UBS Global Real Estate Bubble Index

September 2024 | Chief Investment Office GWM | Investment research

Content

UBS Global Real Estate Bubble Index
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Editorial deadline
23 September 2024

Design
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Cover photo
Getty Images

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English

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Editorial

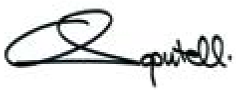
Dear reader,

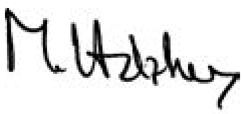
You'd be forgiven for thinking that global housing markets currently seem like the playground of central banks. Since the financial crisis in 2008, money supply has expanded rapidly and interest rates have been lowered—often into negative territory—as the merest whiff of economic turmoil appeared on the horizon. When the economy was running smoothly again, interest rates were hardly raised. Consequently, the price development of residential real estate was often a one-way street. As a result, housing bubble risk reached record highs in many global metropolitan areas.

The rise in interest rates, for a long time considered unlikely, came with the post-pandemic inflation spike. Housing prices reset where high imbalances had accumulated. Homes in major European cities lost up to a quarter of their value in real terms and imbalances corrected rapidly. Real estate bubble risk has also fallen considerably in cities where home values have shown relative stability during the interest rate turnaround like Sydney and Vancouver, since extreme housing shortages and rising rents helped stabilize markets there.

Unintentionally, central banks have meanwhile laid the foundation for the next price boom. Since the sharp rise in interest rates thwarted the plans of many real estate developers, new construction has nosedived in many cities and looks set to exacerbate the housing shortage, thereby leading to upward price pressure in the future. In this edition of the *UBS Global Real Estate Bubble Index*, discover more about growing, existing, and deflating bubble risks and where interest rate cuts should help revitalize the housing market.

We wish you an engaging read.





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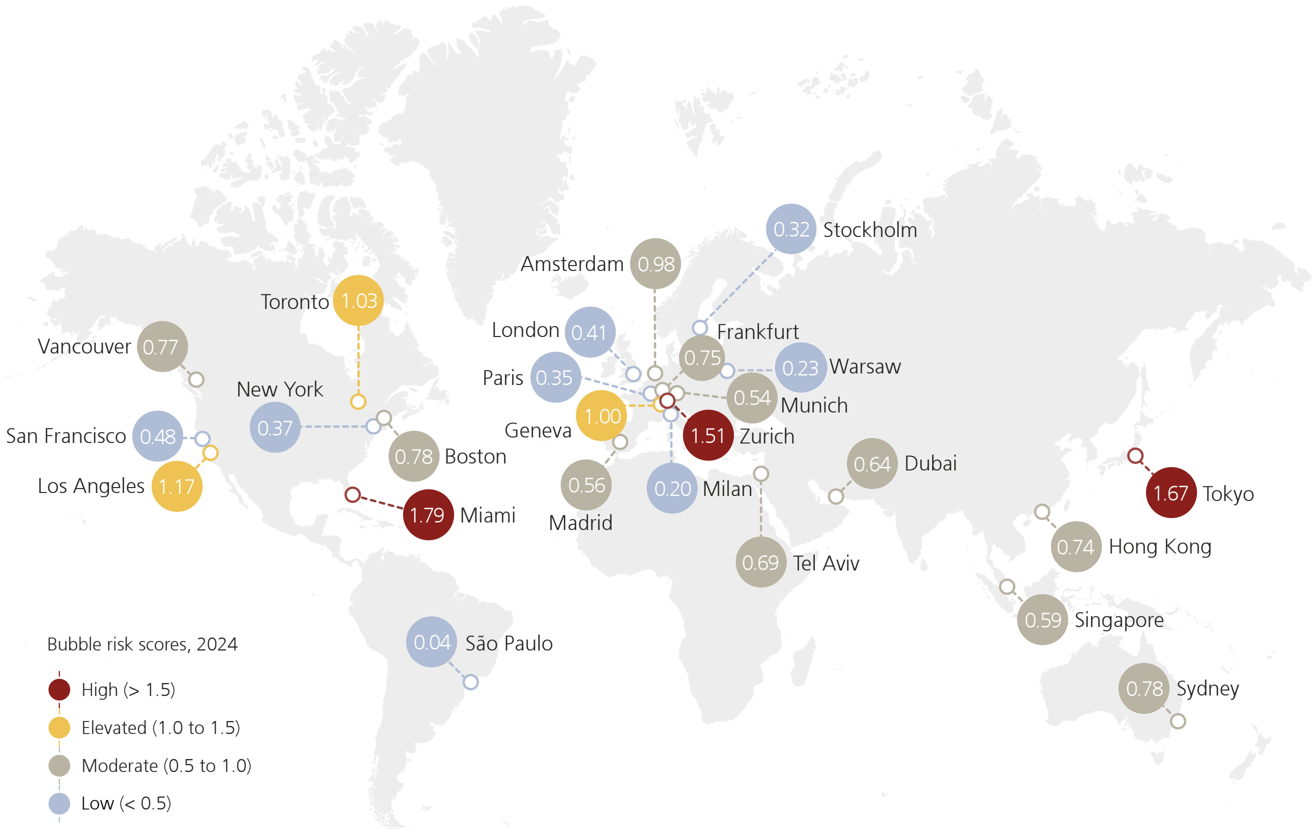
Key results



Reshuffling of risks

Imbalances have declined in Europe, remained stable in Asia-Pacific, and increased in the US. While Miami tops the bubble risk ranking this year, Dubai has recorded the highest risk increase since mid-2023.

Bursting bubbles

Where high imbalances accumulated, real house prices have shed 20% since mid-2021. This compares to a correction of 2% on average for all other cities in the study.

Correction over

Average real house prices increased by 2% compared to last summer. But, price changes were uneven: While real prices in Paris and Hong Kong fell by 10%, Warsaw and Dubai recorded double-digit increases.

Housing shortage

Building permits have been declining in most cities amid deteriorating financing conditions. Real rents have accelerated in a majority of cities and increased by more than 5% on average over the last two years.

Market freeze

Buyers can afford 40% less living space than in 2021, before interest rates increased. As a result, fewer properties are being bought, apparent in sharply lower growth of outstanding mortgage volumes.

The tide is turning

With financing costs set to become more attractive, housing demand is bottoming out and prices should accelerate. Economic growth will be crucial in determining the price dynamics.

Catching breath

The risks of housing bubbles in the cities analyzed in the *UBS Global Real Estate Bubble Index* have, on average, decreased slightly for the second consecutive year. From a regional perspective, the picture is more nuanced: Imbalances have generally declined further in Europe, remained stable in Asia-Pacific, and increased in the US.

Miami now shows the highest bubble risk among the cities in this study. *High* bubble risk can also be seen in Tokyo and, despite a significant decline in the score compared to last year, Zurich. An *elevated* risk of a housing price bubble is evident in Los Angeles, Toronto, and Geneva.

Only a *moderate* risk is recorded in Amsterdam, Sydney, and Boston. In the same risk category are, after very strong reductions in imbalances, Frankfurt, Munich, Tel Aviv, and Hong Kong. Vancouver, Dubai, Singapore, and Madrid complete this group of moderate-bubble-risk cities. Dubai recorded the strongest increase in the risk score of all the cities analyzed.

According to the Index, a *low* risk of a real estate bubble is evident in San Francisco and New York. In Europe, after further declines in the index score, London, Paris, Stockholm, and Milan fall into this low-risk category too. Bubble risk in Warsaw remains low as well. São Paulo shows the lowest bubble risk among the cities analyzed.

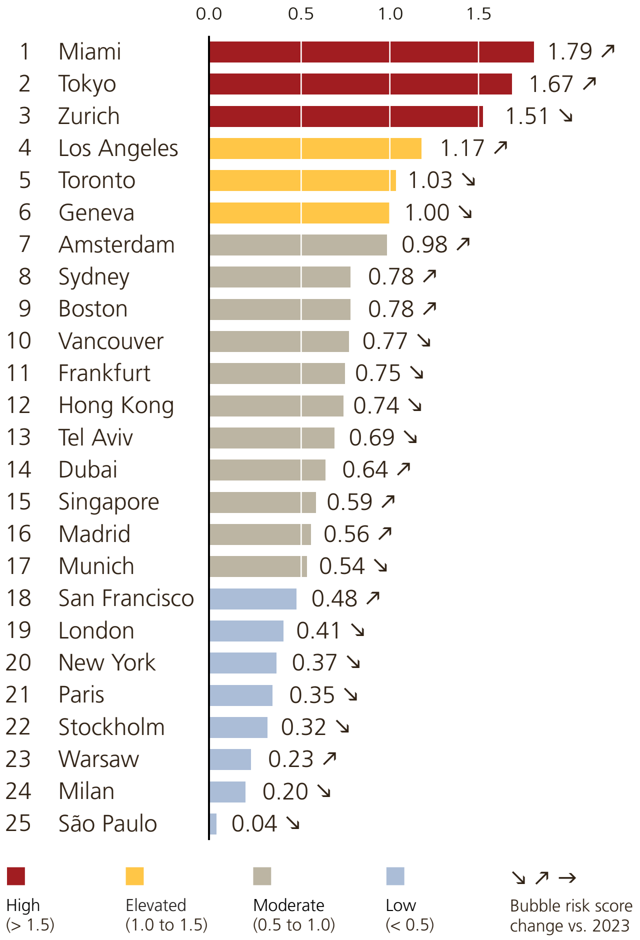
Boom and bust

Inflation-adjusted housing prices in the cities analyzed are now, on average, roughly 15% lower than in mid-2022, when interest rates started to surge globally. The cities recording the strongest price corrections are those that displayed a high risk of a real estate bubble in previous years. Real prices in Frankfurt, Munich, Stockholm, Hong Kong, and Paris are 20% or more below their post-pandemic peaks. Vancouver, Toronto, and Amsterdam recorded significant price declines of around 10% in real terms.

