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UBS Global Real Estate Bubble Index

2021

Content

UBS Global Real Estate Bubble Index
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Editorial

Dear reader,

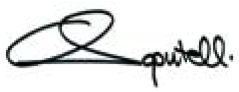
Housing prices around the world have climbed in lockstep to new heights. And urban markets have shared in the spoils, which is noteworthy for two reasons. First, pandemic-related restrictions and the rise of remote working have actually weakened the case for urban housing. Indeed, rents in the cities analyzed have declined on average—something that happened rarely in the past. Second, housing affordability in cities was already heavily strained even before the pandemic struck.

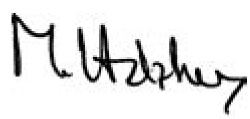
And yet the lack of affordability of homeownership for large parts of the population has evidently not been an obstacle to price increases. Record low financing costs and the entrenched expectation of long-term value gains have made owning a home so appealing that the price level doesn't seem to matter—at least for the time being. However, higher prices inevitably lead to higher household leverage, as the current acceleration in mortgage volumes clearly demonstrates.

Worsening affordability, unsustainable mortgage lending, and a rising divergence between prices and rents have historically served as forerunners of housing crises. As long as financing costs trend toward zero, property prices, incomes, and rents can continue to decouple. But ever-higher prices and leverage imply ever-higher risks, a spiraling path that will likely prove a dead end in the long term.

This report studies the housing market outlook for a broad range of global urban centers and reveals where imbalances are currently the greatest. Miami is replacing Chicago in this year's edition, as it has attracted increasing investor attention.

We wish you an interesting and informative read.





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Key results

Stronger house price dynamics

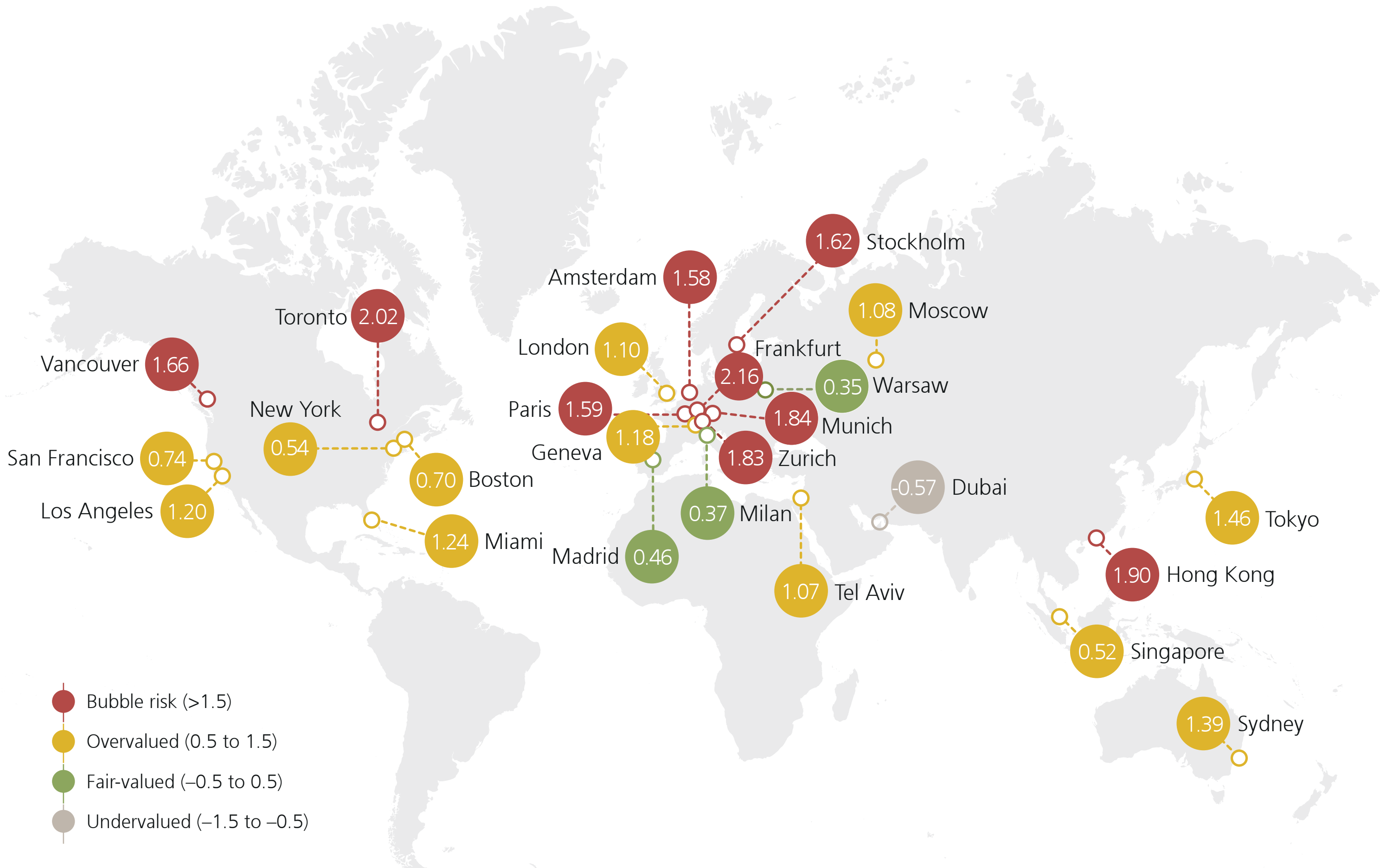
Real house price growth in the cities analyzed accelerated to 6% from mid-2020 to mid-2021, the highest increase since 2014. Moscow, Stockholm, and the cities around the Pacific—Sydney, Tokyo, and Vancouver—recorded double-digit price growth.

Europe with highest imbalances

European housing markets are still hot, and imbalances are sky-high. Six out of nine cities in the bubble risk zone are in Europe. Stockholm and Moscow belong to the top three cities with the highest increase of imbalances compared with last year. By contrast, none of the US cities evaluated are in bubble risk territory.

Emerging lending boom

Households have to borrow increasingly large amounts of money to keep up with higher prices. As a result, the growth of outstanding mortgages has accelerated in the last quarters. This growth has been supported by relaxed lending standards and falling mortgage rates.



End of urban outperformance

For the first time since the 1990s, housing prices in non-urban areas have increased faster than in cities. The cost-benefit ratio of urban living has taken a sharp turn for the worse, as entertainment and shopping options have been reduced and city-center offices have been largely abandoned.

Affordability continues to worsen

The average price-to-income multiple for a 60 square meter (650 sqft) apartment in the urban centers analyzed is currently above 8. Next to Hong Kong, the cities with the worst affordability are Paris, London, and Tokyo where multiples exceed 10.

Rents on the decline

Pandemic-related restrictions and the rise of remote working have weakened the case for urban housing. Rents in the cities analyzed have declined on average—something that happened rarely in the past. In some cities rents even posted a double-digit drop.

Exuberance in lockstep

Frankfurt, Toronto, and Hong Kong top this year's *UBS Global Real Estate Bubble Index*, with the three cities warranting the most pronounced bubble risk assessments in housing markets among those analyzed. Risk is also elevated in Munich and Zurich; Vancouver and Stockholm both reentered the bubble risk zone. Amsterdam and Paris round out the cities with bubble risk. All US cities evaluated—Miami (replacing Chicago in the index this year), Los Angeles, San Francisco, Boston, and New York—are in overvalued territory. Housing market imbalances are also high in Tokyo, Sydney, Geneva, London, Moscow, Tel Aviv, and Singapore, while Madrid, Milan, and Warsaw remain fairly valued. Dubai is the only undervalued market and the only one to be classified in a lower category than last year. On average, bubble risk has increased during the last year, as has the potential severity of a price correction in many cities tracked by the index.

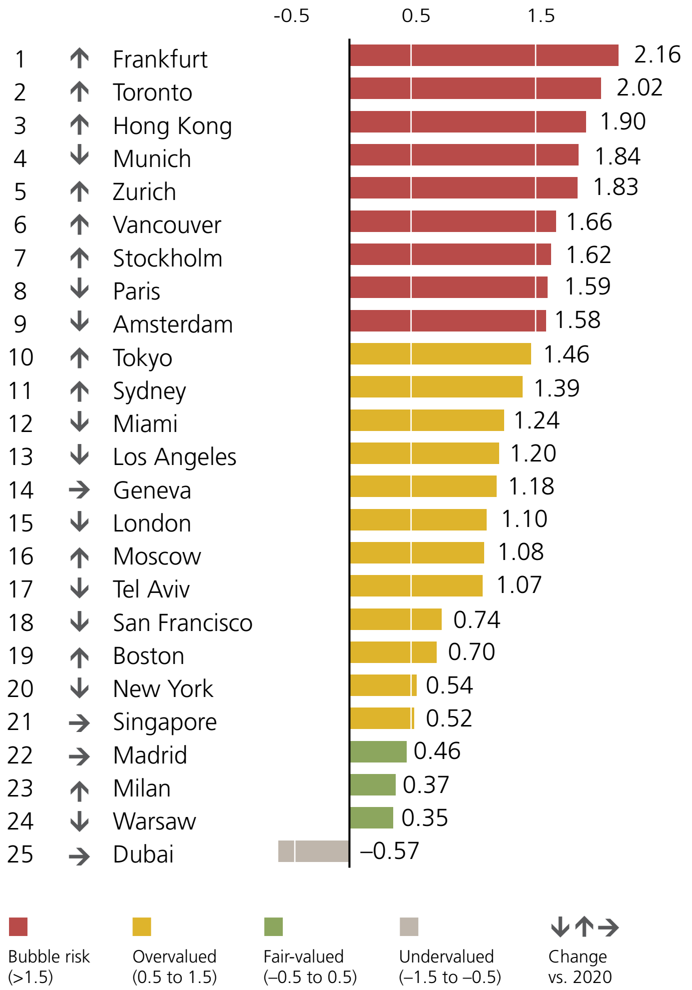
Hot but likely short-lived fireworks
House price growth in the cities analyzed accelerated to 6% in inflation-adjusted terms from mid-2020 to mid-2021, the highest increase since 2014. All but four cities—Milan, Paris, New York, and San Francisco—saw their house prices increase. And double-digit growth was even recorded in five cities: Moscow; Stockholm; and the cities around the Pacific, Sydney, Tokyo, and Vancouver.

A confluence of special circumstances has sparked this price bonanza. Predominantly, the coronavirus pandemic has trapped many people within the confines of their own four walls, amplifying the importance of living space, and leading to a higher willingness to pay for housing. At the same time, already favorable financing conditions have improved even more as lending standards have been relaxed. Moreover, higher saving rates and booming equity markets have freed up additional housing equity.

Markets under the spell of a dangerous narrative
For most households, creditworthiness is the main barrier to entering the property market. Once that obstacle is cleared, the low user cost of owning property compared with renting, coupled with the expectation of ever-growing house prices, makes homeownership look attractive regardless of price levels and leverage. This rationale may keep markets running for the time being. But it's not sustainable in the long run.

UBS Global Real Estate Bubble Index

Index scores for the housing markets of select cities, 2021



Source: UBS
For an explanation, see the section on Methodology & data on page 28.

Identifying a bubble

Price bubbles are a recurring phenomenon in property markets. The term "bubble" refers to a substantial and sustained mispricing of an asset, the existence of which cannot be proved unless it bursts. But historical data reveals patterns of property market excesses. Typical signs include a decoupling of prices from local incomes and rents, and imbalances in the real economy, such as excessive lending and construction activity. The *UBS Global Real Estate Bubble Index* gauges the risk of a property bubble on the basis of such patterns. The index does not predict whether and when a correction will set in. A change in macroeconomic momentum, a shift in investor sentiment or a major supply increase could trigger a decline in house prices.

Households have to borrow increasingly large amounts of money to keep up with higher prices. As a result, the growth of outstanding mortgages has accelerated almost everywhere in the last quarters, and debt-to-income ratios have risen—most markedly in Canada, Hong Kong, and Australia. Pressure is mounting on governments and central banks to take action. Lending standards, which were relaxed during the pandemic, are being tightened again. Additional hurdles for professional housing investors and foreign buyers already loom on the horizon. Overall, housing markets have become even more dependent on very low interest rates, meaning a tightening of lending standards could bring price appreciation to an abrupt halt in most markets.

