

Under the spell of interest rate turnaround and scarcity

Swiss Real Estate Market 2023 | March 2023



Sustainability
**The long road
to net zero**

Page 7

Spatial development
Iceberg ahead!

Page 18

Real estate investments
**Concrete gold
loses its glitter**

Page 43

Imprint

Publisher: Credit Suisse AG, Investment Solutions & Sustainability

Nannette Hechler-Fayd'herbe
Head of Global Economics & Research
+41 44 333 17 06
nannette.hechler-fayd'herbe@credit-suisse.com

Fredy Hasenmaile
Head Real Estate Economics
+41 44 333 89 17
fredy.hasenmaile@credit-suisse.com

Cover picture

Building: Petit-Lancy, Chemin de Surville - CityPop
Building owner: CS Real Estate Fund LivingPlus, a real estate fund of Credit Suisse Asset Management

Copy deadline

February 1, 2023

Publication series

Swiss Issues Immobilien

Orders

Electronic copies via www.credit-suisse.com/realestatestudy.

Visit our website at

www.credit-suisse.com/realestatestudy

Copyright

The publication may be quoted providing the source is indicated.
Copyright © 2023 Credit Suisse Group AG and/or
affiliated companies. All rights reserved.

References

Unless otherwise specified, the source of all quoted information is Credit Suisse.

Authors

Manuel Bolz, +41 44 332 32 20, manuel.bolz@credit-suisse.com
Fredy Hasenmaile, +41 44 333 89 17, fredy.hasenmaile@credit-suisse.com
Thomas Rieder, +41 44 332 09 72, thomas.rieder@credit-suisse.com
Dr. Fabian Waltert, +41 44 333 25 57, fabian.waltert@credit-suisse.com

Contribution

Fabian Diergardt

Contents

Management Summary	4
Sustainability: The long road to net zero	7
Owner-occupied housing	11
Demand: Demand in decline	11
Supply: Building activity down in 2023 too	14
Market outcome: Scarcity of supply props up prices	15
Outlook 2023: Home ownership boom at an end	17
Spatial development: Iceberg ahead!	18
Rental apartments	23
Demand: Rental apartments coveted	23
Supply: More apartments needed	25
Market outcome: Renters on the back foot	26
Outlook 2023: Landlords regain upper hand	28
Housing market: Annual movement of people	29
Office property	33
Demand: Interim surge in demand	33
Supply: Home working slows absorption	34
Supply: Muted newbuild activity	35
Market outcome: Fortified against downturn	36
Use conversions: Home working, office living	37
Outlook 2023: Slowdown to follow interim high of 2022	38
Sustainability: Stop the rating confusion!	39
Real estate investments	43
Direct investments: Concrete gold loses its glitter	43
Indirect investments: Recalibration following interest rate turnaround	46
Outlook 2023: Market heads toward soft landing	48
Ten questions – ten answers	49
Factsheets: Regional real estate markets at a glance	51

Under the spell of interest rate turnaround and scarcity

The wind has changed direction in the Swiss real estate market: Tenants and owners are confronted with rising costs, and even for investors real estate is losing its luster. The interest rate turnaround has brought down the curtain on an extremely long era of rising prices in the Swiss property market – often referred to as a “supercycle”. Time and again in recent years, new developments have emerged to extend this cycle, such as negative interest rates (2015), the unexpectedly robust economy (2018), and the demand surge triggered by the coronavirus pandemic (2020). However, the powerful influence of higher interest rates has finally broken the spell. As a result, the real estate market will now have to endure several years without the familiar tailwind of a benign interest rate environment, which until recently had proved so forgiving to any errors in the conception, marketing, or management of properties. Unlike in other countries, however, the Swiss real estate market is only undergoing a process of normalization, and is not being pushed into a full trend reversal. It would not be out of place to talk of a “soft landing”, as long as this is understood to include a few tolerable price corrections that we expect over the next few years. Not for the first time, two factors make Switzerland something of a special case: First, inflation rates here are only a fraction of those recorded in other countries, which in turn means less hefty interest rate hikes. The second factor is home-made. Specifically, Switzerland is experiencing what is now an almost irritating construction lull, which will soon lead to the rental apartment market experiencing the kind of scarcity problem more often associated with the owner-occupied housing market. There is no question that an unpreventable shortage of housing supply will drive up rental prices, increasing the cost burden faced by tenants. By contrast, from an investor perspective rising rents should help to mitigate the likelihood of residential investment properties suffering valuation corrections in the face of higher interest rates. However, the corollary of the growing scarcity of housing is that calls for greater regulatory intervention will become that much louder.