Overall, the last four quarters were characterized by muted house price growth. But strong corrections continued in Paris and Hong Kong. In contrast, in the sought-after locations of Dubai and Miami, home prices continued to surge. Also, in some cities with pronounced housing shortages, like Vancouver, Sydney, and Madrid, real prices have increased by more than 5% compared to last year.

UBS Global Real Estate Bubble Index

Bubble risk scores for the housing markets of select cities, 2024



Source: UBS
For an explanation, see the section on Methodology & data on page 23.

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.

No affordability, no panic
The financially affordable living space for a skilled service-sector worker is, on average, 40% less than in 2021, before the rise in global interest rates. Current price levels thus seem far from sustainable at prevailing interest rate levels—especially in markets with high homeownership rates such as Toronto or Los Angeles.

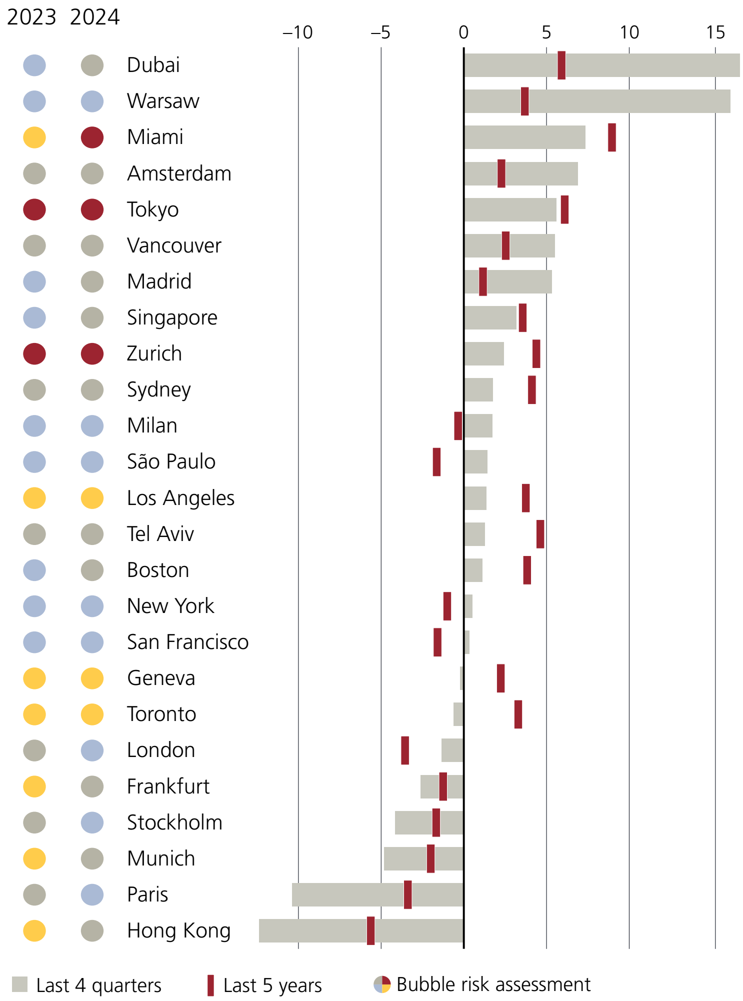
However, a significant deterioration in affordability does not necessarily cause a strong price correction, as seen in Sydney, Vancouver, Madrid, and some cities in the US. Homeowners are reluctant to sell at a loss and the incentive to stay put increases further if the current home has been favorably financed. With declining transaction volumes, apparent in sharply lower growth of outstanding mortgage volumes, prices can continue to rise, even if overall underlying demand has decreased significantly.

Housing shortage saves the day
An increasing housing shortage, reflected in rising rents, has also helped stabilize many urban housing markets. Real rents have increased by 5% on average over the last two years and have outpaced income growth in most cases. In a majority of cities, rents have even accelerated almost everywhere else in the last four quarters. This has contributed to lower bubble risk scores globally.

No relief to the housing shortage is likely from the supply side, as high interest rates and increased building costs have severely hampered housing construction. Building permits have declined in most cities over the past two years. Looking forward, the housing shortage is likely to become a bigger challenge, making city living even less affordable. However, for existing homeowners and especially for buy-to-let investors, this may represent only seemingly good news as housing shortages often lead to political intervention in the housing market—with unpredictable consequences.

Relief in sight
The momentum in the housing market is set to improve. Rising rents underpin demand for home ownership in urban areas. Falling interest rates will shift the user-cost advantage sharply back from renting to buying. First-time homebuyers would return to the market as affordability improves. In our view, real house prices in many cities have bottomed out. The economic outlook will likely determine whether prices once again surge or track sideways.

Rising prices in the majority of cities
Real house price growth, annualized in %



Source: See the section on Methodology & data on page 23.

Regions

Eurozone

Both **Frankfurt** and **Munich** displayed a very high risk of a housing bubble as recently as 2022. Since then, rising mortgage rates have seen both markets tumble, with house prices falling by one fifth since their respective peaks. As rents and incomes remained firm, the risk of a real estate bubble has declined to moderate (see spotlight Frankfurt p. 18). The correction has been losing steam in the last four quarters. Lower expected interest rates paired with low supply should see a recovery in prices. However, a new boom is unlikely in the near future, in our view.

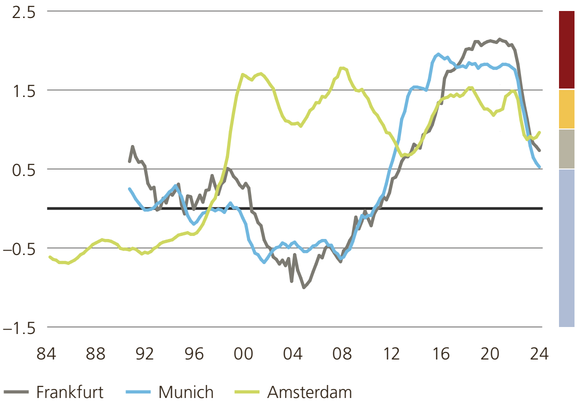
Backed by falling mortgage rates and strong international demand, real prices increased in **Paris** by 30% between 2015 and 2020. Stretched affordability and short supply of larger flats for families weighed on the city's attractiveness. Outmigration has reduced the population by 6% within the last 10 years. Additional lending restrictions, higher mortgage rates, and a property tax hike throttled demand. In real terms, prices have corrected by more than 20% since 2021. With a 10% decline over the last four quarters, Paris was the weakest European housing market among all cities in the study. The bubble risk is currently low.

Home prices in **Milan** have continued to outperform the national average. A robust economy, new developments, and a favorable tax regime have supported housing demand. However, in inflation-adjusted terms, prices and rents remain at 2018 levels. As a result of higher financing costs, mortgage growth has slowed down. Overall, bubble risk is low. In addition to solid prospects for the local economy, an extension of the underground railway, and the upcoming 2026 Olympic Winter Games may have a positive impact on the market.

The bubble risk in **Madrid**'s housing market has increased compared to last year but is moderate. Although real prices are still 25% below their all-time peak in 2007, the housing market in the Spanish capital has decoupled from the rest of the country over the past few years. Strong household formation and investment demand intensified the housing shortage. Real rents increased by 15% over the last four quarters. Hence, home prices increased by 5% between mid-2023 and mid-2024, despite unfavorable financing conditions.

Between 2012 and 2022, real house prices in **Amsterdam** doubled, decoupling from other Dutch regions and the local rental market, propelling the bubble risk to high territory. Worsening financing conditions, inflation diminishing households' purchasing power and their willingness to buy a home, and the reduction of the gift allowance for home ownership exacerbated the situation. A higher transfer tax and prohibition of renting out after the purchase worsened conditions for investors, too. As a consequence, real prices fell by 15% between 2022 and 2023. But on the back of scarce supply, robust income growth, and lower mortgage rates, the market bottomed out quickly. Real prices are now 7% higher than a year ago and the bubble risk is moderate.