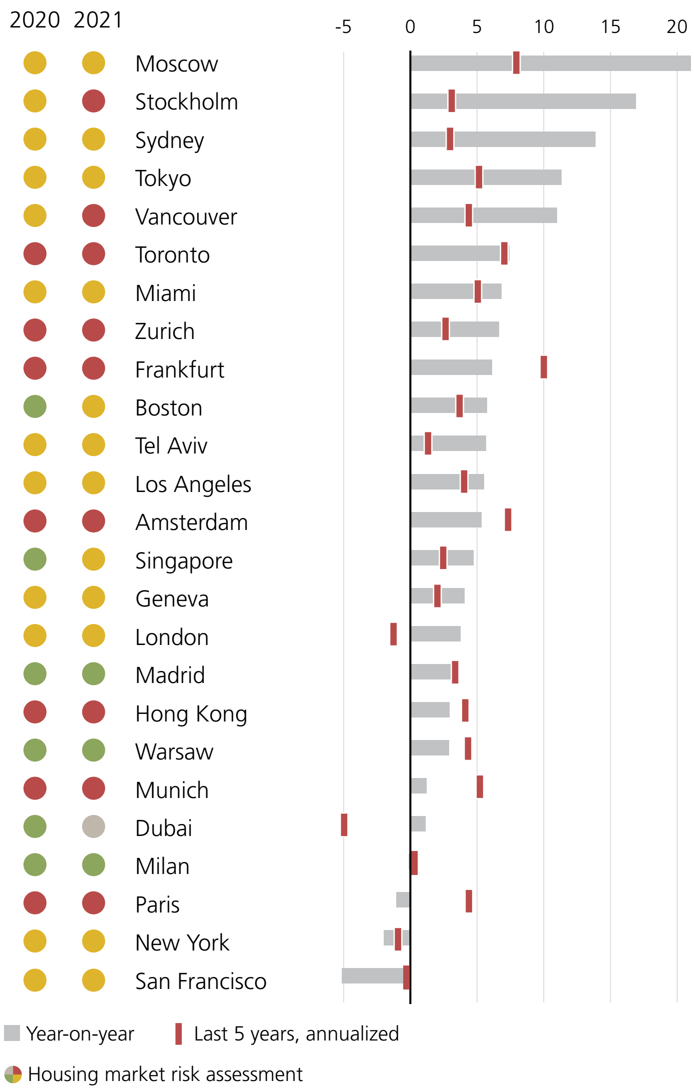
Era of urban outperformance called into question

Next to lower financing costs, urbanization was the main pillar of house price appreciation in city centers in the last decade. However, city life has suffered a considerable blow from lockdowns, as entertainment and shopping options were reduced and city-center offices were largely abandoned. The cost-benefit ratio of urban living has taken a sharp turn for the worse. Economic activity has instead spread outward from city centers to their (sometimes distant) suburbs and satellites—and so has housing demand along with it. Consequently, for the first time since the early 1990s, housing prices in non-urban areas have increased faster than in cities since mid-2020. While some effects may be transitory, this reversal weakens the case for quasi-guaranteed house price appreciation in city centers. The impact of this development will likely be even bigger in places with stagnating or shrinking populations (like most of Europe), as supply will have an easier time keeping up with demand.

Overall, a long, lean spell for cities' housing markets looks more and more probable, even if interest rates remain low. For first-time homebuyers, however, waiting for more affordable prices is rarely an option, given that housing cycles are long-lasting and the timing of bigger market corrections is not predictable—especially if homeownership is a non-negotiable life goal in itself. In light of the shaky housing market fundamentals, caution with regard to leverage is warranted.

Rising prices in most cities

Inflation-adjusted price growth rates, as of 2nd quarter 2021, in %



Source: see page 29

Regional cycles

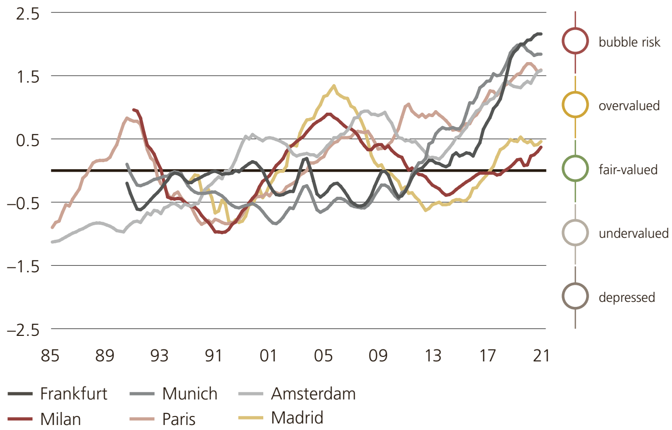
Eurozone

Imbalances remain sky-high in Frankfurt, Munich, Paris, and Amsterdam. Index scores were roughly stable compared with last year's edition, with the exception of Munich, which recorded a decline. Housing markets remain under the spell of the European Central Bank's negative interest rate policy and easy lending standards. In countries with robust economic growth, urban home prices soared across the board over the last decade. In the German cities, real prices are now close to 90% higher than they were in 2012. In Amsterdam prices are up by 75%. In Paris, which follows a different cycle, and in mainly the southern part of the Eurozone, the impact was less pronounced. Overall, price increases have slowed down over the last year and fallen behind the respective national averages as city centers have become less affordable and demand has shifted to the suburbs and satellites. Nevertheless, a price correction is not imminent as long as job creation within these cities remains strong and interest rates stay negative.

Milan and Madrid were hit relatively harder by the pandemic. Strict and long lockdowns brought housing market recoveries to a halt. The index scores of both cities trended sideways. A period of sustained and healthy economic growth would be needed to trigger a housing boom in these cities.

Eurozone

UBS Global Real Estate Bubble Index



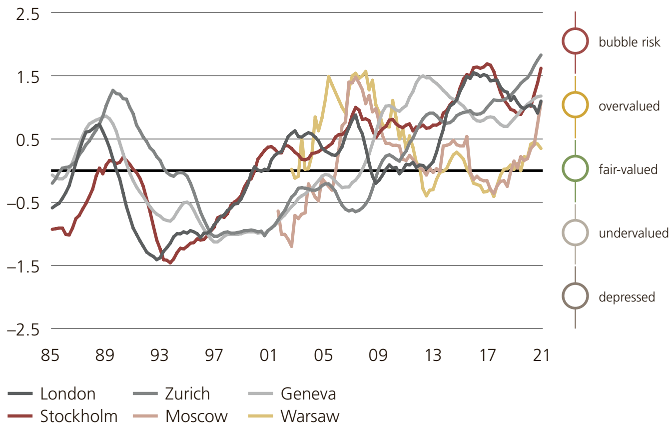
Rest of Europe

Index scores have increased in most European cities over the last year, but markets have developed very heterogeneously. Zurich's score advanced further into bubble risk territory, with price growth accelerating against a background of low mortgage rates and deep-rooted expectations of higher prices. In Geneva, home prices increased less markedly, though still in line with the nationwide average over the last four quarters. The city's index score has steadily risen since 2018 but remained in overvalued territory.

By contrast, Stockholm's property market reentered bubble-risk territory, as prices recorded the strongest annual jump in over 20 years. In no other European city evaluated have imbalances increased so fast since mid-2020. Moscow's real estate has recorded the highest annual price growth of all analyzed cities. Demand has been boosted by lower interest rates and supportive measures. In London, a three-year-long correction period ended. But price growth in England's capital city still trails the nationwide average. Although the index score declined further compared with last year's edition, the market remains in overvalued territory. Warsaw's housing market remains fairly valued. Low supply has underpinned price growth, and imbalances look less severe than they did in 2008 when the bubble burst.

Rest of Europe

UBS Global Real Estate Bubble Index

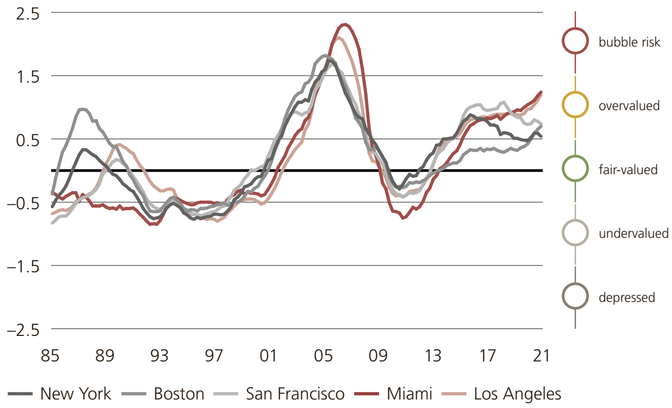


United States

Historically low mortgage rates have supported price growth in the US over the past four to five quarters. Nevertheless, price changes in the analyzed cities (with the exception of Miami) trail the nationwide average. The desire for more space and the potential for more widespread adoption of remote working have shifted a significant amount of demand from densely populated, very expensive cities to more affordable tax-, business-, and regulatory-friendly cities and states. In particular, San Francisco and New York have been hit hard by falling demand. Price levels in the two cities have declined, and rents plummeted by more than 15% from mid-2020 to mid-2021. That said, New York has demonstrated significant resilience over the past several months. Given its business-friendly economy and relatively less restrictive COVID-19 measures, Miami has benefited from substantial in-migration. Overall, market imbalances in the last several quarters have increased in Miami, Los Angeles, and Boston, pushing all of them higher into overvalued territory. By contrast, New York and San Francisco have recorded lower valuation scores, though they have remained overvalued as well. The index scores for all markets are still far below those notched in 2007.

United States

UBS Global Real Estate Bubble Index

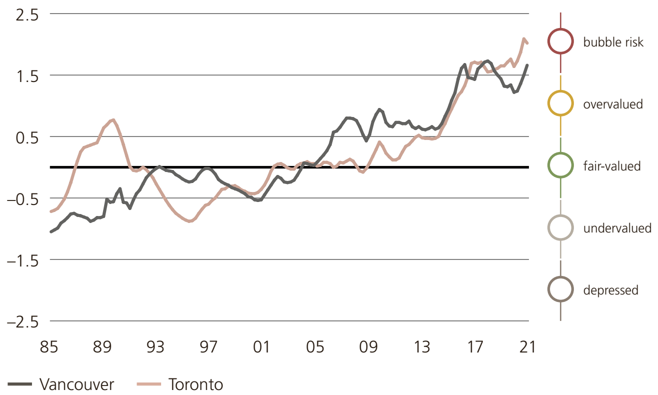


Canada

Between 2000 and 2017, real home prices in Vancouver and Toronto rose almost unabated by more than 5% per year on average in an ascent that was driven by falling mortgage rates, urbanization, and international demand. Imbalances soared, and both markets had highly elevated scores in bubble risk territory. However, local authorities introduced tighter financing conditions, new taxes on foreign buyers, vacancy fees, and stricter rent controls, which together resulted in a cooling of the market. Prices in Toronto stagnated, and Vancouver recorded a price correction of almost 10% between 2018 and late 2019. In 2019, another housing frenzy developed as buyers took advantage of declining mortgage rates. Imbalances and index scores have increased accordingly. Toronto ranks second among all analyzed cities, and Vancouver has returned to bubble risk territory. Stretched affordability, tighter mortgage stress test requirements, and an expected tightening of monetary policy by the Bank of Canada will challenge price levels in the coming quarters.

Canada

UBS Global Real Estate Bubble Index



APAC

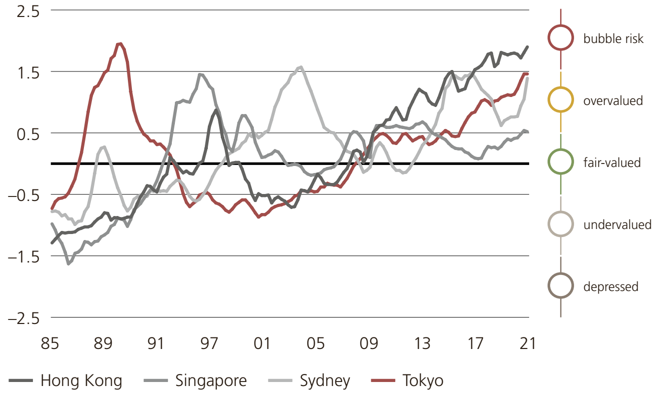
Index scores have increased in all analyzed APAC cities over the last four quarters. Hong Kong is the only market in the bubble risk zone, though. Political tensions and economic woes ended a 15-year uptrend of prices in 2018. Yet imbalances remain highly elevated, despite three years of nearly stagnating real prices. Singapore, by contrast, was able to keep house price and income growth aligned. But in 2018, stronger price growth kicked in as Singapore benefited from higher foreign demand. This year, valuations have increased marginally, and the market is slightly overvalued.