Sustainability I Page 7

The long road to net zero

Swiss residential building stock is supposed to be climate-neutral by 2050. To achieve this, greenhouse gas emissions must be brought down to net zero by then. But as buildings are the third-greatest cause of Swiss emissions at 24%, there is no getting away from the need to massively reduce energy consumption and move away from fossil fuels. Things are already well advanced on the newbuild front in this respect, as it is now extremely rare for a Swiss house to be built with a heating system based on fossil fuels. The situation is rather different in existing housing. Due to the long lifecycles of many construction parts and the high resulting writedown costs in the event of any early replacement, energy-related renovations are rarely undertaken earlier than necessary. This problem can be resolved by government subsidy programs to a limited extent only. Some 60% of all Swiss housing is therefore still heated by some form of fossil fuel. The Federal Office of Energy has tried to establish on the basis of a scenario analysis whether (and how) the net zero target might be achieved. We have subjected the downward paths of greenhouse gases that result from these scenarios to a reality check, while at the same time adding scenarios of our own. This leads us to conclude that while the net zero target may be challenging, it should be attainable due to the changed social and political environment. However, the tempo of the changeover of building heating systems would have to be accelerated. For example, annual heat pump sales would need to rise by 69% by 2027 compared to 2021 levels.

Owner-occupied housing Page 11

Scarcity of supply props up prices

The interest rate trend reversal has led to a sharp decline in demand for owner-occupied housing. Due to the strong recent price rises, fewer households are now in a position to even contemplate owning their own four walls. Lower demand contrasts with a supply that has been limited for years and a pronounced shortage of available properties. And as the new construction of residential property is declining even further, the owner-occupied housing market is not facing an imminent oversupply problem. While potential buyers should be able to choose from a greater number of properties than last year due to much lower interest in buy-to-let investments, waning demand will be reflected in longer selling times only gradually as a result of record-low construction activity.

Therefore, price growth should weaken considerably in 2023 but without sliding into negative territory until 2024. At this point, the combination of rising interest rates and high property prices will simply make the cost burden too great. This in turn will reduce demand to an extent that will sooner or later result in price corrections. That said, these corrections should be tolerable, as persistently scarce supply will substantially reduce their potential magnitude.

Spatial development

Page 18

Iceberg ahead!

The Swiss rental apartment market has experienced a trend reversal in record time. Instead of oversupply, the talk is now of an imminent housing shortage. The main reason for this is the decline in construction activity since 2016/2017. It is not easy to explain why far too few apartments are being built, but we view the revision of spatial planning as the main culprit. Switzerland's Spatial Planning Act rightly makes zoning permission difficult to obtain, particularly as the electorate has repeatedly voiced its opposition to further urban sprawl. However, the process of urban densification, which is supposed to ensure sufficient housing as an alternative to zoning permission, is too often held up. Overly generous appeal options, unresolved conflicts of interest between densification on the one hand and cultural heritage and noise protection on the other, and laborious approval processes are holding back construction activity everywhere. Parallel measures that could provide effective support to densification are either non-existent or work too slowly. Rapid action is required if a full-blown housing crisis is to be avoided. But this would require legislative adjustments, and even in the best scenario several years would probably elapse before any improvement manifested itself. To compound matters, the threatened housing shortage is likely to result in increased calls for even more rigorous regulation of the housing market, along the lines of the example set by Geneva and Basel, even though such a development would clearly only accentuate the problem.

Rental apartments

Page 23

Renters on the back foot

Demand for rental apartments has surged further over the last 12 months, the key driver being the highest net immigration rate for eight years. In view of the pronounced shortage of skilled labor, high immigration figures will be recorded over the next few years too, which means rental apartments will remain in demand in 2023, despite the gloomy economic outlook. In contrast to brisk demand for housing, however, construction activity continues to decline. No trend reversal is foreseeable here, and too few apartments are being built in the majority of Swiss regions. With supply rates and time-on-market declining rapidly, it is evident that landlords are gaining the upper hand in the rental apartment market. Moreover, given the interest rate trend reversal and high construction price inflation, it has become even more unlikely that the situation will ease any time soon. The downward trajectory of rental apartment vacancies is therefore likely to prove similar in 2023, whereas rents are set to rise strongly.

Relocation behavior

Page 29

Annual movement of people

Every year, some 800,000 people – or more than one in ten residents – move house in Switzerland. In 2021, as many as one in every four people between the age of 25 and 30 changed their place of abode. Generally speaking – and unsurprisingly – young adults aged between 18 and 34 are the most likely to move house. They represent just 21% of the population but account for 43% of all moves. Furthermore, analysis of relocation behavior also shows that we become more sedentary with increasing age. However, it is not just age that decides how often we move and where we move to. For example, foreigners move more frequently, and women are on average clearly more likely to move house than men. House moves tend to be local: Overall, the average relocation distance in the years since 2018 has always been between 12 and 13 kilometers, and just 28% of the population will ever move more than ten kilometers. For real estate developers, this means that 72% of demand for a residential construction project will on average come from a catchment area of 10 kilometers or less.