Historical development of index scores



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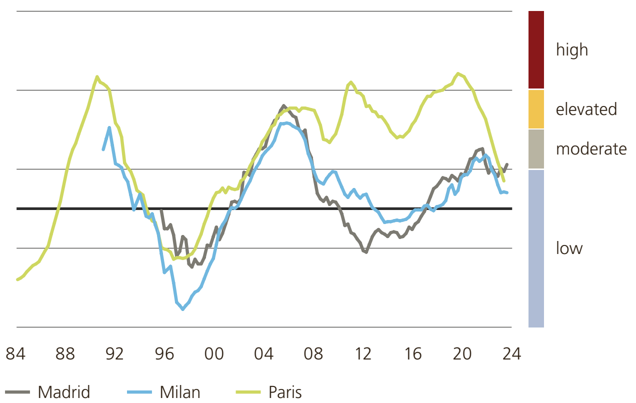


Source: UBS

Rest of Europe

London's housing market has shed a quarter of its value since its all-time peak in 2016. As inflation fell and the Bank of England decreased interest rates, real housing prices stabilized. More rate cuts are expected, which could revive demand for home purchases, especially since rents are also on the rise. The skies appear cloudier on the prime market where uncertainty over unfavorable taxation schemes for the wealthy threatens to undermine demand in this segment. Overall, the risk of a real estate bubble is low, in our view (see spotlight London p. 21).

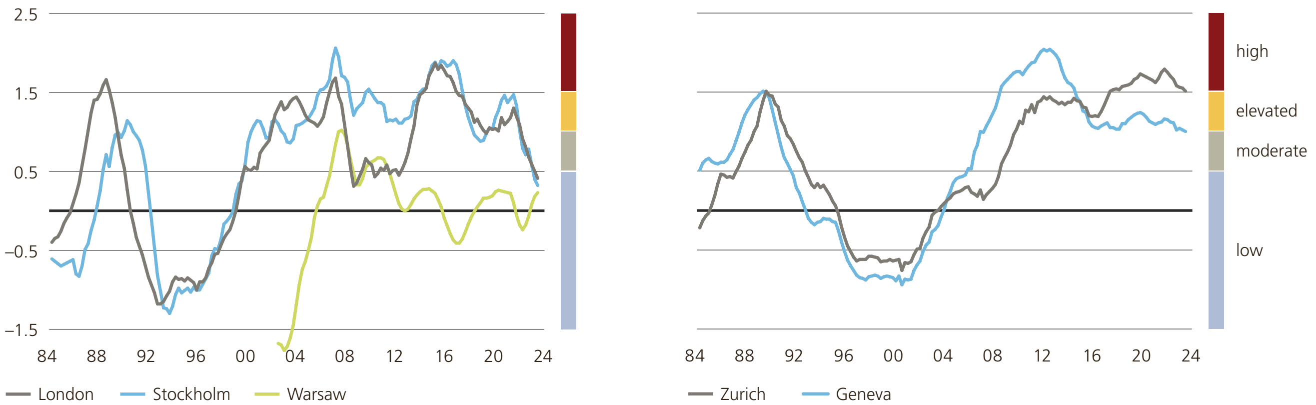
Buying owner-occupied real estate in **Zurich** now costs close to 25 percent more than five years ago. The demand for housing is steadily growing as Zurich´s population has consistently increased by well over one percent annually over the last decade, except during the two pandemic years. Zurich has seen one of the highest rent increases of all the cities in the study over the last four quarters. Consequently, the risk of a real estate bubble has decreased but is still considered high (see spotlight Zurich p. 17).

Since the pandemic, prices in **Geneva** have risen only half as much as in Zurich. They are about 10% higher in real terms than five years ago, but have stagnated over the last four quarters. The city of Geneva recorded the strongest population growth since 2015, ending a three-year period of stagnation. Although construction activity has hardly slowed in the region in recent quarters, it cannot keep pace with the strengthened demand. Accordingly, rents in Geneva have risen more sharply than incomes over the last four quarters. The real estate bubble risk has declined and is now just barely in the elevated zone.

Between 2009 and 2021, falling mortgage rates boosted demand for owner-occupied homes in **Stockholm**, causing real housing prices to rise by about 90%, outpacing local incomes and rents. Excessive housing valuations combined with high household debt and variable-rate mortgages turned out to be a dangerous mix. Rising interest rates and a weak local economy caused demand to plummet and triggered a sharp price correction. Over the last three years, real prices have fallen by almost 30%. For now, the bubble risk is low, and the correction is losing steam. Demand for owner-occupied housing is likely to rise again as affordability improves. The overregulated and undersupplied rental market is not a viable alternative for many prospective owners.

Real house prices in **Warsaw** surged nearly 30% between 2012 and 2022. Strong employment prospects, subway expansions, and modern housing developments kept the market attractive for new residents and buy-to-let investors. However, Poland´s capital has become increasingly unaffordable. Higher mortgage rates led to a real price drop of roughly 10% in 2022. A new government-sponsored subsidy program triggered another buying frenzy. Prices have risen by over 15% since early 2023. In the first half of 2024, many buyers were looking to even more generous subsidies, but these have not been forthcoming. Consequently, price dynamics are likely to slow in the coming quarters.

Historical development of index scores



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Source: UBS

United States

The home ownership market in the US suffers from increasing unaffordability as the median monthly mortgage payment as a percentage of median household income is well above that experienced during the peak of the 2006/2007 housing bubble. As a large share of all US single-family homes has no mortgage or low, locked, longer-term mortgage contracts, we believe many potential buyers are waiting for more attractive mortgage rates. As a result, fewer properties are being sold. This keeps the supply tight and supports property prices. Inflation-adjusted prices increased by 2% between mid-2023 and mid-2024 on average in all analyzed US cities. With more interest rate cuts on the horizon, affordability will improve, and transaction activity should increase. Move-up buyers are also likely to accept slightly improved financing conditions as they would be positioned to use larger downpayments given their existing equity.

Despite poor affordability, **New York**´s housing prices have not corrected sharply. They are only 4% below 2019 levels and have even slightly increased over the last four quarters. The vacancy rate has dropped to a historic low as a result of plummeting new construction activity. But overall, bubble risk is low. The population has not yet recovered from the pandemic out-migration. However, luxury property prices have recently come under pressure. Although a majority of home sales are cash purchases, high interest rates are starting to take their toll.

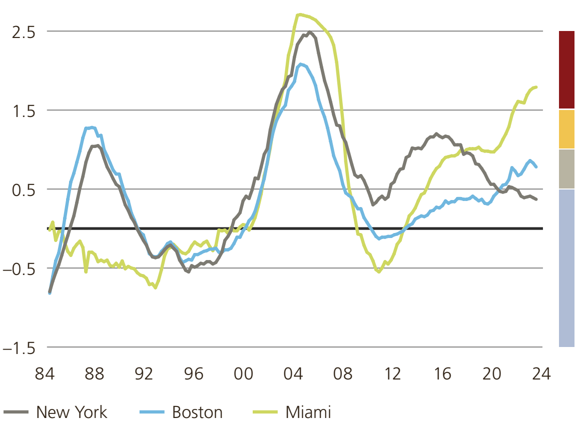
Boston's housing market has recorded a 20% price growth since 2019, outpacing both the local rental market and income growth. The bubble risk is currently moderate, in our view. However, the local economy has been struggling recently, with layoffs, especially in the tech and life sciences sectors. Additionally, remote working has shifted part of the housing demand to the suburban market.

Fueled by a booming luxury market, prices in **Miami** have risen by almost 50% since the end of 2019, 7% of which was in the last four quarters in real terms. Imbalances have increased significantly in recent years, and the bubble risk in Miami has risen to high level this year (see spotlight Miami p. 16).

In **Los Angeles**, real house prices have barely increased over the past year. As a result of decreasing economic competitiveness and high living costs, the population in Los Angeles County has been declining since 2016. Consequently, rents have not kept pace with consumer prices. The 2028 Olympic Games could stimulate the market, thanks to new infrastructure projects and improvements in public transport. Market imbalances have only increased slightly, and the bubble risk in Los Angeles remains elevated.

The **San Francisco** housing market shows signs of a trend reversal. Real prices corrected by roughly 10% after the rate increases in 2022, but remained stable over the past four quarters. The city remains under pressure from quality-of-life issues, elevated hybrid work patterns, and competition with sun-belt cities that attract technology companies. Inflation-adjusted rents are more than 20% lower than before the pandemic. But housing demand shows signs of improvement. A booming stock market and falling interest rates have already started to revitalize the luxury segment and sales are rising.

Historical development of index scores



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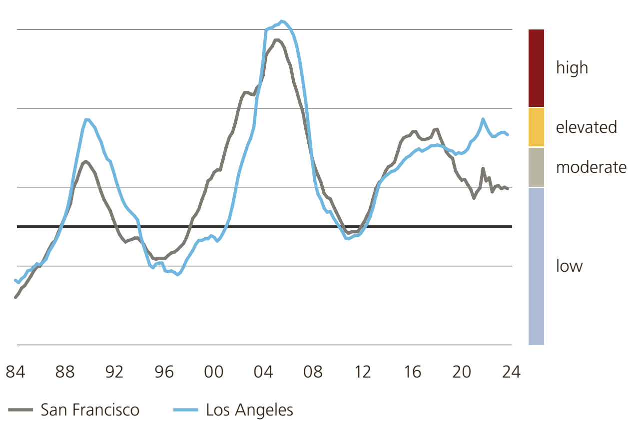


Source: UBS

Canada

Strong population growth, attractive financing conditions, high investment demand, and limited supply drove home prices to new records from 2000 to 2022. Consequently, the risk of a real estate bubble was high.