The correction period for Sydney's housing market was brief. Easier lending standards and rate cuts by the Reserve Bank of Australia have reflated the market. Market valuations have increased significantly but are still not in bubble risk territory, sitting below the 2017 level. Without a turnaround in interest rates, the decade-long upward trend of house prices is likely to continue, given ongoing population growth.

Real estate prices in Tokyo have been increasing almost continuously for over two decades, bolstered by attractive financing conditions and population growth. The housing in the capital has decoupled increasingly from the rest of the country and become unaffordable. During the pandemic, demand for city housing has remained high, with imbalances increasing from undervalued 20 years ago to highly overvalued now.

APAC

UBS Global Real Estate Bubble Index



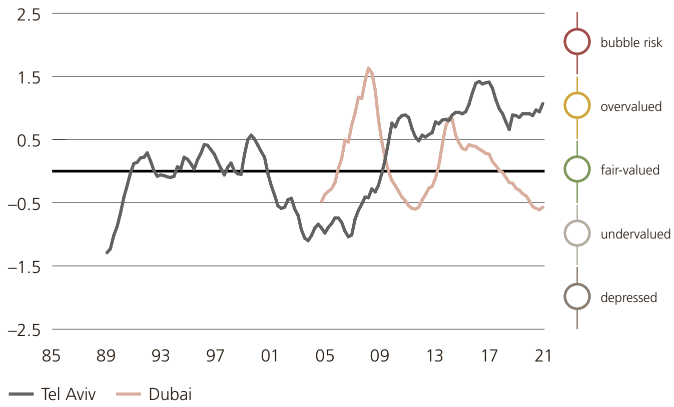
Middle East

Leading up to the end of 2020, prices in Dubai were still plummeting—in total roughly 40% since the peak in 2014. Index scores dropped from bubble risk to undervalued territory in those six years. Improved affordability, easier mortgage regulations, stable oil prices, and an economic rebound now seem to have finally kick-started a recovery. Although construction has slowed, essentially limitless supply poses a risk for long-term appreciation prospects.

In Tel Aviv, prices rose by an average of 7% per year between 2003 and 2017—the second-strongest price growth of all analyzed cities within this period. Accordingly, the market is in overvalued territory. A combination of rising mortgage rates and stretched affordability triggered a short-lived correction. But falling mortgage rates and robust population growth have pushed up prices again. Moreover, the government has lowered the purchase tax for second homes, even encouraging housing market speculation as the market again approaches bubble risk territory.

Middle East

UBS Global Real Estate Bubble Index



Global cities' benchmarks

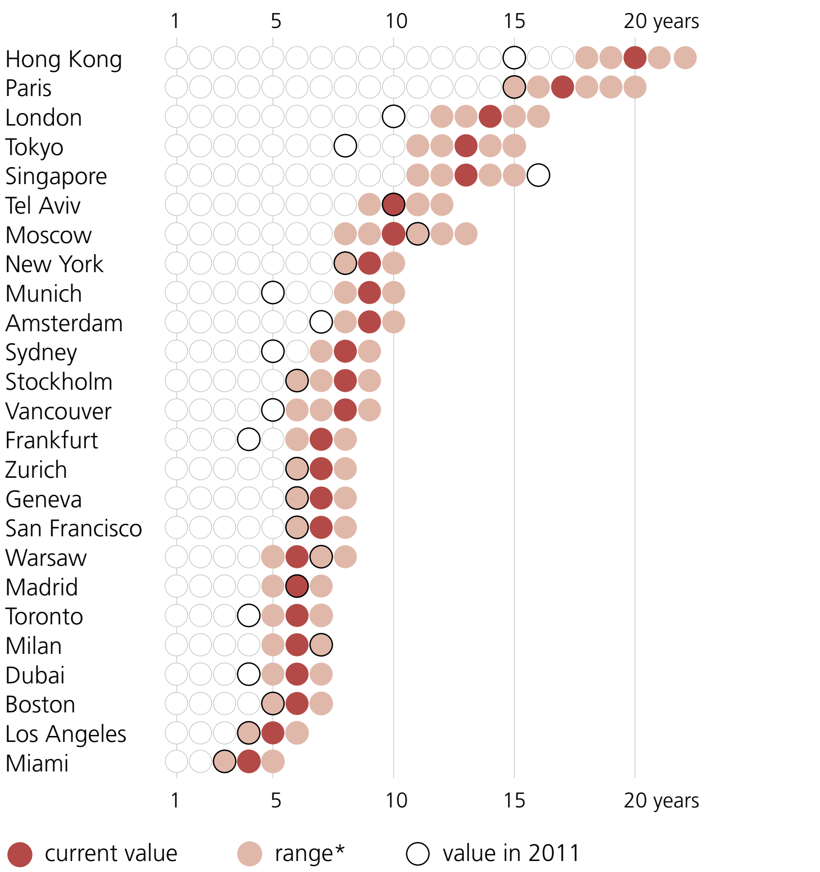
Price-to-income

Buying a 60 square meter (650 square foot) apartment exceeds the budget of people who earn the average annual income in the highly skilled service sector in most world cities. In Hong Kong, even those who earn twice the city's average income would struggle to afford an apartment of that size. House prices have also decoupled from local incomes in Paris, London, Tokyo, and Singapore, where price-to-income multiples clearly exceed 10. Unaffordable housing is often a sign of strong investment demand from abroad, tight zoning, and strict rental market regulations. If investment demand weakens, the risk of a price correction increases and long-term appreciation prospects shrink.

By contrast, housing is relatively affordable in Miami, Los Angeles, Boston, Dubai, and Milan, which limits the risk of a price correction in those cities. Given relatively high incomes, purchasing an apartment of this size is also relatively feasible for residents of Geneva or Zurich.

For homebuyers, affordability also depends on mortgage interest rates and amortization obligations. Relatively high interest and amortization rates, for example, mean that even the relatively low price-to-income multiples in US cities can place a heavy burden on monthly income. Conversely, with low interest rates and no requirement of full amortization, even elevated purchase prices can be easily sustained in, for example, Switzerland and the Netherlands.

The number of years a skilled service worker needs to work to be able to buy a $60m^2$ (650 sqft) flat near the city center



Source: UBS. Remark: For an explanation, see the section on Methodology & data on page 28. * Uncertainty range due to differing data quality

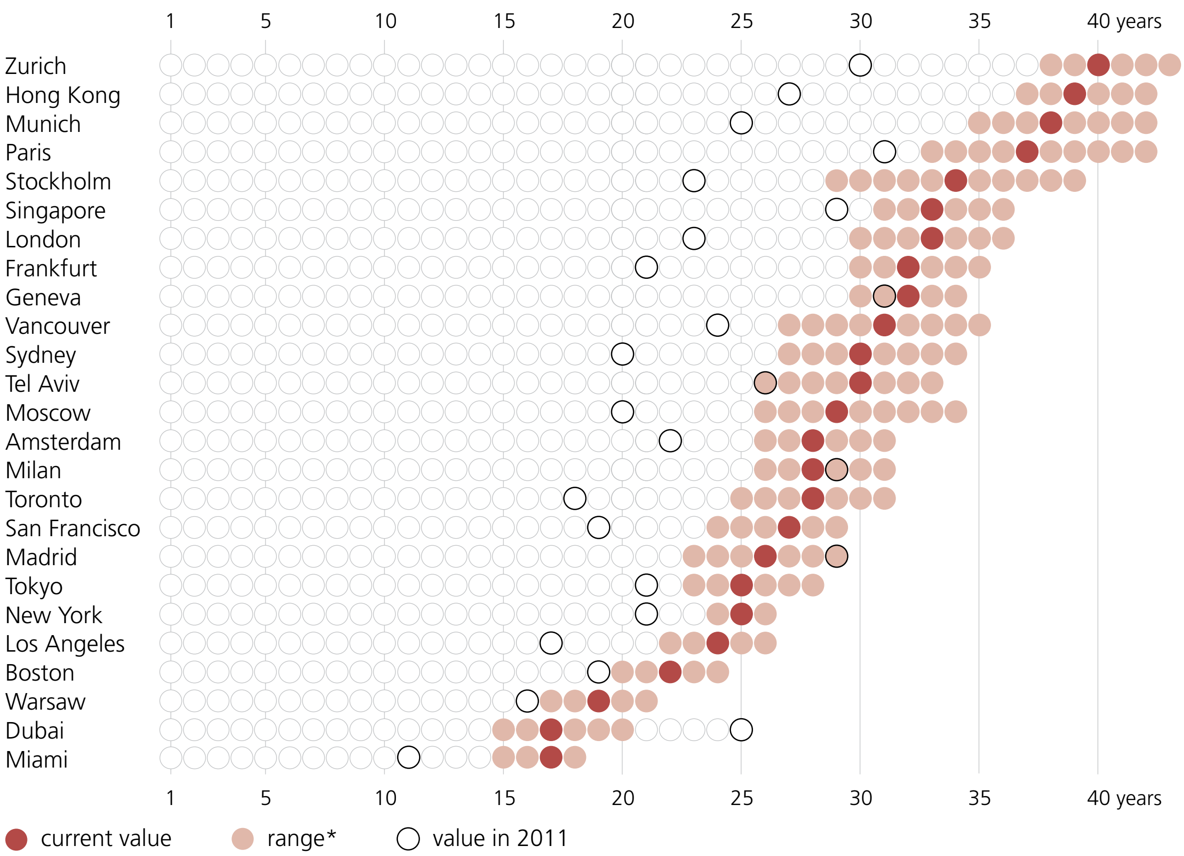
Price-to-rent

Zurich, Hong Kong, Munich, and Paris have the highest price-to-rent ratios, followed by Stockholm, Singapore, and London. Extremely high multiples indicate an excessive dependence of housing prices on low interest rates. Overall, almost half of the covered cities have price-to-rent multiples above or close to 30. House prices in all these cities are vulnerable to a sharp correction should interest rates eventually rise.

Price-to-rent multiples in some US cities have recently increased. But with values below 25, New York, Los Angeles, Boston, and Miami can be still found in the lower part of the list. These low multiples reflect, among other things, higher interest rates and relatively mild regulation of the rental market. Conversely, rental laws in France, Germany, and Sweden are strongly pro-tenant, preventing rentals from reflecting true market levels.

However, stratospheric price-to-rent multiples reflect not only interest rates and rental market regulation, but also expectations of rising prices, as is the case, for example, in Zurich and Munich. Investors anticipate being compensated with capital gains for very low rental yields. If these hopes do not materialize and expectations deteriorate, homeowners in markets with high price-to-rent multiples are likely to suffer significant capital losses.

The number of years a flat of the same size needs to be rented out to pay for the flat



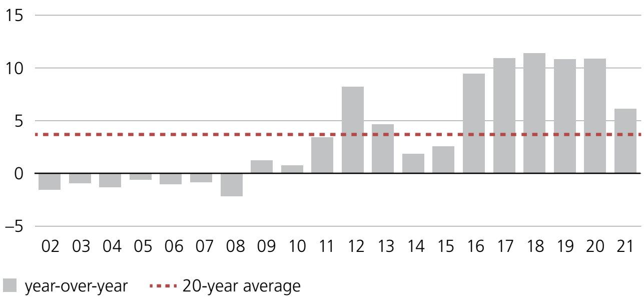
Source: UBS. Remark: For an explanation, see the section on Methodology & data on page 28. * Uncertainty range due to differing data quality

Frankfurt

Inflated home prices

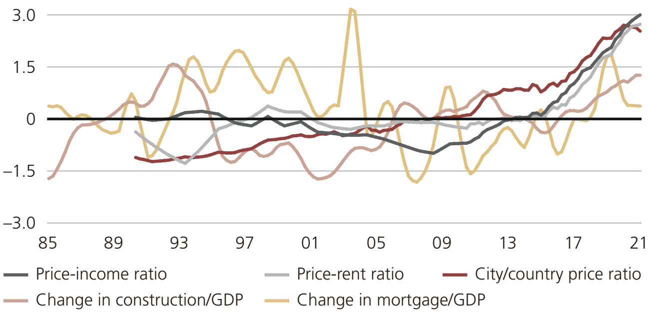
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



Frankfurt tops this year's edition of the *UBS Global Real Estate Bubble Index*. Its score is in **bubble risk** territory, which is the result of extremely strong price growth. Since 2016, real home prices have been rising by 10% per year on average, the highest rate of all cities included in our report. Currently, its price growth is still at the unsustainable level of 6% per year, though it has fallen below the national average.