Office property

Page 33

Office market at interim peak

Write off a real estate market at your peril. In the wake of the COVID-19 pandemic, Switzerland's office property market was pronounced to be on death row by many an observer. But demand for office space has been buoyant until recently, which is the result of robust employment growth. This interim peak came at exactly the right time for the Swiss office market: Thanks to declining vacancies and rising rents, it can at least face the current downturn in somewhat better shape. If there is a gloomy side to the picture, it is the fairly high level of the average Swiss supply rate. While this has declined from 5.8% to 5.6% year on year, a stronger fall had been expected given the strength of employment growth. The home working trend is weighing on absorption, hence the overall supply of space is not falling as strongly as in previous recovery phases. Investors would

appear to be fearful of this too, as investment in new space is some 11% below the long-term average. Accordingly, use conversions are still being considered. However, these are far more difficult to implement than is commonly believed.

Sustainability II

Page 39

Stop the rating confusion!

As the standards for sustainable investing have only been established gradually, confusion reigns. The multitude of current initiatives and ratings stands in direct contrast to the actual progress being made in the area of sustainability. Some ratings encompass dozens of indicators, making it impossible for users to interpret the results correctly without precise knowledge of the rating methodology, never mind draw any benefit from them. The Economist magazine has bemoaned the fact that ESG ratings are in any case too broad-based. A focus on just a few key environmental metrics such as the absolute energy consumption and greenhouse gas emissions of properties would be far more valuable. If property owners can demonstrate that they are making a key contribution to containing climate warming, they automatically attract less criticism. The Real Estate Investment Data Association (REIDA), a Swiss non-profit organization for the pooling of investment data, wants to facilitate this breakthrough and has developed a standard for determining key environmentally-relevant metrics in the real estate sphere, with industry associations AMAS and KGAST adding their voices to calls for greater transparency here. For this to be achieved, the calculated metrics must be comprehensible and comparable, which in turn makes a uniform set of data and an identical calculation method essential. The first-ever comparison of the key figures on real estate portfolios of different providers under the REIDA standard throws up interesting results, and gives an idea of what measures might facilitate the drive to net zero without damaging yields.

Direct real estate investments

Page 43

Concrete gold loses its glitter

Ever since the turnaround in interest rates that began in 2022, investors have had alternatives to real estate investments. The difference in yield between these and 10-year Swiss government bonds has narrowed sharply, and is currently below the long-term average. However, depending on the inflation expectations of an investor and the possibility of passing on cost increases, the real narrowing of the yield difference is less pronounced, as real estate offers partial or even extensive protection against inflation, according to the segment in question. Real estate investments have nonetheless lost their special cachet as the “no alternative” asset category. Moreover, it is likely that rising discount rates will increasingly become the new reality as 2023 progresses, thereby putting the valuations of investment properties under pressure. Valuations are better able to withstand this pressure when net rents are rising at the same time. Prospects look particularly good for residential investment properties in this respect, as the growing signs of scarcity in the rental apartment market are already reflected in sharply rising advertised rents. This market development is also apparent in the portfolios of institutional investors, where rental income losses – which are largely attributable to vacancies – have halved within the space of just three years. What’s more, thanks to the expected increase in the reference interest rate this year, a proportion of rising debt capital costs and inflation can be passed on to tenants, albeit with a certain time lag. To this extent, Switzerland’s economic stability and the positive development of user markets are protecting real estate investments from a hard landing.

Indirect real estate investments

Page 46

Recalibration following interest rate turnaround

Listed real estate funds and shares reacted dramatically to the interest rate turnaround in 2022, ending the year with total performance of –15.2% and –9.0% respectively. It is of only slight consolation to real estate investors that the performance of comparable international investments was much worse. Capital market transactions also suffered a severe slump, with the volume of capital raised by real estate funds through launches and capital increases recording a year-on-year decline of 50% in 2022. The raising of debt capital through the issuance of bonds experienced an even greater slump. Following this correction, the market is now starting to recalibrate, and new investment opportunities are appearing thanks to more realistic valuations. We see this primarily in the case of commercial properties, which on average generate a high dividend yield of 4.1% while at the same time offering some protection against inflation.

Ten questions answered

Page 49

Ten questions – ten answers

Finally, we provide a set of short, sharp answers to what we believe are the ten key questions regarding the Swiss real estate market.