The high inflation of the past two years has significantly contributed to reducing imbalances in the housing market in Canada. Despite significantly decreased affordability, the home market has held up well. In inflation-adjusted terms, purchase prices in both Toronto and Vancouver are only slightly below the levels of three years ago.

At the same time, rents have risen sharply. In **Vancouver**, rents are about 10% higher in real terms than in 2021. Relative to income growth, home prices have not increased excessively in recent years. Accordingly, the real estate bubble risk is now in the moderate range.

In **Toronto**, the real estate bubble risk has also declined compared to previous years but is still considered elevated. Both rents and incomes have grown more slowly in the last three years compared to Vancouver.

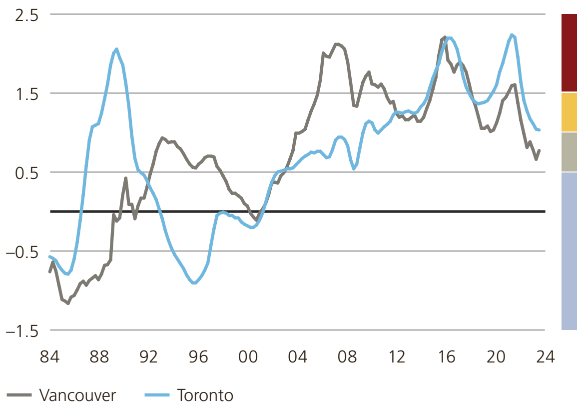
The anticipated interest rate cuts by the central bank are likely to accelerate price growth in both cities again, as the demand from particularly interest-sensitive first-home buyers increases. The ban on foreign buyers, rising inventories, and a subdued economic outlook argue against a quick resurgence of the real estate boom.

Brazil

After a prolonged period of weakness, home prices in **São Paulo** have now slightly increased in inflation-adjusted terms for the second consecutive year. However, real prices remain more than 20% below the peak at the end of 2014. Renting remains financially more attractive than homeownership due to very high interest rates. As a result, rents have surged by almost 10% in real terms over the last four quarters. Consequently, there is currently low real estate bubble risk.

Robust economic growth, due to loose fiscal policy, is generally supporting demand for housing in good locations. This is also reflected in a significant increase in transaction activity. However, given persistently high inflation, there's a high probability of interest rate hikes in the coming quarters, which limits the upside for real home prices.

Historical development of index scores



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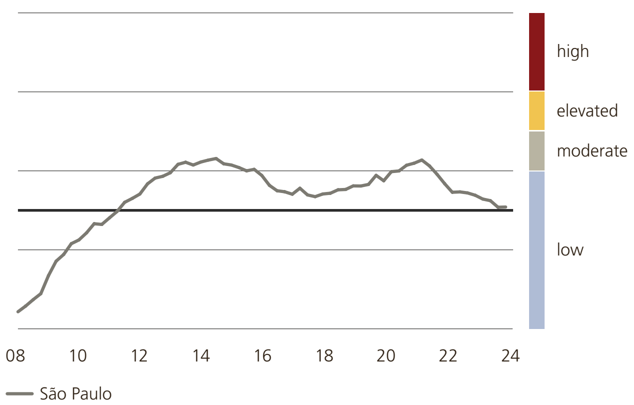


Source: UBS

Asia Pacific

In the last four quarters, real housing prices in **Hong Kong** recorded a double-digit decline. In inflation-adjusted terms, house prices are back at levels last seen in 2012. The number of transactions fell sharply, and mortgage growth came to a standstill in the last four quarters.

High interest rates, anemic population growth, and a lack of buyer optimism all contributed to weak housing demand. However, residential rents and household incomes posted moderate gains in the previous year, contributing to lower imbalances. Bubble risk declined sharply in the last four quarters, and the city is now only in moderate bubble-risk territory.

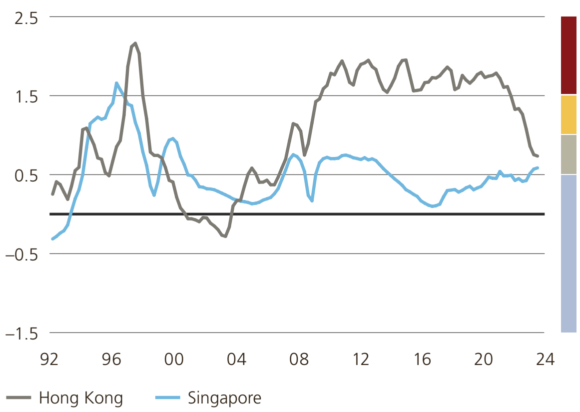
Solid economic growth and lower interest rates should underpin demand next year. To restore buyer confidence in the housing market, stamp duties were canceled early in 2024. However, in the next three to four years, newly built apartments totaling nearly 10% of the housing stock will be available on the market. Overall, the bottom should be in sight, even though inventories have to fall before a lasting price rebound.

In **Singapore's** private housing market, rent growth outpaced price growth over the past five years, driven by global talent influx and construction delays. Last year, however, real rents fell by 7% while prices rose by 3%. The risk of a housing bubble is moderate (see spotlight Singapore p. 20). Government cooling measures have reduced foreign demand, especially in luxury markets. High interest rates and eased supply bottlenecks have increased unsold inventory, suggesting moderated price inflation ahead.

Due to high interest rates, **Sydney** currently has the worst financial affordability of all cities in the study, second only to Hong Kong. Nevertheless, prices slightly increased in inflation-adjusted terms over the last four quarters and are only about 10% below the peak seen in 2022 in real terms. The resilience of prices is primarily a result of a pronounced housing shortage. Additionally, over a 10-year horizon, prices have developed in line with incomes, rents, and national average property prices. Accordingly, the market continues to show only a moderate real estate bubble risk. With falling interest rates, prices are likely to increase more strongly once again. Furthermore, large-scale infrastructure developments are expected to enhance the city's attractiveness in the long term.

Real house prices in **Tokyo** increased by around 5% over the last four quarters, continuing the trend of previous years. Over the last five years, home prices have risen by more than 30% in inflation-adjusted terms, more than doubling the increase in rents. Tokyo also has one of the highest price-to-income ratios among all the cities studied. The city continues to benefit from urbanization and rural depopulation. Financing costs have only slightly increased, which has had little impact on demand. Additionally, the weak yen has strengthened foreign demand for real estate in Tokyo. Overall, the risk of a real estate bubble remains high. The high property valuations are ultimately a side effect of the extremely loose monetary policy of the Bank of Japan.

Historical development of index scores



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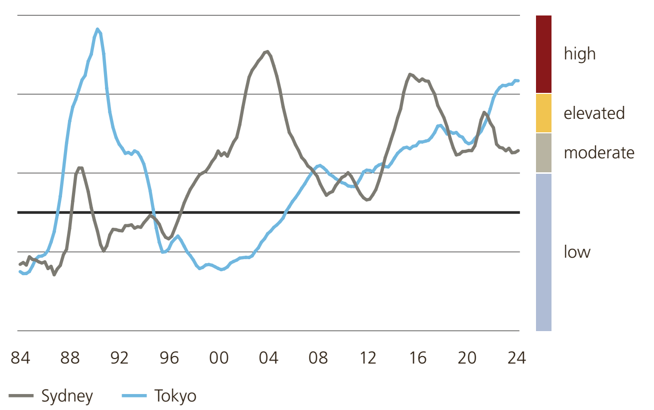


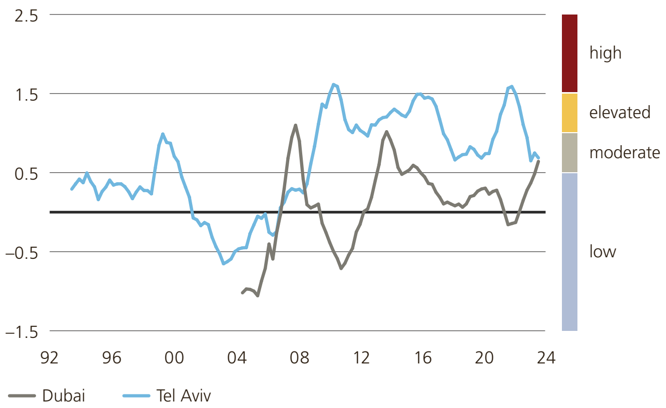
Source: UBS

Middle East

Propelled by falling interest rates and an intensifying housing shortage, real house prices in **Tel Aviv** tripled between 2002 and 2022. The bubble risk was high in 2022: the price level in the city decoupled from the rental market and prices in the rest of the country. Household incomes could not keep up with prices, leading to stretched affordability. It is no surprise that rising mortgage rates ended the boom two years ago and demand shifted to the rental market. Mortgage volume growth has quartered since then. As a result, real prices fell by 10% by the end of 2023. However, dwelling transactions have started to recover in 2024, despite security concerns. On the latter topic, leading indicators suggest that the conflict is starting to weigh on the economy, while the room for monetary policy support from the Bank of Israel is limited due to still-elevated inflation. Attempts from various sides to broker a ceasefire have been unsuccessful so far, increasing the possibility of a prolonged conflict. The growing economic damage raises the risk of spillovers into the local real estate market. Although price growth is supported by low construction, some demand is driven by the fear of missing out. Hence, the bubble risk is moderate.