Solid economic and employment growth have laid the groundwork for these market dynamics. The population has increased by more than 12% over the last 10 years. Although construction activity accelerated in the past few years, it did not keep up with rising demand. Consequently, rents have been climbing by almost 3% annually, making Frankfurt the city with the third-highest rental inflation among all those analyzed.

But extremely low mortgage rates and lax financing conditions were the real fuel of the housing frenzy. As rents have increased, Frankfurt has become a hotspot of speculative buy-to-let investments. Construction activity has been focused on the luxury segment, which has added to price inflation. To curb speculation, a second-home tax was introduced in 2019.

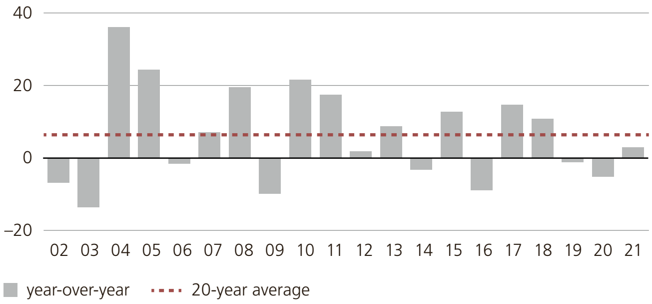
Recently, however, some clouds have appeared on the horizon. Frankfurt has become increasingly unaffordable; the average price-to-income ratio has doubled within 10 years. Alongside increased possibilities of remote working, population growth in the city has come to a halt, and people are moving away to more spacious locations in the suburbs.

Hong Kong

Wait and see

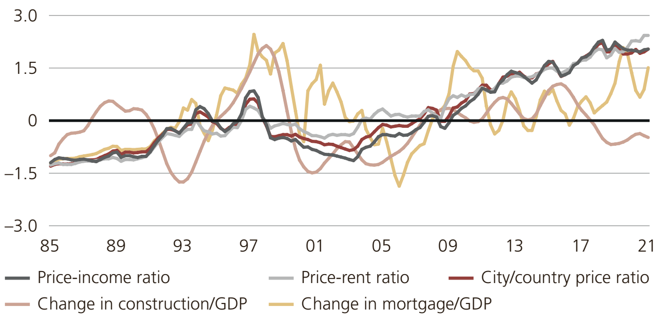
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



The Hong Kong housing market shows signs of improvement. Real prices increased by 3% between mid-2020 and mid-2021, with sales even reaching the highest level ever recorded. There is robust housing demand in the upper price and luxury segment, driven not only by locals, but also by newly arrived residents from mainland China. Rent levels have bottomed out, as tenants have been taking advantage of the recent rental price correction. In addition, tenants are willing to upsize, given the rise in working from home.

Overall, the *UBS Global Real Estate Bubble Index* score for Hong Kong has increased over the last four quarters and the market remains in **bubble risk** territory. Imbalances have been aggravated by strong mortgage growth of 8–10% per year—far outpacing income growth. However, the high minimum down payment and stress test requirement should help alleviate the potential financial risk even if a market correction occurs.

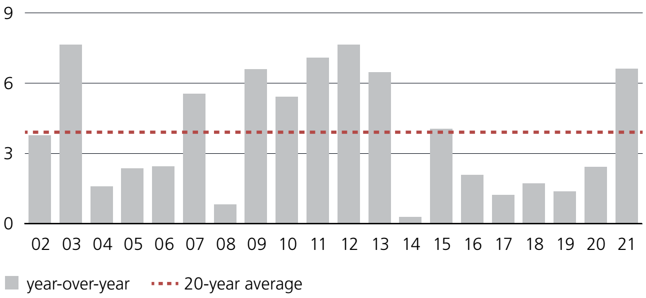
The current positive momentum masks underlying economic and political uncertainties. The ongoing economic recovery and the relaxation of travel restrictions to mainland China should support the property market. But for the time being, we do not expect a long-lasting revival of the market dynamics that characterized the last 20 years. The government is eager to actively increase the new housing supply over the medium to long term, and it is pushing for more farmland conversion and land reclamation, which could have structural price dampening effects. Current price growth will likely fade out in the coming quarters.

Zurich

Overheated market

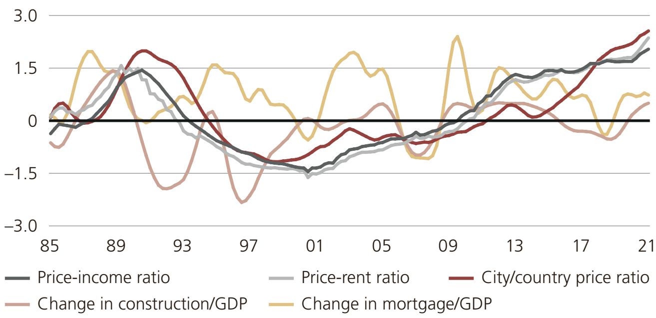
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



The valuation of the owner-occupied housing market in Zurich rose significantly once again. Since summer 2020, real prices have increased by 6.5%—the highest annual growth rate since 2013. They are now more than 50% above their 2010 level. Similarly, the growth of outstanding household mortgages has accelerated in the last quarters. The market is in the **bubble risk** zone, according to the *UBS Global Real Estate Bubble Index*.

The city of Zurich has recorded the strongest price growth rates of all Swiss economic regions in the last decade. Consequently, expectations of rising prices are deeply entrenched. The market has been overheating in the last quarters, and offered volumes have fallen to a record low.

Nevertheless, a broad market correction is not in the offing in the short run. User costs are low, so homeownership looks enticing compared with renting, at least assuming long-term price appreciation continues. Furthermore, Zurich attracts a persistently high level of international immigration thanks to the city's prime business location, and it is enjoying robust employment growth.

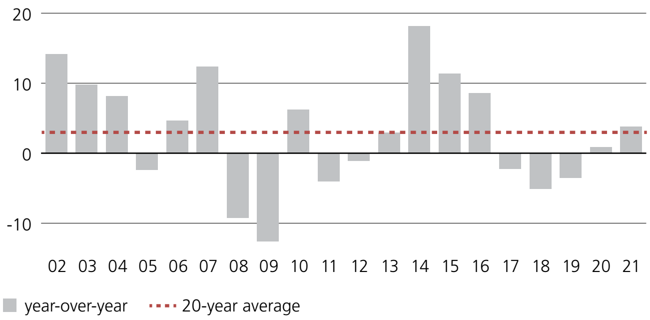
In the long run, however, there is cause for caution. Increased demand for more living space and low affordability have reduced the attractiveness of the city for locals, and demand has shifted away from the center to the agglomeration and periphery. Moreover, the highest price-to-rent ratio among all cities analyzed argues against continuing house price appreciation. The current price level is contingent on lasting negative interest rates in Switzerland.

London

Still trailing

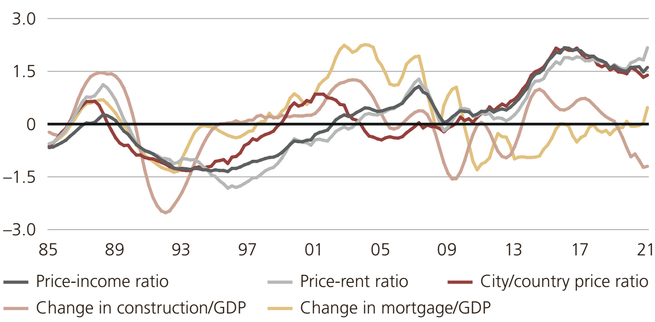
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



Over the last five years, London has recorded the second-weakest price growth of all the cities included in the study. But the beginning of the pandemic in 2020 marked the bottoming out of the local housing market. Between mid-2020 and mid-2021, real house prices in England's capital increased by almost 4%. Overall, London's housing market remains in **overvalued** territory, according to the *UBS Global Real Estate Bubble Index.*

The recent recovery of the housing market has been supported by multiple factors. First, financing conditions have become even more attractive. Second, the temporary stamp duty holiday has fueled sales activity, leading to historically high demand for the Help-to-Buy financing scheme. Finally, although housing completions have recently increased, the market remains structurally undersupplied.

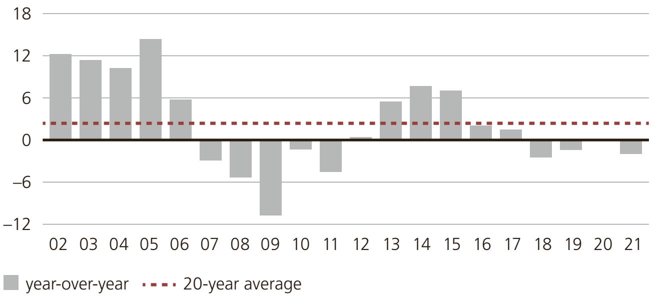
Despite these supportive drivers, London's housing market has lagged the overall UK market. The rise of home and flexible office models sparked an increase in demand and faster price increases for homes with more space and greater affordability (i.e., those outside the city center). Nevertheless, after a few challenging years, London's prime property prices have stabilized. For now, global travel restrictions and ongoing economic and political uncertainties continue to serve as a headwind to a stronger price rebound. But a relatively weak pound may attract global investors again. The stamp duty surcharge for non-UK buyers, which was introduced in April 2021, will likely slow demand but not discourage it completely.

New York

Uncertain recovery

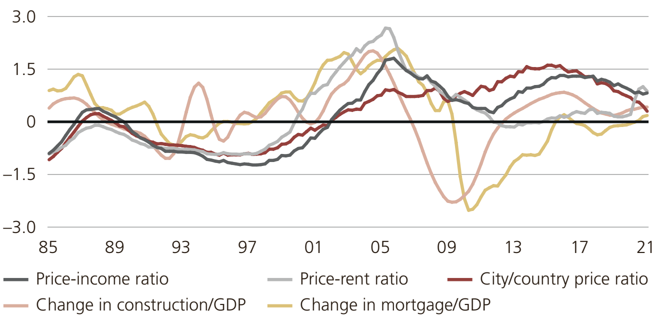
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



Home prices in the US soared between mid-2020 and mid-2021 by almost 7% in inflation-adjusted terms, the highest rate since 2006, underpinned by low financing costs and strong demand. In sharp contrast, median prices in the city of New York declined by 2%. The local economy has been hit hard by strict measures implemented during the pandemic, especially since the tourism and entertainment industries came to a virtual standstill. The rapid rise of remote work motivated many New Yorkers to seek less dense, more affordable suburban locations. Given rapidly rising vacancies, real rents corrected by almost 20% on average—the steepest drop among all analyzed cities. Nevertheless, New York remains in slightly **overvalued** territory, according to the *UBS Global Real Estate Bubble Index*.

As in other gateway cities, market momentum in New York has been improving of late. The number of sales in Manhattan reached the highest level in six years according to Douglas Elliman. The recovery was especially robust within the luxury segment, where average sales prices increased by 20% in the second quarter of 2021 alone. Although many employees will likely continue working from suburban locations beyond 2021, the rental market is poised for brighter days ahead, as well. Rents have bottomed out, concessions have largely been eliminated, and more affordable apartments have lured many people back.

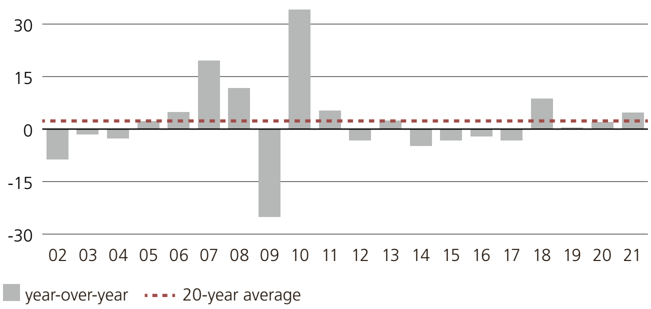
Given the city’s global standing, property prices still look attractive compared with international gateway markets. That said, fiscal challenges continue to cast a shadow over the market outlook. Higher taxes and adverse policies could potentially limit real estate demand, particularly in the high-end segment. We expect New York’s overall price growth to trail the national average over the next several quarters.

