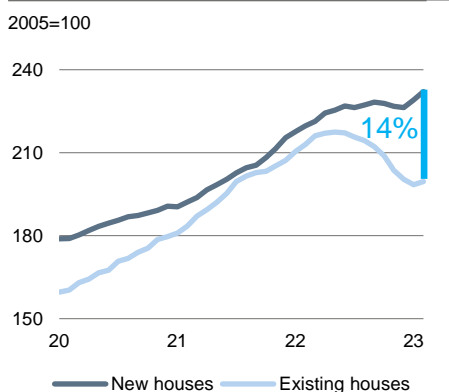
In view of the numerous pro and con arguments and the scant data available, it remains unclear from an analytical perspective whether the 6 million target will be achieved in 2030. Not only supply bottlenecks but also insufficient demand could stand in the way of achieving the target. The introduction and enforcement of regulatory laws are politically explosive. Moreover, a simple subsidy is unlikely to close a potential demand gap. Prices for air-to-water heat pumps have roughly doubled in the last 15 years. The state subsidy therefore probably flowed primarily to the manufacturers of heat pumps and not to the property owners.

In addition to the replacement of heating systems, the focus is on the building envelope. Although the Building Energy Act provides regulations for the thermal transmittance coefficient, which measures a building's heat output to the outside, these typically reflect the current technology standards of the building components. Thus, the legal requirements are much less challenging than the heat pump target.

5.3 Price differences between low and high emission buildings

Low-emission buildings arguably already command price premiums. For example, in the summer of 2021 price indices for existing and new homes were similar. By contrast, in February 2023 there was a 14% difference. Taking into account energy-related refurbishment costs for existing properties is likely to explain the divergence. During the housing boom the state of renovation and the energy certificates played a much smaller role. Today, properties that have not been refurbished or have been refurbished to a minor extent are regularly traded at a discount. In the long term, the discount is likely to increase. On the supply side, the shortage of labor and skilled workers is likely to intensify over the decade as a whole. As a result, the ambitious new construction and refurbishment targets will be difficult to achieve. On the demand side, the rise in energy prices and the consideration of the costs of climate change are likely to lead to a shift away from buildings with high emissions and toward low-emission buildings. The CO₂ tax is already making energy costs more expensive. In the next few years, the EU taxonomy will require larger companies and institutional investors to publish their ESG footprint annually. The way companies generate profits will thus come into focus. Consumers and the public can then vote with their feet in a more targeted way and denounce misconduct or persistent underperformance, which in turn is likely to have an impact on corporate performance. For example, the green asset ratio, the share of sustainable investments in all investments, must be published. If real estate companies come under pressure due to a low green asset ratio, the company will likely react and increase demand for low-emission properties. Further regulatory requirements such as the planned climate tariff are likely to make energy costs more expensive in the future. If the climate targets in the building sector are missed by a significant margin over the entire decade, the regulatory framework could be tightened, for example by setting a maximum value for the green asset ratio. In addition, there is likely to be further price differentiation because many people want to do something actively to combat the climate crisis. A shortage of supply and a trend toward rising demand for low-emission buildings are likely to

Hedonic house price indices



Sources: Deutsche Bank Research, Hypoport



further increase price premiums compared with high-emission buildings in the coming years.