After a seven-year price correction, the bubble risk signal in **Dubai** was low in 2020. The market started recovering in 2021 backed by strong demand growth. Transaction numbers have reached new all-time highs every year and excess supply has been absorbed. In the last four quarters, housing prices increased by almost 17% and are 40% higher than 2020. Income growth has been robust and rental growth has even surpassed price growth, keeping yields relatively high. Hence, the bubble risk is in moderate territory but has increased considerably since mid-2023. A high proportion of—likely speculative—off-plan transactions and an elevated new supply could trigger a price correction in the short-term (see spotlight Dubai p. 19).

Historical development of index scores



Source: UBS

Benchmarks

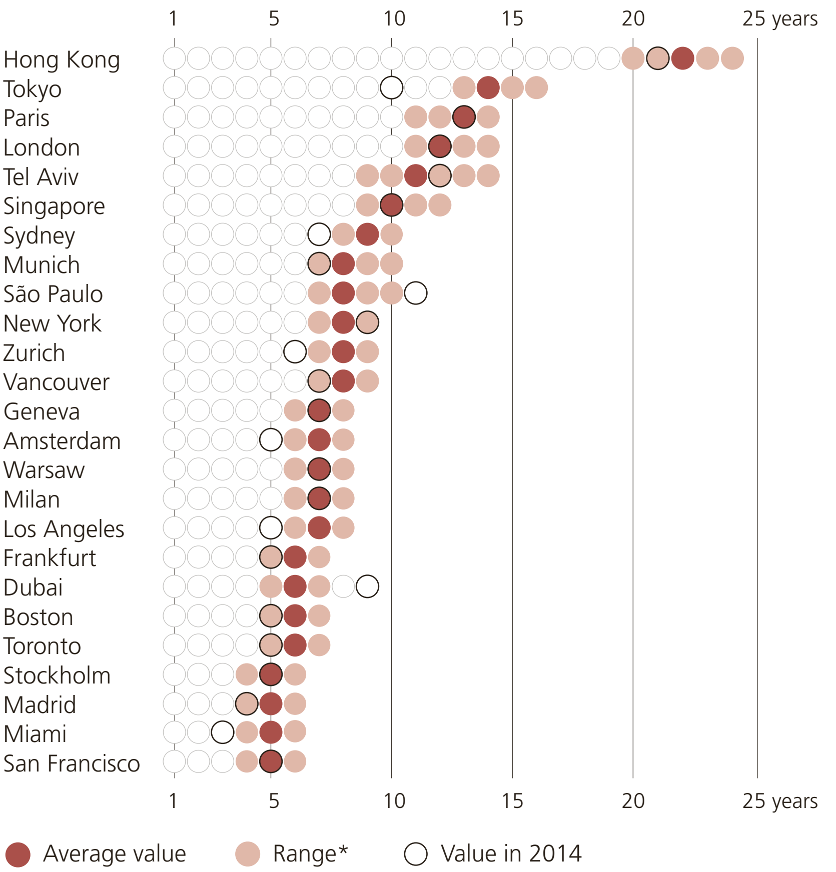
Price-to-income

Although housing prices have declined slightly on average in the cities analyzed and income growth has been relatively robust in recent quarters, affordability has remained stretched in many locations. Buying a 60 square meter (650 square foot) apartment exceeds the budget of those earning the average annual income in the skilled service sector in most world cities. In Hong Kong, even those earning twice this income would struggle to afford an apartment of that size. House prices remain decoupled from local incomes in Tokyo, Paris, London, and Tel Aviv, where more than 10 annual incomes are required to buy a 60 square meter flat. Unaffordable housing often signals strong foreign investment, tight zoning, and strict rental market regulations. A weakening investment demand increases the risk of a price correction and weighs on long-term appreciation prospects.

By contrast, relatively few annual incomes are required to purchase an apartment in San Francisco, Miami, Madrid, and Stockholm, making the price level more sustainable in those cities. Given relatively high incomes, purchasing a 60 square meter apartment also looks relatively feasible for residents of Boston, Dubai, Frankfurt, Los Angeles, Geneva, or Zurich.

For homebuyers, affordability depends primarily on mortgage rates and amortization obligations. If interest and amortization rates are relatively high, the burden on monthly income can be heavy even in cities with low price-to-income multiples like those in the US. Conversely, elevated purchase prices can be sustained with relatively low interest rates and no requirement of full amortization, as seen in 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 23.
The data is not comparable with previous years due to a comprehensive data revision.
* Uncertainty range due to differing data quality.

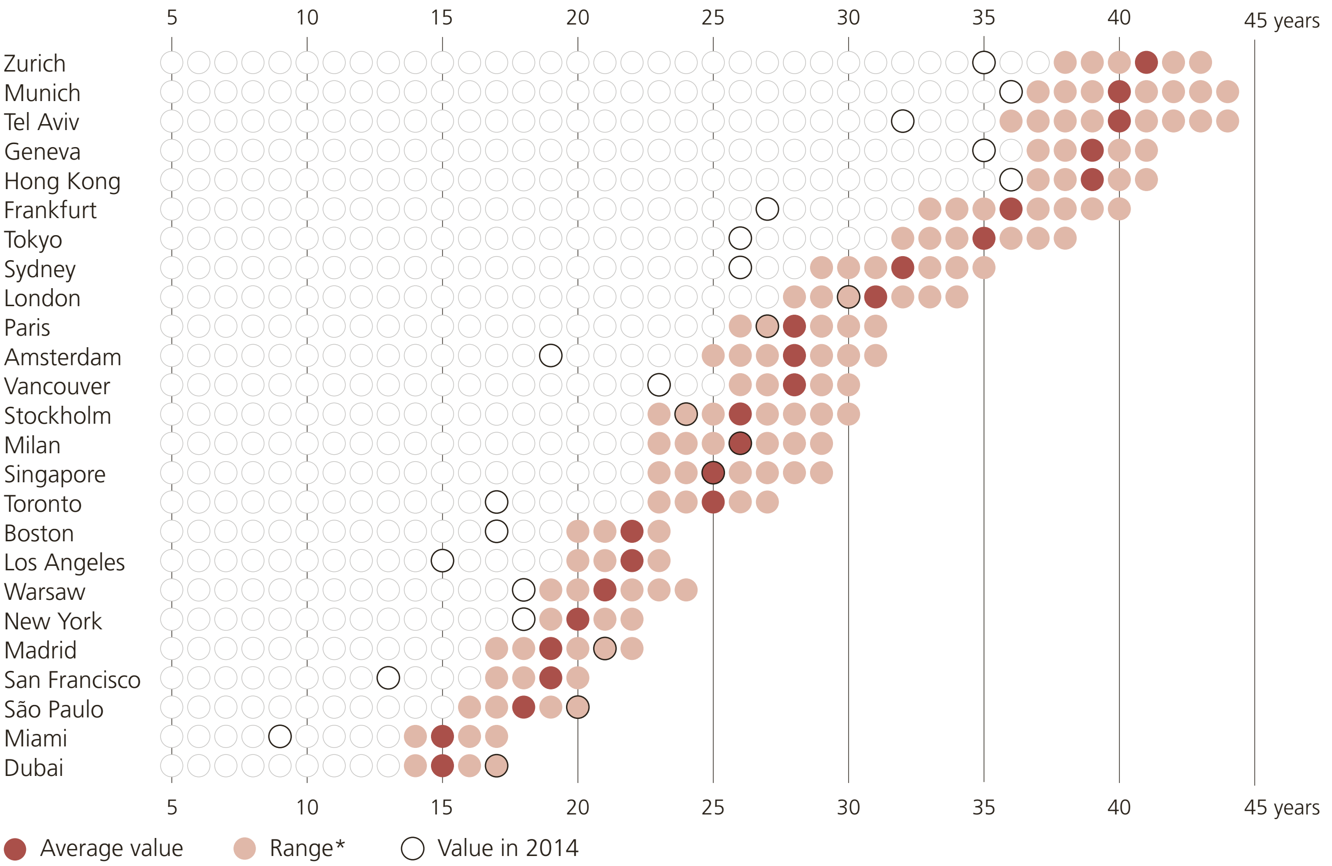
Price-to-rent

Price-to-rent multiples declined on average compared to last year, as rental growth outpaced price appreciation. That said, more than a third of the cities covered have price-to-rent multiples above or close to 30. The highest price-to-rent ratios are currently reported in Zurich, Munich, Tel Aviv, Geneva, and Hong Kong. Such high multiples result from an excessive appreciation of housing prices in the wake of previously low interest rates. House prices in all these cities remain vulnerable to price corrections should interest rates remain elevated for longer or rise further once again.