Singapore

No irrational exuberance

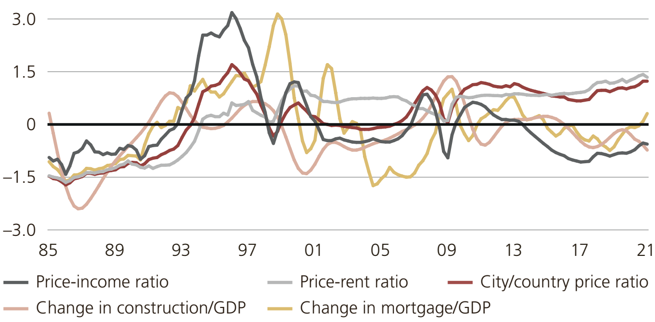
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



From mid-2020 to mid-2021, Singapore registered its second-strongest annual price growth over the last decade. In inflation-adjusted terms, home prices increased by 5% compared with the previous year, clearly outpacing the growth rates in income and rents. Singapore's index score has consequently increased, pushing the city-state's housing market into slightly **overvalued** territory according to the *UBS Global Real Estate Bubble Index*.

Rising home prices have been driven by low interest rates, a rebound in economic growth, and the local labor market recovery. Transaction volumes have been trending higher, with firm demand across domestic and foreign buyers. A nascent revival of an en-bloc cycle is also fueling positive sentiment around home prices. At the same time, new supply is expected to decline. Project completion schedules have been delayed because of construction bottlenecks arising from labor shortages and financial difficulties among a handful of contractors.

Rents have increased by 3% over the past year, while vacancies have remained relatively stable. Project delays in the primary market may have diverted some demand to the rental market. With working from home becoming the new normal for many, growing space requirements are also supportive of rental demand.

The government is keeping a close watch on asset price increases and is willing to intervene with adequate property cooling measures. Potential future policy interventions should prevent the formation of a real estate bubble. Given this policy environment, homebuyers in Singapore should not expect capital gains in excess of income growth over the long run.

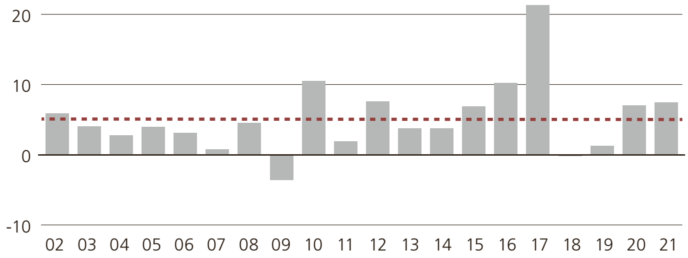
Select cities

Toronto

Over the last ten years, the real price level has almost doubled amid strong population growth and falling mortgage rates. After the introduction of restrictive regulations (e.g., a foreign-buyers' tax and rent controls), the market took a breather in 2018 and 2019, only to reaccelerate in 2020. Real prices increased by almost 8% from mid-2020 to mid-2021. To finance purchases in an environment of higher prices, buyers have taken advantage of historically cheap mortgage loans and looser mortgage stress test requirements for households. Increasingly stretched affordability—according to the National Bank of Canada, buyers in Toronto require the highest income in the country to qualify for a mortgage—poses a challenge, as stress test rules have recently been tightened again. Moreover, the high price levels are increasingly dependent on low interest rates. The Bank of Canada is expected to taper in 2022, well ahead of the Federal Reserve, a move that would likely raise mortgage rates and discourage foreign real estate investments. This, in turn, could lead to an abrupt end to the current housing frenzy.

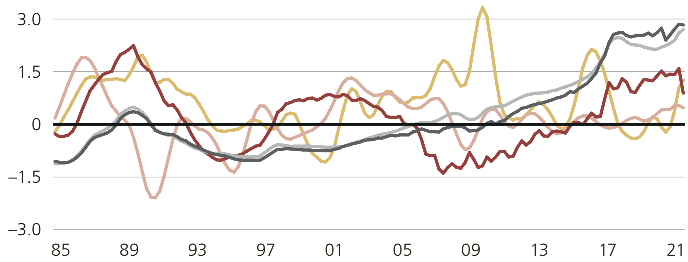
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

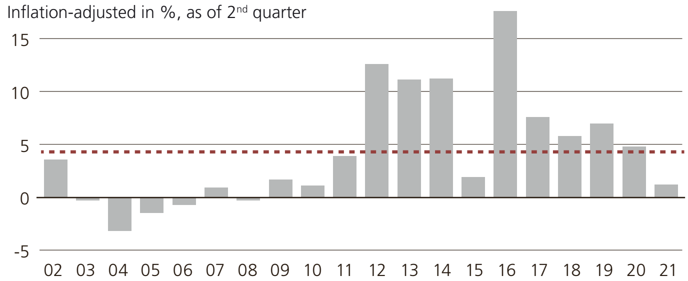


Munich

The healthy and well-diversified economy has ensured dynamic job creation, attracting new residents and boosting housing demand over the last few years. On average, real prices increased by more than 8% per year between 2010 and 2019. Given low financing costs, speculative investment is still an important pillar of demand. Overall, the city has become a victim of its own success. Munich has one of the highest price-to-rent ratios among all cities analyzed. Declining affordability and pandemic-driven need for more space both have shifted population growth to suburban locations. Consequently, over the last few quarters price growth has stalled. And for the first time since 2012, rents have even corrected slightly. Any tightening of financing conditions could trigger a price correction, even in this highly undersupplied market.

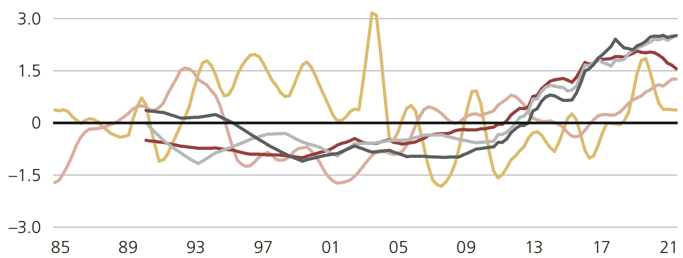
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year · 20-year average

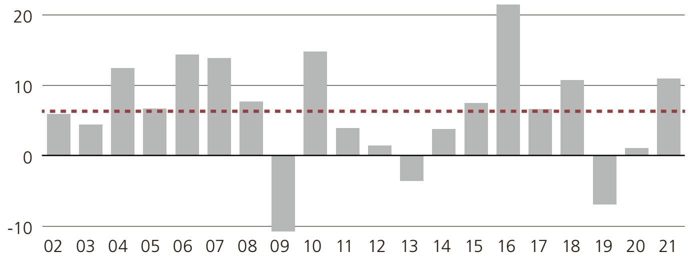
Price-income ratio · Price-rent ratio · City/country price ratio
Change in construction/GDP · Change in mortgage/GDP

Vancouver

The introduction of vacancy fees and a foreign-buyers' tax in 2016 curbed foreign demand and triggered a price correction in the red-hot housing market of Vancouver. Between 2018 and 2019, real price levels declined by almost 10%. Since then, however, lower prices, falling mortgage rates, and looser stress test rules have enticed households to buy properties again, leading to a fast rebound. From mid-2020 to mid-2021, property prices increased by 11%, offsetting past losses. In an effort to temper housing demand and boost market resilience, the mortgage qualifying rate was recently lifted again. While the ongoing economic rebound will likely support demand in the coming months, affordability has once again returned to the spotlight. Tightening down payment and income requirements for mortgages should moderate current market dynamics.

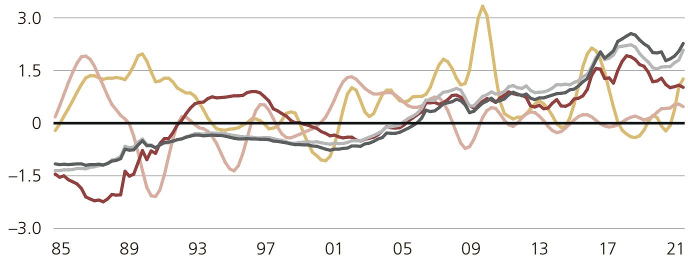
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

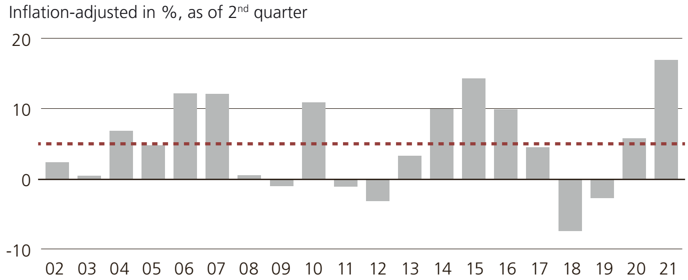


Stockholm

More than two straight decades of rising property prices ended in 2017 as affordability decreased and tighter mortgage standards were introduced. By 2019, real prices had corrected by 10%. But the pandemic and falling mortgage rates have now sparked a downright housing frenzy. Prices increased by 17% from mid-2020 to mid-2021—the strongest annual increase for 20 years—and now stand 10% above the previous peak. Consequently, stricter mortgage amortization standards have been reintroduced as macroprudential measures. But financing conditions continue to favor home ownership, especially in light of the highly regulated and (consequently) undersupplied rental market.

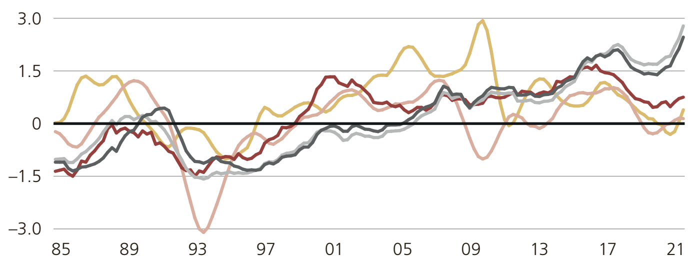
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year · 20-year average

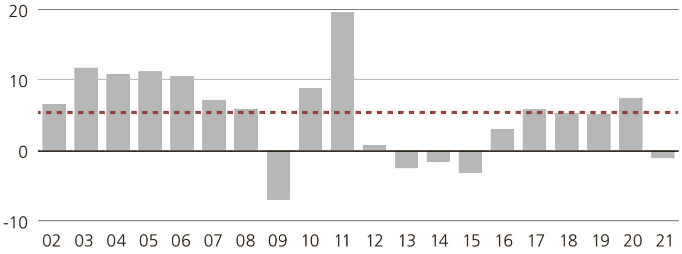
Price-income ratio · Price-rent ratio · City/country price ratio · Change in construction/GDP · Change in mortgage/GDP

Paris

Between 2015 and 2020, real prices increased by more than 30%. Foreign demand in the luxury segment and falling mortgage rates propelled the price surge. But from mid-2020 to mid-2021 prices corrected by 1%. This market weakness has been driven by central locations. First, these locations are highly unaffordable—a highly skilled worker needs to work 16 years to save for a 60 square meter (650 square foot) apartment. And second, the pandemic has prompted many Parisians to look elsewhere for housing. Many residents left Paris before a strict lockdown went into effect last fall, and demand for small apartments in the city center has flattened. Consequently, the price growth has lagged the nationwide average. While international appeal and a lack of new housing supply support the price level, current negative population growth poses a risk to price stability.

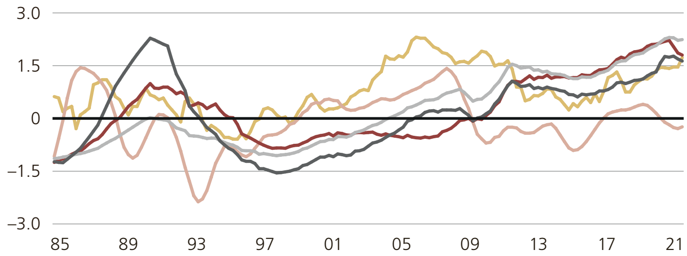
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

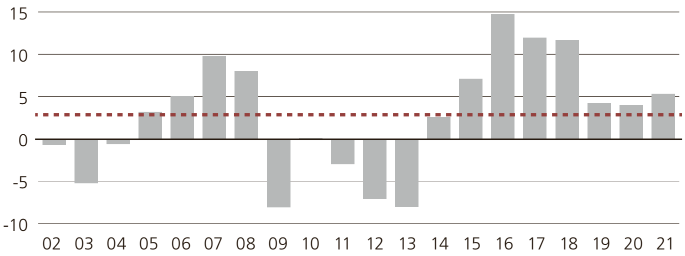


Amsterdam

Real prices increased by more than 10% per year between 2013 and 2018, a sharper rise than in any other city in the study. The boom was supported by attractive financing conditions, a solid economy, and high buy-to-let demand. However, price growth slowed down substantially in 2019 and 2020 as affordability decreased and banks tightened their mortgage approval criteria. Moreover, a considerable amount of new supply entered the market. On the back of relaxed lending conditions, lower rates, and lower taxes for first-home buyers, prices shot up again. Real prices are now 5% higher than they were a year ago. A complete ban on buy-to-let investments is currently under discussion and could somewhat decelerate the market dynamics.