5.4 Early renovation could be optimal

In addition to higher prices, one can probably expect higher rents for low-emission buildings. In particular, households with relatively high incomes are likely to consider low-emission rental housing. In this case, rent increases should also be easier to implement. It is unclear to what extent higher prices and rents will cover the costs of new construction or renovation. However, if the heat turnaround is to succeed, the state is likely to provide more incentives here again in the future. Both the draft amendment to the Building Energy Act and the modernization package hold out the prospect of subsidies. An ideal time for renovation could therefore be as soon as the subsidy situation brightens and the German government launches new subsidy programs. The current construction recession and falling material costs may also provide an opportunity to place orders. Also, due to presumably significantly higher wages as a result of the worsening shortage of labor and skilled workers, early refurbishment is recommended. Moreover, as described, we expect demand to outstrip supply of refurbished properties for many years to come. The frontrunners are therefore likely to achieve not only lower refurbishment costs, but also higher prices and rents, and thus higher returns overall. It is also advisable to develop a refurbishment strategy. Properties that are easy to refurbish are probably a better starting point than buildings with high emissions, where emissions reduction is often disproportionately expensive. The focus is likely to be on serial renovations in particular. Once positive experience has been gained with the new method, economies of scale could reduce costs substantially. Instead of refurbishment, the average CO₂ emissions in a portfolio can also be reduced by purchasing low-emission properties and selling buildings with high emissions. Given the high current uncertainty in the housing market, there may be current opportunities for both.

Shift in demand within the group of low-emission building?

38

Even within low-emission buildings, prices could diverge between electricity-based heating and poorly insulated buildings on the one hand and alternatives such as pellet, biomass heating and district heating and well-insulated buildings on the other. This will at least be true if electricity prices meet an ever-increasing but possibly unsteady supply of solar and wind as a result of high demand due to the electrification of mobility and heating.

Source: Deutsche Bank Research

5.5 Anti-refurbishment strategy could also promise economic success

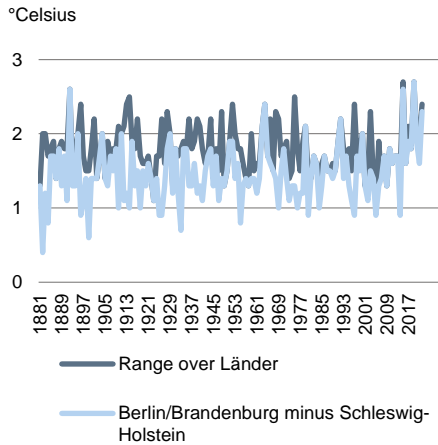
Particularly for smaller companies, small landlords and investors, to whom the taxonomy applies but still has a relatively low impact, the new regulatory environment may also offer opportunities. This is because the considerable shortage of labor and skilled workers is likely to undermine the statutory replacement and remediation obligations to some extent. If, despite this, there is an increase in the sale of buildings with high emissions as a result of media coverage and social and political pressure, then they could be purchased cheap and renovations deliberately omitted. In the short term, it should thus be possible to achieve excess returns. We suspect that legislators will refrain from imposing a housing ban and the resulting stranded assets over the next few years, at least as long as housing is in short supply. Likewise, due to the normative power of the factual – the lack of labor – the judiciary is likely to be very reluctant to act. In the very long term, then, the success of this strategy depends primarily on the development of redevelopment costs. In the unfavourable case, costs rise disproportionately because the shortage of labor and skilled workers continues to worsen. In the favourable case, clean-up costs will be lower in the next decade than they are today due to economies of scale and technological progress. Given the generally high importance of the housing market and the great earning potential for successful renovators, decisive progress should be possible here. Last but not least, this strategy could also make sense from a climate policy point of view, as the optimal renovation time,



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Temperature difference during summer Berlin/Brandenburg vs. Schleswig-Holstein