Elevated price-to-rent multiples may be the result of expectations of rising prices, as is the case in Tel Aviv, Zurich, and Geneva. Investors anticipate being compensated for very low rental yields with capital gains. 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.

Moreover, rental laws in France, Germany, and Sweden are strongly pro-tenant, keeping rents below their true market levels, as reflected in high price-to-rent ratios. Conversely, the US cities analyzed in the study exhibit some of the lowest multiples among the markets analyzed. These reflect, among other things, relatively mildly regulated rental markets and above-average interest rates.

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 23. The data is not comparable with previous years due to a comprehensive data revision.
* Uncertainty range due to differing data quality.

Spotlights

Miami

Challenges on the horizon

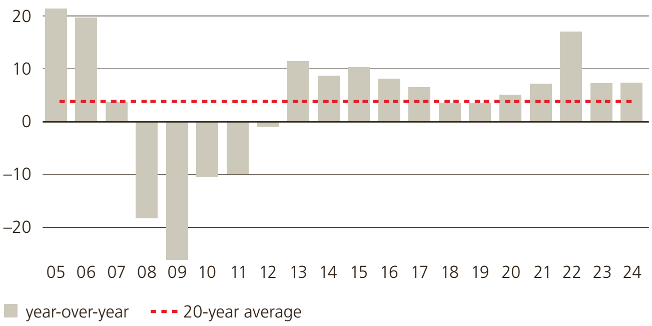
The boom in the Miami housing market has cooled somewhat due to significantly higher mortgage rates. Real house price growth has halved compared to 2022. However, with an annual increase of 7% per mid-2024, the growth was still almost twice as high as the 20-year average. Price rises in recent years have strongly decoupled from income and rental growth, leading to significant imbalances in the residential property market and a **high** bubble risk according to the *UBS Global Real Estate Bubble Index*.

The market is fueled by wealthy individuals competing for the few available high-end properties with ocean frontage. But it's not just the warm climate, the seaside location, and no personal income tax that make Miami attractive to many newcomers from the West and Northeast of the US. Although real estate prices in Miami are now almost 50% higher than at the end of 2019, the absolute price level is still significantly below the prices of New York, Boston, San Francisco, and Los Angeles.

Not only do the large imbalances in the housing market pose a risk for housing market in Miami, but new regulatory requirements for condominiums older than 30 years have recently led to a sharp increase in the supply of such properties. In addition, lower mortgage rates will likely bring significantly more existing inventory to market and potentially lead to some price erosion. Insurance costs for homeownership have risen sharply due to increasing environmental hazards. And the concern about rising sea levels, which has recently been a growing media focus, puts the future of Miami's price levels into question.

Annual house price growth rates

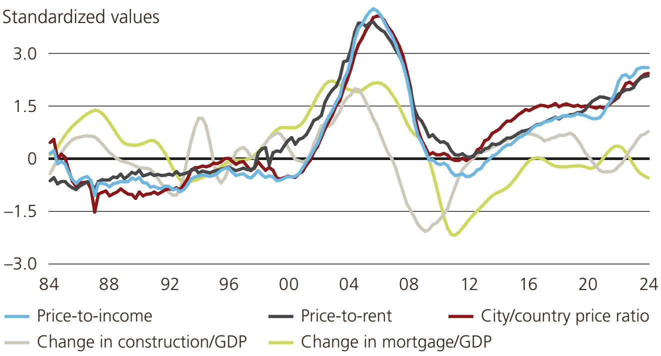
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



Source: UBS

Zurich

Homeownership is losing ground

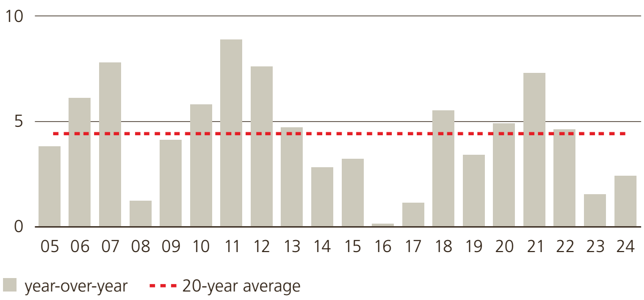
Zurich recorded the strongest price growth among all European cities in this study over the last five years. Real prices are more than 20% higher compared to pre-pandemic levels. Though inflation-adjusted price growth has slowed down due to higher mortgage rates, a correction has not occurred. The price-to-income ratio has continued to deteriorate as real incomes increased only in the low single-digit percentage range. The share of owner-occupied housing is declining.

Supply looks unlikely to come to the rescue. New condominium units are often rented out as buy-to-let properties, despite low returns, driven by the expectation of long-term value growth. Nationwide, declining construction activity exacerbates the demand overhang in Swiss urban centers. As a result, rents have continued to rise sharply and are now a quarter higher than in 2019. Particularly in the last two years, rents have increased significantly more than home prices, which has helped reduce some market imbalances. Nevertheless, the risk of a real estate bubble remains **high**, in our view.

Despite stretched affordability, housing in Zurich is likely to become even more expensive. The region should still benefit from ongoing robust employment and high population growth, in our view. The dried-up rental market will likely boost demand on the owner-occupied market, especially in light of declining mortgage rates. Finally, due to the very low inventory of owner-occupied homes in Zurich, they will be increasingly perceived as a luxury good and will ultimately gain importance as a status symbol.

Annual house price growth rates

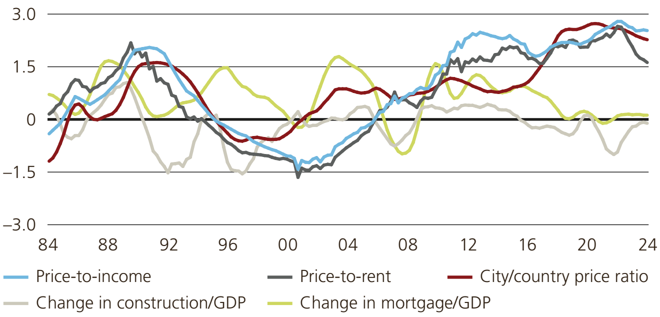
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



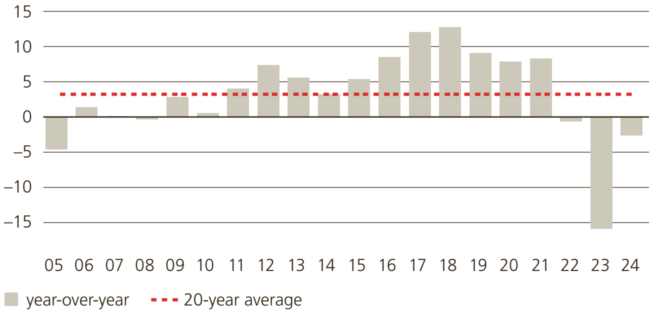
Source: UBS

Frankfurt

Blues after correction

Annual house price growth rates

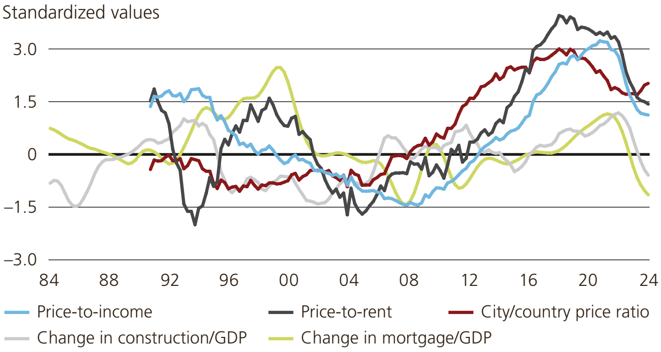
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



Source: UBS

The story of Frankfurt's housing market decline shows just how quickly a real estate bubble can burst. After peaking in mid-2022, real prices have fallen roughly 20% and are now back to levels not seen since 2018. Two years of significantly higher interest rates were all it took to eradicate the price gains seen during the pandemic. However, in the first half of 2024, prices seem to have stabilized.

In contrast, both incomes and rents have held up well, at least over the past four quarters, recording an inflation-adjusted increase of 2-3%. The same cannot be said of the once buoyant mortgage market, with growth peaking at 7% during the pandemic coming almost to a standstill. Together, these developments have led to a reduction in imbalances in Frankfurt´s owner-occupied market such that the risk of a real estate bubble has dropped within two years from high to **moderate**.

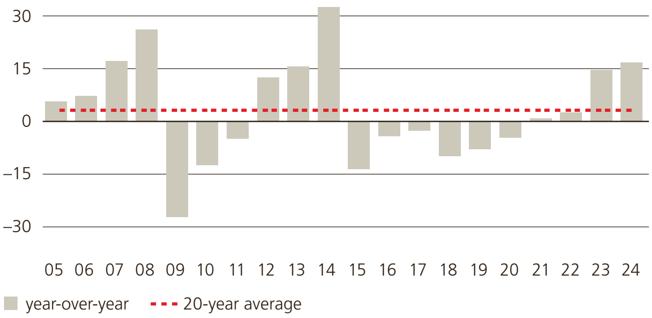
Given that the European Central Bank will likely continue to lower rates, mortgage costs should fall and boost demand, suggesting that the market correction will draw to a close. A new law curbing the conversion of rental to owner-occupied apartments and a lack of new housing should see house prices edge up again. However, a sharp acceleration of prices is unlikely, in our view. Despite the recent correction, purchase prices remain 90% higher than they were a decade ago. Stagnating population numbers in the city and a struggling economy argue against a rapid recovery.