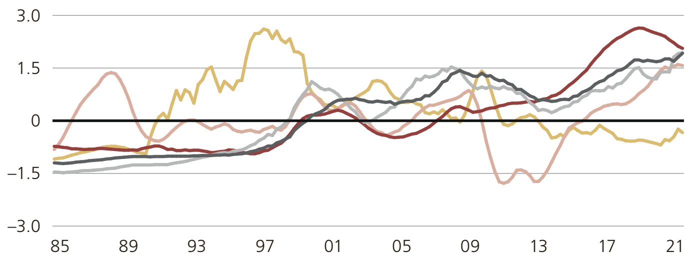
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year - - - 20-year average

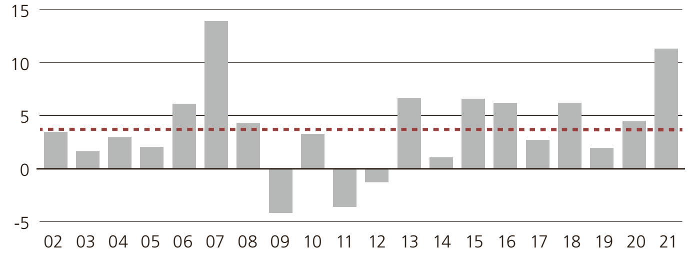
Price-income ratio — Price-rent ratio — City/country price ratio — Change in construction/GDP — Change in mortgage/GDP

Tokyo

Against the background of a declining national population, the city is still adding to its numbers. At the same time, a strong economy, relatively good job prospects, and falling mortgage rates have supported housing demand. Consequently, real housing prices have been increasing almost uninterruptedly for the last two decades, resulting in a doubling of the price level. In recent quarters, annual price dynamics have even accelerated into double-digit territory—one of the highest growth rates of cities covered in this study. Sales of newly constructed buildings for the Olympics have also lifted prices. The housing price level in the capital has decoupled increasingly from the rest of the country's, leading to stretched affordability that will likely curb future price growth.

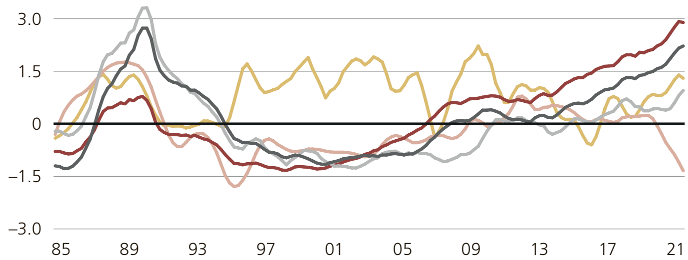
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

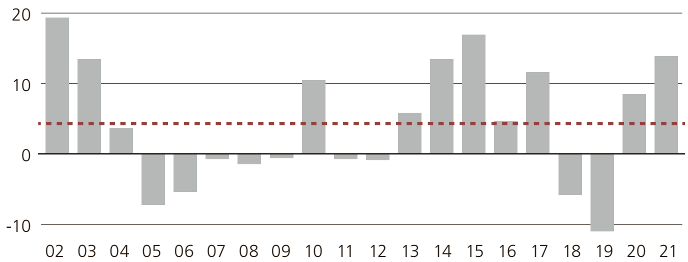


Sydney

After a short-lived but sharp price correction between 2018 and 2019, the housing market rebounded. From mid-2020 to mid-2021 prices increased by almost 14% in inflation-adjusted terms—the third-strongest rise among all analyzed cities. Overall, the market has recovered from all losses, and prices have reached the highest level on record. Price growth has clearly outpaced local incomes, stretching affordability and thereby increasing dependance on easy financing conditions even further. The growth of outstanding mortgages is accelerating again, as households are taking advantage of historically low interest rates. Monetary policy is likely to stay accommodative for the time being. A tightening of lending rules would likely result in a setback for prices.

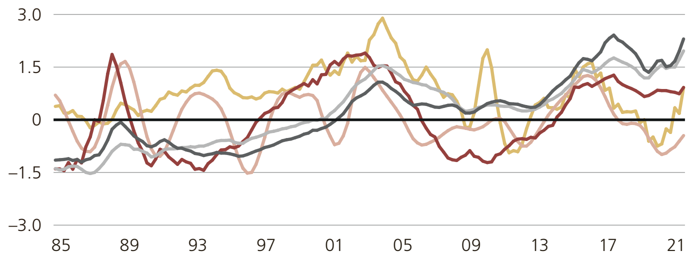
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



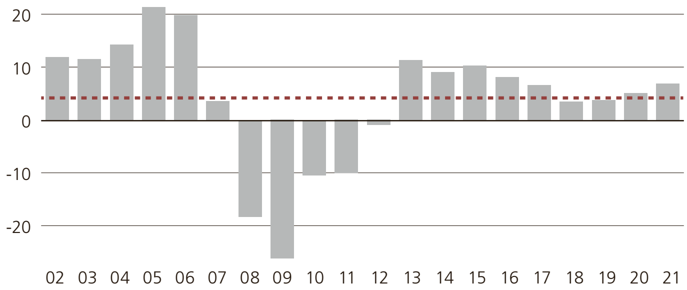
year-over-year - - - 20-year average

Price-income ratio — Price-rent ratio — City/country price ratio — Change in construction/GDP — Change in mortgage/GDP

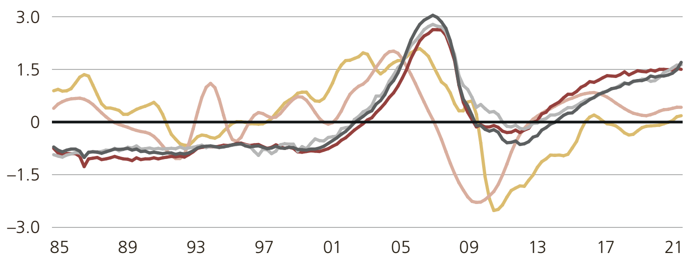
Miami

The housing market was hit hard by the global financial crisis: In inflation-adjusted terms, prices corrected by more than 50% between 2007 and 2012. Afterward, relatively cheap properties, improving financing conditions, and high foreign demand led to a market recovery and a rebound in property prices. Recently, the widespread increase of remote work has emerged as an additional tailwind for the local housing market. Miami already offered an attractive lifestyle and no state income tax, so its relatively few COVID-19-related constraints have only accelerated interstate migration to Florida. Housing sales activity has reached a 15-year high, and inventory remains very constrained. Real house prices increased by 7% from mid-2020 to mid-2021. Nevertheless, the further easing of pandemic-induced measures in a number of other states, combined with the rapidly increasing cost of flood and homeowner's insurance, could redirect migration away from the Sunshine State toward other tax-, business- and regulatory-friendly states that are less exposed to environmental risks.

Annual house price growth rates
Inflation-adjusted in %, as of 2nd quarter



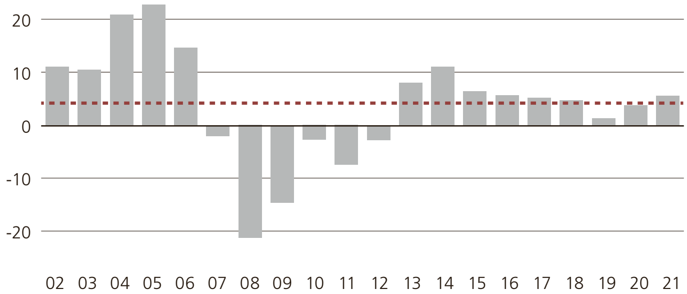
Development of sub-indices
Standardized values



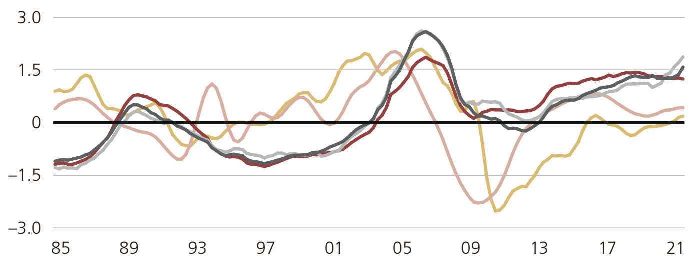
Los Angeles

Supply shortages and a prospering economy—particularly in the technology, media, entertainment, and manufacturing sectors—have benefited the housing market, with real prices increasing by almost 65% since 2012. However, shortly before the pandemic, market dynamics seized up, mainly because of declining affordability. Sharply falling interest rates in 2020 and soaring demand for more living space during the pandemic have revived price growth. Compared with last year, housing is now 5% more expensive in inflation-adjusted terms. We do not believe a major price correction is in the cards for now. Very attractive financing conditions will likely continue to bolster the market for the foreseeable future. In addition, we think the current economic rebound will remain supportive of the housing market, as the local economy is highly exposed to booming international trade. And although some additional supply will come on the market, structural housing undersupply will likely persist. In the medium to long term, however, slower population growth—exacerbated, in part, by the flight to low-tax states—and stretched affordability may pose a risk to price appreciation.

Annual house price growth rates
Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices
Standardized values



year-over-year   20-year average

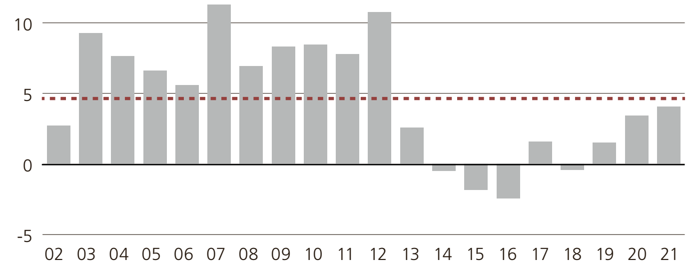
Price-income ratio   Price-rent ratio   City/country price ratio
Change in construction/GDP   Change in mortgage/GDP

Geneva

Prices increased by more than 4% in inflation-adjusted terms from mid-2020 to mid-2021, topping the previous peak in 2013. As the rental market is highly regulated and rents are inflated, home ownership is still attractive, underpinned by historically low mortgage rates. Geneva continues to benefit from its relative stability and international status, especially in light of global economic uncertainty. Despite travel restrictions, international migration has been the main driver of housing demand. But remote working has made it possible for people to flee the city to less dense and more affordable regions within and outside the canton, resulting in higher vacancies and stagnating rents. In the long term, Geneva will have to prove itself against the neighboring canton of Vaud, where economic prospects are better and housing is cheaper.

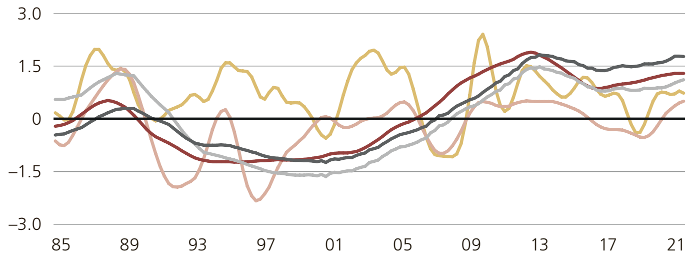
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

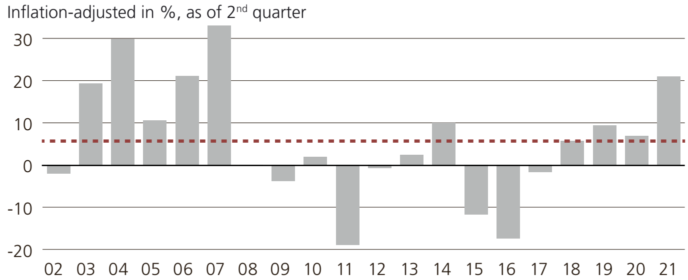


Moscow

Between 2014 and 2017, property prices lost 30% in real terms in the wake of currency depreciation in a weakening economy. But falling financing costs and new buyer-friendly legislation around escrow accounts have led to a rebound that began in 2018. From mid-2020 to mid-2021 real prices soared by 20%, topping all other cities included in the study. To support the struggling economy, state-secured mortgages at preferential rates have been offered. Meanwhile, higher building costs and a shortage of foreign construction workers, due to travel restrictions, have made new supply more expensive. While financing aid has been reduced again, higher commodity prices and an economic recovery may keep the housing market booming for now.