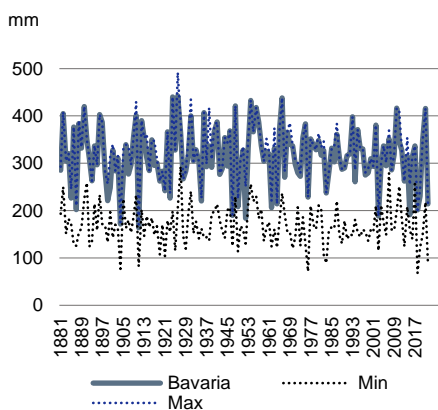
39



Sources: Deutsche Bank Research, German Meteorological Service

Precipitation in summer in Bavaria relative to other Länder

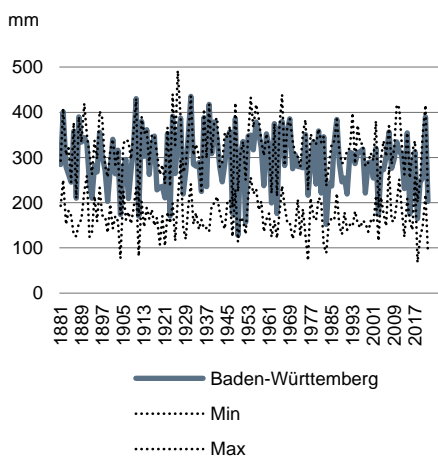
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Sources: Deutsche Bank Research, German Meteorological Service

Precipitation in summer in Baden-Württemberg relative to other Länder

41



Sources: Deutsche Bank Research, German Meteorological Service

defined as the minimum sum of all CO₂ emissions of a building, could be beyond this decade, at least assuming significant economies of scale and efficiency gains.

5.6 Climatic changes and impacts on the housing market

To date, climatic location factors have played a small role for investors. This could change as the climate crisis worsens, with both direct and indirect effects on housing demand. In regions with a higher likelihood of extreme weather events, housing demand is reduced due to a lower quality of life. For example, there could be a direct negative impact from rationing water to water the garden or fill up the swimming pool in the more arid regions. Fires are also more likely and tend to increase there. Heavily damaged forests or fields are also likely to dampen demand for housing, especially if such events become more frequent and nature fails to fully regenerate. Demand is also likely to fall in regions that are increasingly affected by floods and inundations. The indirect effects on demand for housing could be even more significant. For example, entire value chains could be broken and business models rendered unprofitable if infrastructure is damaged by heat, dried-up rivers or fires. As prices and rents rise in line with incomes in the long term, rents in the affected regions could rise or fall less sharply. Regions that will be less affected by extreme weather events in the future, on the other hand, could experience higher demand, prices, and rents.

Much information is lacking to estimate which regions are more likely to be winners and losers. For example, the impact of the climate crisis on Germany's regions is unclear. But it also remains questionable to what extent it will be possible to contain or even prevent climate damage through behavioural change, construction measures, precautions and good crisis management. The first indications are provided by the extensive data of the German Weather Service. Schleswig-Holstein, for example, tends to have low average summer temperatures, while Berlin/Brandenburg tends to have high average temperatures. Historically, the difference between the two regions has averaged about 1.5°C, and in recent years it has even been around 2°C. Bavaria and Baden-Württemberg tend to have higher temperatures than Schleswig-Holstein, probably due to the higher number of sunshine hours. However, they typically also have higher precipitation, making fires and potential water rationing less likely. It also increases the yield of photovoltaic systems, which in turn could reduce utility costs. In general, it should also be true that low and high mountains tend to have higher soil moisture due to lower evapotranspiration. In contrast, Berlin/Brandenburg is a rather dry region with a rather high risk of forest fires. Schleswig-Holstein, on the other hand, may be most affected by rising sea levels or the cost of higher dams. In view of the many influencing factors and the unclear regional effects of climate change, it will probably take several years before these are noticeably reflected in the return considerations of investors.



6. Summary and outlook for Germany, metropolises and metropolitan regions

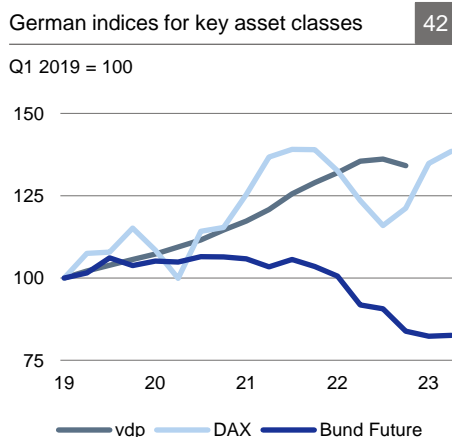
6.1 Competing price drivers and dampers

The interest rate shock has ended the boom. The high price increases and equity yields are a thing of the past. Prices have been falling since spring 2022. How long this phase will last is analytically challenging. Many factors, some of which act in opposition to each other, have to be taken into account for a sound analysis. Significantly higher financing costs suggest even steeper price declines. In the case of unrefurbished and slightly refurbished buildings, the pricing-in of refurbishment costs also has a dampening effect on prices. This is all the more true as legislators are loudly considering tightening up replacement and refurbishment obligations.