Dubai

Setting records

Annual house price growth rates

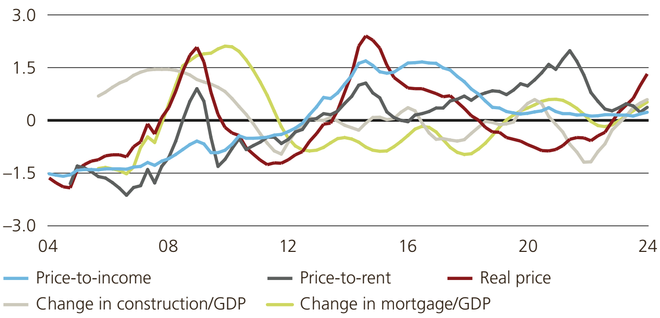
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



Source: UBS

Dubai's real estate has been in high demand since 2021. The market has benefited from accelerating population growth, especially from regions where the investment climate has deteriorated in recent years. Underpinned by a dynamic economy in the Emirates, household incomes have recorded strong growth since 2021, surpassing all other analyzed cities. Moreover, given a high proportion of cash buyers, higher interest rates have had a lesser impact on the market than elsewhere.

Strong demand has helped absorb a considerable supply expansion. Residential transaction volumes have recently reached a record high. The 17% price increase in the last four quarters outshone the home price developments in all other cities in the study. Prices in Dubai are now 40% higher than in 2020. Despite the strong price growth, rental yields remain very attractive at 6-7%. This is due to a 60% increase in rents in real terms. As a result, the bubble risk in Dubai is **moderate**.

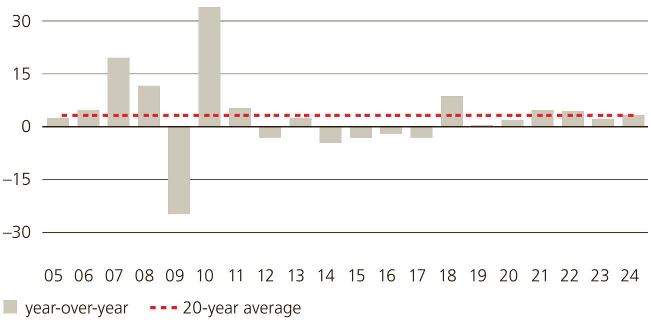
However, the city experienced the strongest bubble risk score increase among all cities analyzed in this report over the last four quarters. Strong price increases have been driven partially by speculative demand, and by a high proportion of off-plan sales. Additionally, the luxury segment is increasingly overvalued, in our view. Price swings are likely in the short term. Over the medium term, an economic recession and a lasting oil price drop are the main risks to the residential market. Moreover, supply continues to expand relentlessly: by 2029, the housing stock is likely to have grown by a third. This puts prospects for long-term price appreciation into question.

Singapore

Cooling measures prove effective

Annual house price growth rates

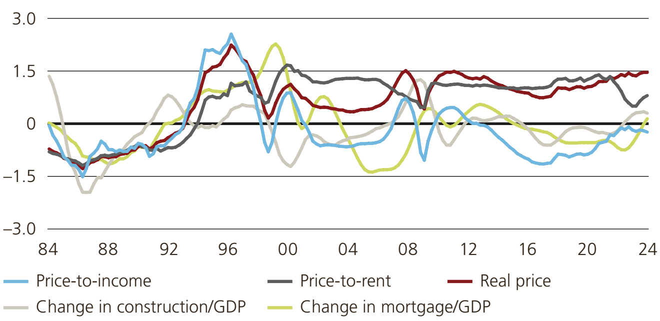
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



Source: UBS

Remark: The analysis refers to the private residential market only.

In the last five years, rent growth surpassed price growth in Singapore's private housing market, as rents climbed by 28% while prices increased by 18% in real terms. This phenomenon was partly attributed to an influx of global talent post-pandemic driving up rental demand, whereas new supply was hampered by pandemic-induced construction delays.

Last year saw an inflection point. Rents declined by almost 7% in real terms, while prices crept higher by 3%. Even as the price-to-rent ratio increased, the price-to-income ratio suggests improved affordability as income growth outpaces price increases. Overall, the risk of a housing bubble has increased somewhat over the last four quarters but is only **moderate**.

Overall, we see Singapore's residential housing market as being well-supported by robust fundamentals. But macroprudential cooling measures implemented by the government—most notably the doubling of foreigners' stamp duties in 2023—have led to a weakening of demand from foreign buyers. The negative impact has been most pronounced in the luxury market. Foreign purchasers now account for just a low-single-digit of total transactions, down from a high of 24% in 2011. Additionally, persistently high interest rates continue to weigh on housing demand, while supply bottlenecks have eased. Consequently, unsold inventory has crept up, and sales volumes have decreased. This indicates a potential moderation in price inflation in the coming quarters.

London

Running out of steam

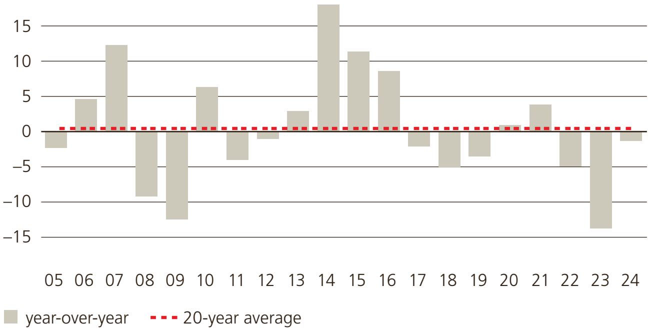
Following a period of high inflation and falling demand, house prices in London are at the same level as in 2013 in real terms. However, the price correction seen in large parts of the market has largely come to a halt, with prices stagnating over the past year. In part, this has been helped by the turning tide of monetary policy as inflation has retreated. This enabled the Bank of England (BoE) to announce the first rate decrease in August 2024 after almost three years of monetary tightening.

Although the BoE is easing policy, high interest rates continue to weigh on the market, as evidenced by stagnating mortgage volumes, despite real income growth turning positive and continuing to rise. Rents, however, have soared by 6% in real terms as worsening affordability of owner-occupied housing drove up demand for rentals, and high borrowing costs forced landlords to increase rents. The risk of a housing bubble has continued to decline over the last year and has fallen from high in 2016 to currently **low**.

Further interest rate cuts should lead to a slight uptick in demand in the broad London housing market, in our view. As new construction remains low, limited supply should support prices. The outlook is less promising for the prime market though, as the new government looks to increase wealth tax and remove VAT exemptions for private schools. High-net-worth individuals have been leaving the country since Brexit and their population looks likely to decline even more.