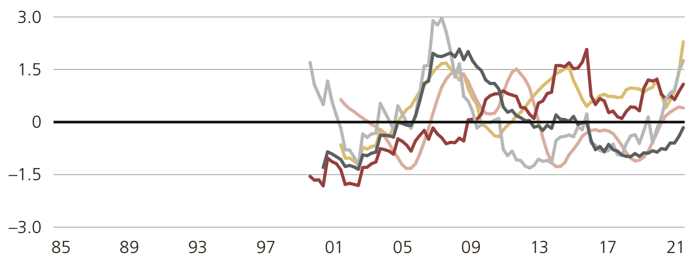
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year · 20-year average

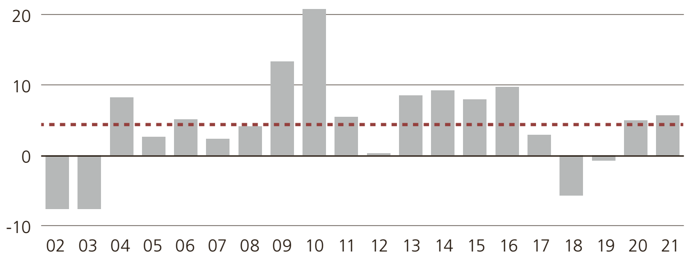
Price-income ratio · Price-rent ratio · City/country price ratio · Change in construction/GDP · Change in mortgage/GDP

Tel Aviv

Increased financing costs led to a price correction of almost 10% between 2017 and 2019. But as mortgage rates declined again, lending and price growth accelerated. Demand was particularly strong in the first half of 2021. In a structurally undersupplied market, a rapid increase of prices was the logical consequence. In real terms, prices are now 6% higher than they were last year, and stand at the highest level ever recorded. The combination of robust population growth and a decreasing number of housing starts and completions does not suggest any relief is in sight for the highly overvalued market. Although the Bank of Israel's recent communication that it would not accept first properties as collateral for further property purchases enhances market resilience, it will not stop the boom.

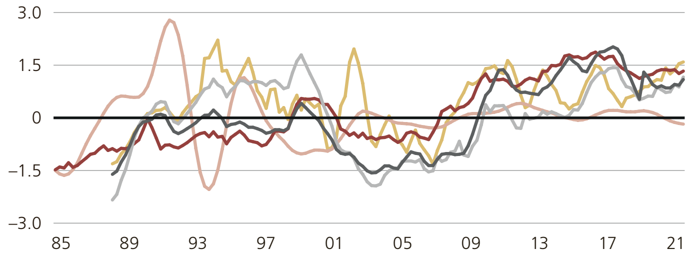
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

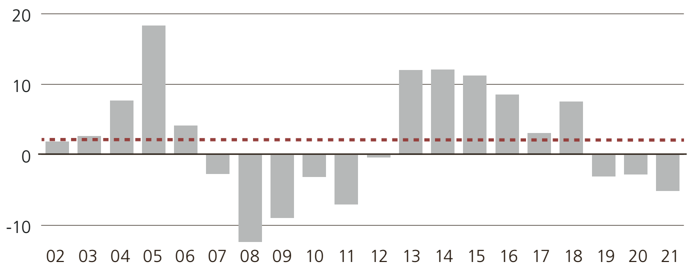


San Francisco

Between 2012 and 2018, real house prices increased by 6.5% per year on average. The rise was fueled both by the surge in high-tech job creation and by the large amount of capital raised through IPOs, a significant portion of which ultimately made its way into real estate. As these supportive factors lost momentum, real prices retreated and are now 12% below their 2018 peak level. From mid-2020 to mid-2021, property values declined by 5%—the sharpest correction among all cities analyzed in the study. Rents fell by almost 20%. The pandemic and the fast rise of flexible working opportunities prompted many people to flee San Francisco to states with lower taxation levels and more affordable housing. That said, the number of sales has recently reached the highest level since 2006. Moreover, the relaxation of travel restrictions should support foreign demand. Hence, the recent price correction period may end soon.

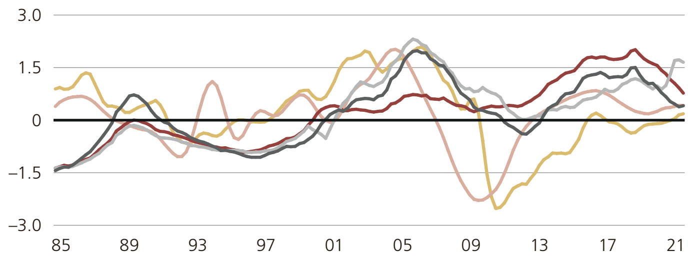
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year · 20-year average

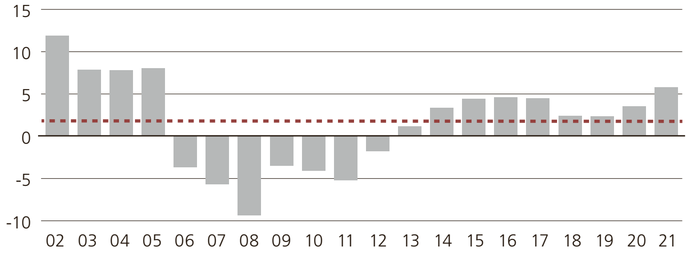
Price-income ratio · Price-rent ratio · City/country price ratio · Change in construction/GDP · Change in mortgage/GDP

Boston

In the last decade, Boston had the biggest population growth of all US cities included in this study, thanks to robust economic growth, a highly educated work force, and good job prospects, particularly in technology and the life sciences. This increased demand for property fueled prices, which rose by more than 3% per year following the start of the boom in 2012. Despite some temporary market weakness during the pandemic—rents hit a 5-year-low in the first quarter of 2021—housing demand remains strong. Over the last four quarters, sales activity has reached the highest level in more than 15 years, and price growth has accelerated to 6%. The economic rebound, combined with high local venture capital investments, should support higher prices in the coming quarters.

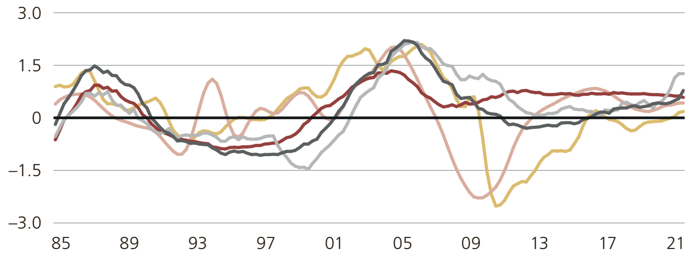
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values

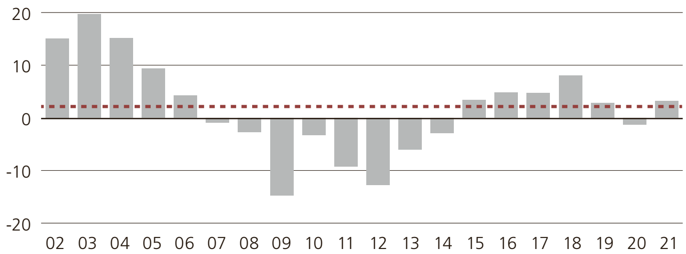


Madrid

Between 2015 and 2019, real prices increased by 5% per year on average. But the price boom has since come to an abrupt halt, and the Spanish capital is one of only four cities in the study that recorded a price correction in 2020: Property prices fell 5% in the wake of severe lockdown measures and economic contraction. Rents plummeted by almost 10%. Overall, the housing market remains fairly valued. Prices have started to bottom out this year and are now 3% higher than they were in mid-2020, and transactions are likely to rebound. Significant new building and refurbishment activity limit the price upside for the time being.

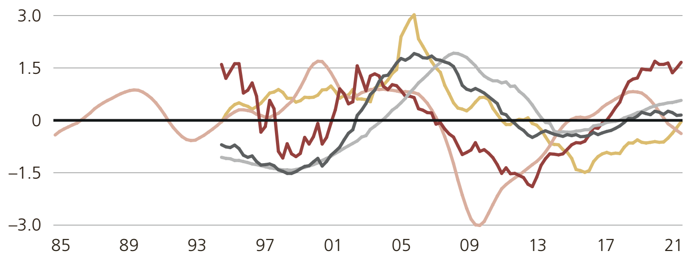
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



year-over-year - - - 20-year average

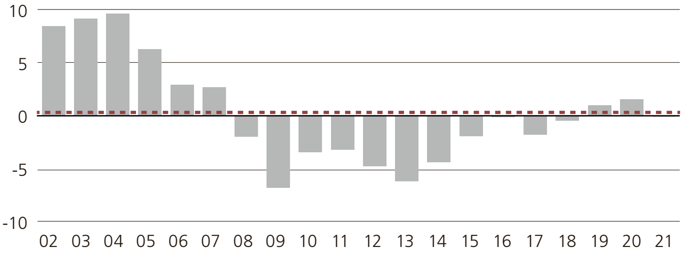
Price-income ratio — Price-rent ratio — City/country price ratio

Change in construction/GDP — Change in mortgage/GDP

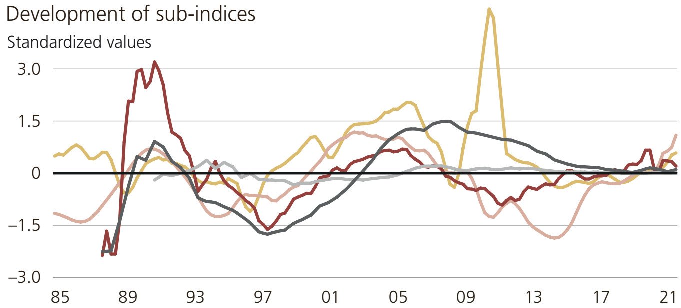
Milan

Between 2008 and 2018, real house prices declined by 30%. As redevelopment of urban areas stimulated the market, prices started to recover in 2019, and the time required to sell properties shortened markedly. However, the pandemic brought the market to a standstill, as the absence of cultural events and tourism struck a blow to the local economy. Housing demand moved to semi-central locations. Overall, the market remains fairly valued. In the medium run, housing demand should benefit from one of the best levels of housing affordability among European cities and attractive financing conditions, leading to higher prices. The gradual return of large events and the 2026 Winter Olympics will likely drive further demand in the medium term.

Annual house price growth rates
Inflation-adjusted in %, as of 2nd quarter



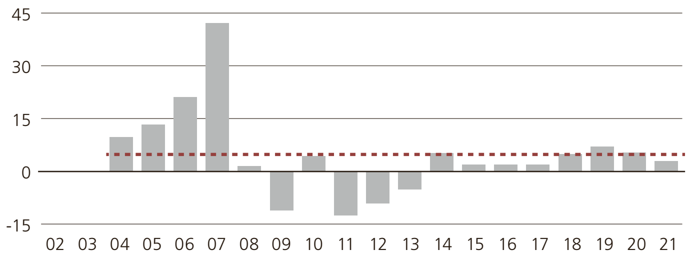
Development of sub-indices
Standardized values



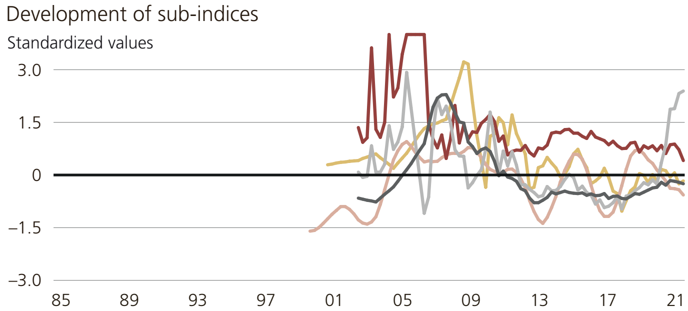
Warsaw

House prices have been on a roller-coaster ride: They more than doubled between 2004 and 2007, dropped 35% between 2008 and 2013, and have been on the rise since then. Demand for housing has been boosted by robust economic growth that has led to higher household incomes. Recently, real price growth has slowed to less than 3% annually, which is below the country average. With remote working becoming more common, demand for housing in central locations has decreased considerably, and rents have dropped by more than 10%. For now, relatively good mortgage availability and slow supply growth should continue to support prices. However, political tensions with the European Union and the US pose an economic risk, and housing affordability will likely become a major issue in the next years.