The main price driver is the fundamental supply shortage. In 2023, according to our calculations, 59 of the 126 cities have higher demand than supply. The situation improves only slowly over the decade, according to our projections. In 2030, 35 cities still have a supply shortage. These are mainly the cities with high populations. The shortages are also likely to radiate to their neighbouring cities and entire regions. However, there are significant differences. The metropolitan areas with a high supply shortage over the entire decade include Berlin, Frankfurt, Hanover, Heidelberg, Cologne, Leipzig, Stuttgart, and Munich. According to our calculations, the supply shortage will end in 2025 in Düsseldorf and Hamburg, while the market has eased in Bremen and Nuremberg. For many years, we have pointed out in our housing market outlook that these cities are likely to have higher interest rate sensitivity. Now the litmus test is upon us.

In addition to the fundamental supply shortage, there are a number of other factors that tend to raise prices. For example, adjusted for inflation, the price decline in 2022 was already very strong. In addition, the very negative real interest rates are currently an incentive to invest. Given the high debt levels in many euro countries, they are likely to remain structurally low, probably negative. In this case, borrowers can let inflation work for them, which means they have to pay back less purchasing power than they have borrowed. Another factor is inflation protection. In periods of high inflation, house and apartment prices increased faster than inflation. This is likely to be the case this time as well, especially against the backdrop of the high supply shortage. Last but not least, rents are starting to pick up. Admittedly, the strict regulatory environment argues against strong rent increases. But the increase in short-term rentals, furnished rentals and the likely strong rise in the share of index rents point to higher rent growth.

The relative risk position also makes the German housing market attractive. For example, although prices are currently falling, the declines are small compared with the stock and bond markets. Since house and apartment prices historically rise with inflation, the residential real estate market should also be more attractive for institutional investors in the long term than the bond market, which may yield a higher cash flow but generally does not offer inflation protection. Furthermore, the residential real estate market is again likely to be significantly less cyclical and dependent on rate changes than the commercial real estate market. Last but not least the German residential market is less overvalued than many other residential markets in terms of income and rents according to OECD indices. Given the relatively lower risk in the German residential market compared to other capital investments, investors are likely to have a relatively high willingness to invest in the German residential market. They may also





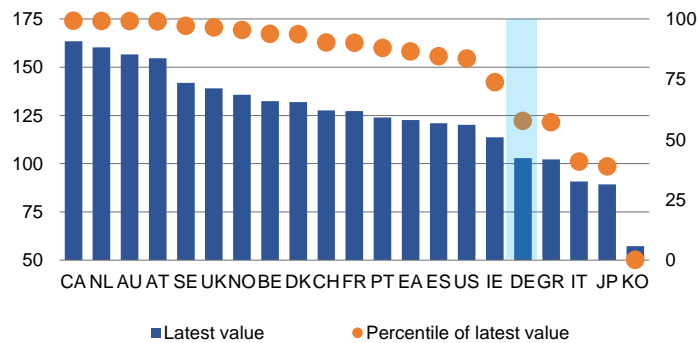
2023 Housing market outlook

initially accept a negative cash flow in order to participate in the inflation protection and the relatively low risk in the long term.