Annual house price growth rates

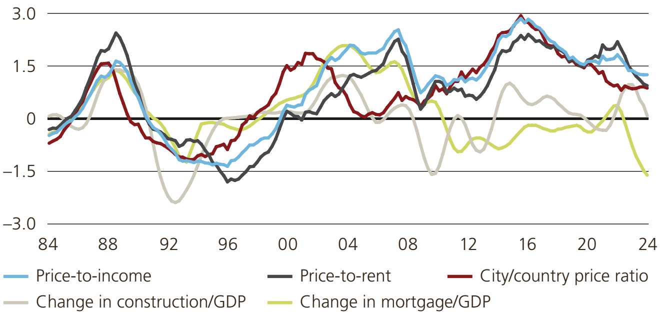
Real in %, as of 2nd quarter



Source: UBS

Development of sub-indices

Standardized values



Source: UBS

Overview

Rank	City	Score (Total)	Assessment	Price / Income	Price / Rent	City / Country[1]	Mortgage[2]	Construction[2]	Real price growth, last year	Real price growth, last 10 years	Real rental growth, last year	Real rental growth, last 10 years
		UBS Global Real Estate Bubble Index: Total	Sub-indices						Annualized, in %		Annualized, in %	
1	Miami	1.79	High	High	High	High	Low	Moderate	7.4	7.5	–2.8	1.4
2	Tokyo	1.67	High	High	High	High	Elevated	Moderate	5.6	5.3	2.4	2.1
3	Zurich	1.51	High	High	High	High	Low	Low	2.4	3.4	8.1	2.0
4	Los Angeles	1.17	Elevated	High	High	Moderate	Low	Moderate	1.4	4.0	–4.0	0.4
5	Toronto	1.03	Elevated	High	High	Elevated	Low	Low	–0.7	5.3	–2.8	1.7
6	Geneva	1.00	Elevated	High	High	Moderate	Low	Low	–0.2	1.1	2.6	–0.1
7	Amsterdam	0.98	Moderate	Elevated	High	Elevated	Low	Low	6.9	5.8	–0.9	1.7
8	Sydney	0.78	Moderate	High	Elevated	Moderate	Low	Low	1.7	3.4	3.5	1.3
9	Boston	0.78	Moderate	Elevated	Elevated	Low	Low	Moderate	1.1	3.6	–1.1	1.1
10	Vancouver	0.77	Moderate	Elevated	Elevated	Elevated	Low	Low	5.5	4.9	–1.3	2.9
11	Frankfurt	0.75	Moderate	Elevated	Elevated	High	Low	Low	–2.7	4.1	2.2	1.2
12	Hong Kong	0.74	Moderate	Moderate	Elevated	Moderate	Low	Moderate	–12.5	–0.2	1.9	–0.8
13	Tel Aviv	0.69	Moderate	Moderate	Elevated	Moderate	Low	Low	1.3	3.5	1.2	1.2
14	Dubai	0.64	Moderate	Low	Low	Elevated	Moderate	Moderate	16.8	–1.3	16.6	–0.6
15	Singapore	0.59	Moderate	Low	Moderate	Elevated	Low	Low	3.2	1.7	–6.6	1.5
16	Madrid	0.56	Moderate	Moderate	Low	High	Low	Low	5.3	2.8	14.1	3.6
17	Munich	0.54	Moderate	Moderate	Elevated	High	Low	Low	–4.9	3.1	4.4	2.0
18	San Francisco	0.48	Low	Low	High	Low	Low	Moderate	0.3	1.9	–1.7	–1.7
19	London	0.41	Low	Elevated	Moderate	Moderate	Low	Low	–1.4	–0.9	6.5	–1.1
20	New York	0.37	Low	Moderate	Elevated	Low	Low	Moderate	0.5	0.2	–0.5	–0.8
21	Paris	0.35	Low	Moderate	Elevated	Moderate	Low	Low	–10.4	–0.2	–0.9	–0.9
22	Stockholm	0.32	Low	Elevated	Moderate	Low	Low	Low	–4.2	0.9	1.9	0.1
23	Warsaw	0.23	Low	Low	Elevated	Low	Low	Low	16.2	3.3	0.8	1.4
24	Milan	0.20	Low	Low	Low	High	Low	Low	1.7	–0.4	4.7	–0.4
25	São Paulo	0.04	Low	Low	Low	Moderate	Moderate	Low	1.4	–2.5	8.1	–1.5

High (above 1.5 standard deviations)
Elevated (between 1.0 and 1.5 standard deviations)
Moderate (between 0.5 and 1.0 standard deviations)
Low (below 0.5 standard deviations)

[1] Price ratio. For Hong Kong, Singapore and Dubai real prices
[2] Compared to GDP, annual change

Source: UBS

Methodology & data

The *UBS Global Real Estate Bubble Index* traces the fundamental valuation of owner-occupied housing markets and the valuation of cities in relation to their country and economic distortions (such as lending and building booms). Based on the valuation, the "bubble risk" is assessed: *low* (score below 0.5), *moderate* (0.5 to 1.0), *elevated* (1.0 to 1.5), and *high* (above 1.5). This classification is aligned with historical bubble episodes. The method cannot predict if or when a correction will happen. Hence, "bubble risk" refers to the prevalence of a risk of a large price correction.

The index score is a weighted average of the following five city sub-indices, standardized using an expanding window procedure: price-to-income and price-to-rent ratios (fundamental valuation), change in mortgage-to-GDP ratio and change in construction-to-GDP ratio (economic distortion), and city-to-country price ratio. The city-to-country price ratio 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.

The sub-indices 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 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 2008. Data availability was also considered when deciding which cities to include in the index, along with the importance of the city for global financial markets and residential real estate investments. Please see the description of data sources on page 24.

The weights of the sub-indices are determined using factor analysis, as recommended by the OECD Handbook on Constructing Composite Indicators (2008). Factor analysis weights the sub-indices 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-indices. To prevent overweighting country level variables and to increase the comparability of cities, the deviation from the average weight across all cities is limited. Weights adjusted this way approximate the average factor analysis weight of single indices across the cities and 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 and price-to-rent ratios. The price-to-income ratio indicates how many years a skilled service-sector worker needs to work to afford a 60-square-meter (650 square foot) flat near the city center. The price-to-rent ratio signals how expensive owner-occupied homes are relative to rental apartments. The higher the ratios, the more expensive buying becomes. Earnings data is primarily taken from official statistical sources and supplemented by other sources like the UBS Prices and Earnings survey.

Real estate prices and rents vary 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

		Price Index (City)	Rent Index (City)	Income Index (City)	Price Index (Country)	Mortgage, Construction, GDP, Inflation (Country)
Amsterdam	2024Q2	CBS, Maastricht University	NVM, UBS P&E	UBS P&E, CBS	CBS, FED Dallas	DNB, CBS, EUKLEMS, Bloomberg
Boston	2024Q2	FHFA, S&P/Shiller	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Dubai	2024Q2	Reidin, BIS	Reidin, UBS P&E	UBS P&E, Morgan Stanley, Bloomberg	–	Central Bank UAE, Dubai Statistics Center, Morgan Stanley, Bloomberg
Frankfurt	2024Q2	Bulwiengesa, Kiel Institut für Weltwirtschaft	Bulwiengesa, OECD	Destatis, UBS P&E, OECD	FED Dallas	Deutsche Bundesbank, Destatis, EUKLEMS, Bloomberg
Geneva	2024Q2	Wüest Partner	Statistique Genève	FTA, FSO	Wüest Partner	SNB, SECO, FSO
Hong Kong	2024Q2	RVD	RVD	Census and Statistics Department Hong Kong, Bloomberg	–	Census and Statistics Department Hong Kong, HKMA, Macrobond, Bloomberg
London	2024Q2	Nationwide	ONS, UBS P&E	ONS	Nationwide	BoE, ONS, EUKLEMS, Bloomberg
Los Angeles	2024Q2	FHFA, S&P/Shiller	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Madrid	2024Q2	BoS, Idealista	Ayuntamiento de Madrid, Idealista	INE	BoS	INE, BoS, EUKLEMS, Bloomberg
Miami	2024Q2	FHFA, S&P/Shiller	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Milan	2024Q2	Nomisma	Nomisma, OECD	Dipartimento delle Finanze, UBS P&E	FED Dallas	Banca d'Italia, Hypostat, Istat, EUKLEMS, Macrobond, Bloomberg
Munich	2024Q2	Bulwiengesa	Bulwiengesa, OECD	Destatis, UBS P&E, OECD	FED Dallas	Deutsche Bundesbank, Destatis, EUKLEMS, Bloomberg
New York	2024Q2	FHFA, S&P/Shiller	CBRE, CoStar, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
Paris	2024Q1	BIS, CGEDD, Insee	Insee	Insee, Bloomberg, UBS P&E	FED Dallas	BdF, Insee, EUKLEMS, Macrobond, Bloomberg
San Francisco	2024Q2	FHFA, S&P/Shiller	CBRE, FED St. Louis	BEA	FHFA	FED, BEA, Bloomberg
São Paulo	2024Q2	Fipe	Fipe	Fundação Seade	Fipe	Banco do Brasil, IBGE, Bloomberg
Singapore	2024Q2	Government of Singapore	Government of Singapore, UBS P&E	Government of Singapore	–	Government of Singapore, Bloomberg
Stockholm	2024Q2	Statistics Sweden, Valueguard	Statistics Sweden, UBS P&E	Statistics Sweden, UBS P&E	Statistics Sweden	Statistics Sweden, Bloomberg
Sydney	2024Q2	REIA, ABS	REIA, NSW Government, UBS P&E	ABS, UBS P&E	FED Dallas	ABS, RBA, Bloomberg
Tel Aviv	2024Q2	CBS	CBS, UBS P&E	CBS, UBS P&E	FED Dallas	BoI, Bloomberg
Tokyo	2024Q2	The Real Estate Transaction Promotion Center, Haver Analytics, Tokyo Kantei	Miki Syoji, Official Statistics of Japan Tokyo Kantei	INDB, Tokyo Metropolitan Government, UBS P&E	FED Dallas	ESRI, EUKLEMS, Bloomberg
Toronto	2024Q2	Sauder School of Business UBC, Bloomberg	Canadian Housing Observer, Sauder School of Business UBC, UBS	Statistics Canada	FED Dallas	Statistics Canada, BoC, Bloomberg
Vancouver	2024Q2	Sauder School of Business UBC, Bloomberg	Canadian Housing Observer, Sauder School of Business UBC, UBS	Statistics Canada, Government of British Columbia	FED Dallas	Statistics Canada, BoC, Bloomberg
Warsaw	2024Q2	National Bank of Poland	National Bank of Poland	Statistics Poland	National Bank of Poland	National Bank of Poland, Statistics Poland, Bloomberg
Zurich	2024Q2	Wüest Partner	Statistik Stadt Zürich	FTA, FSO	Wüest Partner	SNB, SECO, FSO

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Version B/2024. CIO82652744