Annual house price growth rates
Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices
Standardized values



year-over-year
20-year average (Warsaw: 18-year average)

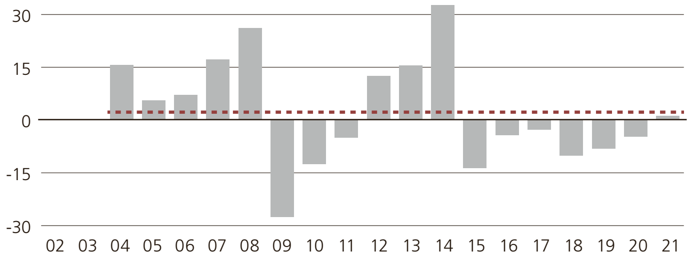
Price-income ratio
Price-rent ratio
City/country price ratio
Change in construction/GDP
Change in mortgage/GDP

Dubai

Alongside massive overbuilding and low oil prices, residential prices have trended down for the last six years and are now almost 40% below 2014 levels in inflation-adjusted terms. Consequently, affordability of housing has improved despite eroding household incomes amid slowing economic growth. In addition, easier financing conditions and first-buyer programs are making home purchases seem attractive. Since the beginning of the year, real prices have bottomed out, underpinned by improving demand in the upper market segment. Transaction volumes have reached an almost decade-high level. The housing market recovery is likely to gain pace on the back of the global economic rebound and higher oil prices. But as long as population growth does not accelerate sharply, oversupply limits the upside.

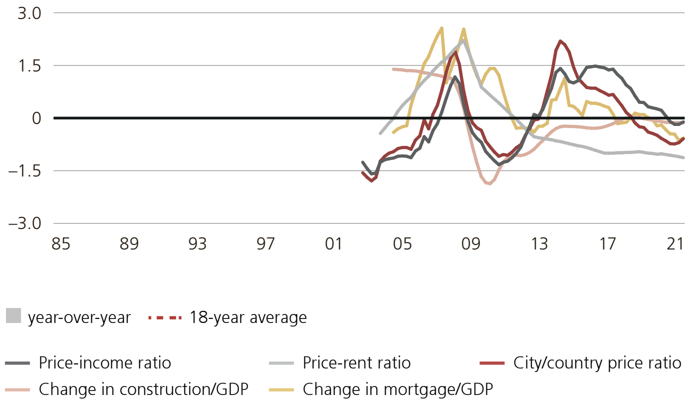
Annual house price growth rates

Inflation-adjusted in %, as of 2nd quarter



Development of sub-indices

Standardized values



Methodology & data

UBS Global Real Estate Bubble Index
The *UBS Global Real Estate Bubble Index* traces the fundamental valuation of housing markets and the valuation of cities in relation both to their country and to economic distortions (lending and building booms). Tracking current values, the index uses the following risk-based classifications: depressed (score below –1.5), undervalued (–1.5 to –0.5), fair-valued (–0.5 to 0.5), overvalued (0.5 to 1.5), and bubble risk (above 1.5). This classification is aligned with historical bubble episodes.

The index score is a weighted average of the following five standardized city sub-indexes: price-to-income and price-to-rent (fundamental valuation), change in mortgage-to-GDP ratio and change in construction-to-GDP ratio (economic distortion), and relative price-city-to-country indicator. The price-city-to-country indicator in Singapore, Hong Kong, and Dubai is replaced by an inflation-adjusted price index. The approach cannot fully account for the complexity of the bubble phenomenon. We cannot predict if or when a correction will happen. Hence, "bubble risk" refers to the prevalence of a high risk of a large price correction.

The sub-indexes are constructed from specific city-level data, except for mortgage-to-GDP and construction-to-GDP ratios, which are calculated on the country level. In most cases, publicly available data is used. But in a few cases, the data consists of, or is supplemented by, additional sources, including the results of the UBS Prices and Earnings survey. The index length varies by city depending on data availability. The longest data series starts in 1980, the shortest in 2004. For time series shorter than 30 years, the coefficient of variation of an equivalent indicator on the country level is used as a floor value to calculate the volatility of the city-level indicator (subject to availability). We also took into account the availability of data when deciding which cities to include in the index. We considered the importance of the city for global financial markets and residential real estate investments. Please see the description of data sources on page 29.

The weights of the sub-indexes are determined using factor analysis, as recommended by the OECD Handbook on Constructing Composite Indicators (2008). Factor analysis weights the sub-indexes to capture as much of the common underlying bubble risk information as possible. As the drivers of bubbles vary across cities, this method results in city-specific weights on sub-indexes. To prevent overweighting country level variables and to increase the comparability of cities, the deviation from the average weight across all cities is limited. So fixed weights that approximate the average factor analysis weight of single sub-indexes across the cities complement the calculation. The final weights are subject to minor changes when new data enters the calculation or past data is revised.

Benchmarking
The analysis is complemented by a city benchmarking using current price-to-income (PI) and price-to-rent (PR) ratios. The PI ratio indicates how many years a skilled service worker needs to work to be able to buy a 60 square meter (650 square foot) flat near the city center. The PR ratio signals how expensive owner-occupied homes are relative to rental apartments. The higher the ratios, the more expensive buying becomes. Earnings data is taken primarily from the UBS Prices and Earnings survey and from official statistical sources. Real estate prices and rents range widely near the city center. Our estimates are cross-checked, validated using different sources, and are updated and challenged on an annual basis. However, we also specify an uncertainty range due to the differing quality of data sources.

Data sources

	As of	Price Index (City)	Rent Index (City)	Income Index (City)	Price Index (Country)	Mortgage, Construction, GDP, Inflation (Country)
Amsterdam	2021Q2	CBS, Maastricht University	NVM, UBS P&E	UBS P&E, CBS	CBS, FED Dallas	DNB, CBS, EUKLEMS, Bloomberg
Boston	2021Q2	FHFA	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Dubai	2021Q2	BIS	Reidin, Merrill Lynch, UBS P&E	Euromonitor International, Merrill Lynch, UBS P&E	–	Central Bank UAE, Dubai Statistics Center, Merrill Lynch, Bloomberg
Frankfurt	2021Q2	Bulwiengesa	Bulwiengesa, OECD	Destatis, UBS P&E, OECD	FED Dallas	Deutsche Bundesbank, Destatis, EUKLEMS, Bloomberg
Geneva	2021Q2	Wüest Partner	Statistique Genève	FTA, FSO	Wüest Partner	SNB, SECO, BFS
Hong Kong	2021Q2	RVD	RVD	Census and Statistics Department Hong Kong, Bloomberg	–	Census and Statistics Department Hong Kong, HKMA, Macrobond, Bloomberg
London	2021Q2	Nationwide, Lloyds Banking Group	ONS, UBS P&E	ONS	Nationwide, Lloyds Banking Group	BoE, ONS, EUKLEMS, Macrobond, Bloomberg
Los Angeles	2021Q2	FHFA	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Madrid	2021Q2	BoS	Idealista, UBS P&E	INE	BoS	INE, BoS, EUKLEMS, Bloomberg
Miami	2021Q2	FHFA	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Milan	2021Q2	Nomisma	Nomisma, OECD	Dipartimento delle Finanze, UBS P&E	FED Dallas	Banca d'Italia, Hypostat, Istat, EUKLEMS, Macrobond, Bloomberg
Moscow	2021Q2	Rosstat	Domofond, UBS P&E	Analytical Centre by Government of Moscow, UBS P&E	Rosstat	CBR, Rosstat, Bloomberg
Munich	2021Q2	Bulwiengesa	Bulwiengesa, OECD	Destatis, UBS P&E, OECD	FED Dallas	Deutsche Bundesbank, Destatis, EUKLEMS, Bloomberg
New York	2021Q2	FHFA, S&P/Shiller, Elliman	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Paris	2021Q2	BIS, CGEDD	CGEDD, Clameur, UBS P&E	Insee, Bloomberg, UBS P&E	FED Dallas	BdF, Insee, EUKLEMS, Macrobond, Bloomberg
San Francisco	2021Q2	FHFA	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Singapore	2021Q2	Government of Singapore	Government of Singapore, UBS P&E	Government of Singapore	-	Government of Singapore, Bloomberg
Stockholm	2021Q2	Statistics Sweden	Statistics Sweden, UBS P&E	Statistics Sweden, UBS P&E	Statistics Sweden	Statistics Sweden, Bloomberg
Sydney	2021Q2	REIA, ABS	REIA, NSW Government, UBS P&E	ABS, UBS P&E	FED Dallas	ABS, RBA, Macrobond, Bloomberg
Tel Aviv	2021Q2	CBS	CBS, UBS P&E	CBS, UBS P&E	FED Dallas	BoI, Bloomberg
Tokyo	2021Q2	The Real Estate Transaction Promotion Center, Haver Analytics	Miki Syoji, Official Statistics of Japan	INDB, Tokyo Metropolitan Government, UBS P&E	FED Dallas	ESRI, EUKLEMS, Macrobond, Bloomberg
Toronto	2021Q2	Sauder School of Business UBC, Bloomberg	Canadian Housing Observer, Sauder School of Business UBC	Statistics Canada	FED Dallas	Statistics Canada, BoC, Bloomberg
Vancouver	2021Q2	Sauder School of Business UBC, Bloomberg	Canadian Housing Observer, Sauder School of Business UBC	Statistics Canada, Government of British Columbia	FED Dallas	Statistics Canada, BoC, Bloomberg
Warsaw	2021Q2	National Bank of Poland	National Bank of Poland	Statistics Poland	National Bank of Poland	National Bank of Poland, Statistics Poland, Bloomberg
Zurich	2021Q2	Wüest Partner	Statistik Stadt Zürich	FTA, FSO	Wüest Partner	SNB, SECO, BFS

Benchmarking sources

	Earnings	Real Estate (prices and rents)
Amsterdam	UBS P&E, CBS	globalpropertyguide.com, numbeo.com
Boston	BEA, BLS	Zillow, numbeo.com, CBRE
Dubai	numbeo.com, guide2dubai.com	numbeo.com, bayut.com
Frankfurt	UBS P&E, Destatis	Bulwingesa, globalpropertyuide.com, numbeo.com
Geneva	UBS P&E, Federal Income Tax Statistics, FSO	Wüest Partner
Hong Kong	UBS P&E, Census and Statistics Department Hong Kong	Hong Kong Statistical Office
London	UBS P&E, ONS	GLA datastore, findpoperly.co.uk, numbeo.com
Los Angeles	BEA, BLS	Zillow, numbeo.com, CBRE
Madrid	UBS P&E	Idealista, numbeo.com
Miami	BEA, BLS	Zillow, numbeo.com, CBRE
Milan	UBS P&E, Dipartimento delle Finanze	Nomisma
Moscow	UBS P&E	numbeo.com
Munich	UBS P&E, Destatis	Bulwingesa, globalpropertyuide.com, numbeo.com
New York	BEA, BLS	Elliman, Zillow, globalpropertyguide.com
Paris	UBS P&E, Insee	globalpropertyguide.com, numbeo.com
San Francisco	BEA, BLS	Zillow, numbeo.com, CBRE
Singapore	Department of Statistics Singapore, Demographia.com	globalpropertyguide.com, numbeo.com
Stockholm	UBS P&E, Statistics Sweden	globalpropertyguide.com, numbeo.com, Statistics Sweden
Sydney	UBS P&E, ABS	globalpropertyguide.com, numbeo.com
Tel Aviv	CBS, numbeo.com, UBS P&E	globalpropertyguide.com, expatistan.com, numbeo.com, UBS P&E
Tokyo	UBS P&E, INDB, Tokyo Metropolitan Government	globalpropertyguide.com, numbeo.com
Toronto	Statistics Canada	Canada mortgage and housing corporation (CMHC), globalpropertyguide.com, numbeo.com, Toronto Real Estate Board, condos.ca
Vancouver	Statistics Canada	Canada mortgage and housing corporation (CMHC), globalpropertyguide.com, numbeo.com, Real Estate Board of Greater Vancouver, condos.ca
Warsaw	UBS P&E, Statistics Poland	National Bank of Poland, numbeo.com
Zurich	UBS P&E, Federal Income Tax Statistics, FSO	Wüest Partner

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