2022 Price to income

43

left y-axis: Historical average for each country = 100
right y-axis: percentile across 21 countries from 1960 to 2022

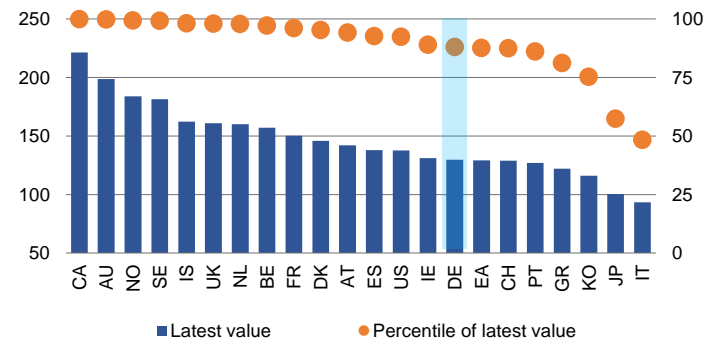


Source: Deutsche Bank Research, OECD

2022 Price to rent

44

left y-axis: Historical average for each country = 100
right y-axis: percentile across 22 countries from 1960 to 2022



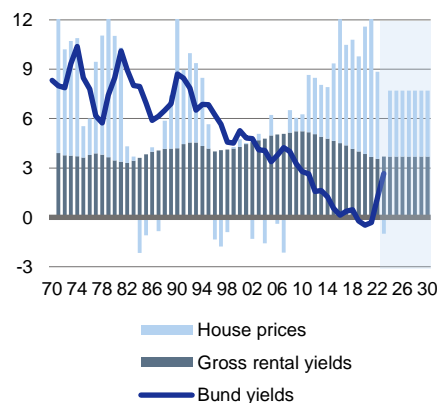
Sources: Deutsche Bank Research, OECD

6.2 Quo vadis prices? Bottom formation will be near if interest rate rises end soon

1970-2030: Returns in the residential property market vs. 10-year Bund yields

45

in % p.a.



Sources: Deutsche Bank Research, Federal Statistical Office

We expect prices to fall by a further 2% in the first quarter compared with the previous quarter. Subsequently, prices should pick up again slightly. The starting signal for this could be more cautious communication by the ECB with regard to further interest rate hikes and a continued cautious approach to reducing bond purchases. As a result, mortgage rates should also fall again, uncertainty among investors should decrease noticeably and the positive price drivers should take over. In many respects, the historical model for current developments is the 1970s. Then, too, there were energy crises, high wage settlements, loose fiscal policy, and wars. In that decade average inflation increased by 5% annually and house prices by 6%. If by 2030 house prices were again to increase at 1% point above inflation, and assuming an average inflation rate of 3% annually, then house prices would increase by 4% annually. Rental growth is expected to be similar, so initial rental yields would run sideways at today's levels. In this scenario, rental yields remain at their current level of 3.7%. The housing market would remain attractive in this scenario, but in addition to the higher financing costs, refurbishment costs, CO₂ levies and the like would have to be paid from the yields. We no longer expect the sometimes exorbitant returns of the boom phase from the financial crisis to the beginning of 2022.

6.3 Risk scenario: Further interest rate shock. The “whatever it takes” of the 2010s could turn into a “whatever it may cost” of the 2020s

Our baseline scenario “Price dip in the German housing market” described here, which we first presented in the March 2021 housing market outlook, has often been described as optimistic. However, this will only persist if high inflation eases again and falls below the 2% target. Otherwise, there is a threat of further interest rate tightening. In the short term, the current high uncertainty and financial stability risks are likely to limit the potential for interest rate hikes. However, a look back at the 1970s teaches us that central banks eventually get



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inflation under control, even if this comes at a huge cost. For example, inflation in the 1970s ended with the Volcker shock and massive interest rate hikes. These led not only to a severe recession, but also to the Latin American crisis. So if inflation remains structurally high, sooner or later interest rates could rise again sharply. House prices could then come under renewed pressure. In this scenario, however, almost all investments are likely to lose value, and investments in the German housing market could still perform relatively well compared with other asset classes.

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