The long road to net zero

The goal is for Swiss residential building stock to be climate-neutral by 2050. The following analysis concludes that this is the right direction, and that the objective is achievable. But it will take enormous effort to actually achieve this goal – as our reality check shows.

Switzerland aiming to be climate-neutral by 2050

The Swiss population has major concerns regarding the state of the environment. According to the latest Credit Suisse Worry Barometer, the environment has now become the no. 1 worry of the Swiss electorate for the first time. And despite the rejection of the CO₂ Act at the ballot box, this theme will remain on the political agenda, as Switzerland has committed to reducing its emission of greenhouse gases (GHG) to net zero by 2050. And in a first step, GHG emissions will have to be reduced by 50% – compared to 1990 levels – by 2030.

Real estate responsible for almost a quarter of all emissions

This also has major repercussions for the evolution of residential buildings in Switzerland, given that this is the third-largest cause of GHG emissions at 23.9%, behind transport (31%) and manufacturing (24.8%) (Fig. 1). Buildings are thus very much in the spotlight, and owners are coming under pressure to act. More than two-thirds of building emissions come from housing, primarily through fossil fuel heating and the supply of hot water. The reduction of building emissions is therefore a crucial step on the road to a climate-neutral Switzerland. Such a goal can logically only be achieved with a massive reduction of energy consumption and a transition away from fossil energy sources. At the same time, Switzerland needs to create a circular economy by ensuring the lowest possible (gray) energy consumption in the construction and demolition of buildings.

Scenarios for Swiss housing up to 2050

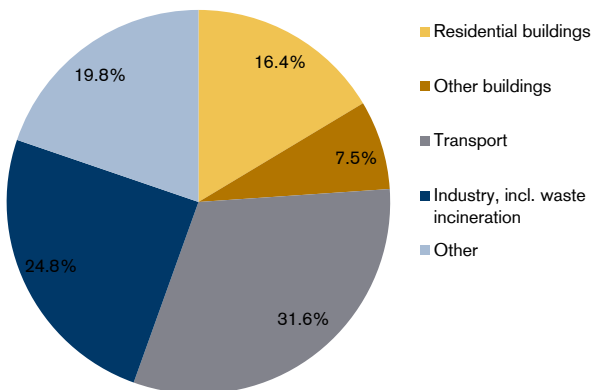
In the following article we illustrate how the existing stock of residential buildings in Switzerland might evolve in the direction of climate neutrality. This is based on the scenarios drawn up by the Swiss Federal Office of Energy as part of the 2050+ Energy Perspectives. In addition, we have calculated our own scenarios and tried to show where possible stumbling blocks lie on the road to climate neutrality. This reality check helps us as a bank to understand the drivers of developments in this area and to better assess the climate risks to which our own credit portfolios are exposed as well as the impact of our portfolios on the climate itself.

Newbuilds will almost exclusively bypass fossil fuels

A considerable amount of progress has already been made in the newbuild sphere: For over a decade now, new single-family homes and multi-family dwellings have mainly been fitted with heating systems in which fossil fuels play no part. Thanks in part to growing pressure from legislation, this trend has been accentuated further in recent years. In 2022, 97% of approved single-family homes and 96% of apartments in multi-family dwellings were planned with no fossil fuel use (Fig. 2). In the case of single-family homes, heat pumps are now almost ubiquitous (90.4%).

Fig. 1: Real estate the third largest emitter of greenhouse gases

Switzerland's greenhouse gas emissions broken down by sector

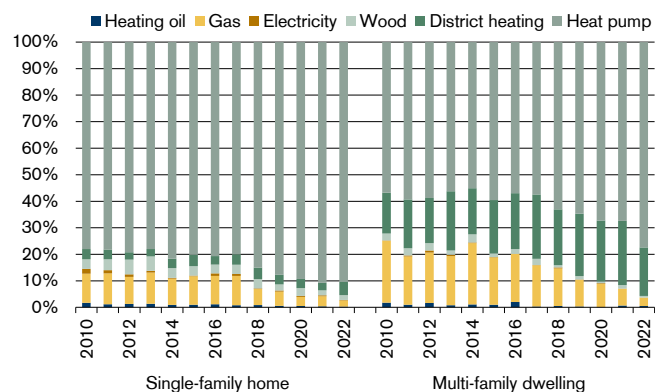


Source: Federal Office for the Environment

Last data point: 2020

Fig. 2: Fossil fuel heating now almost inconceivable in newbuilds

Residential building permits (no. of residential units) by heating type, in %



Source: Baublatt, Credit Suisse

Last data point: 10/2022

By contrast, in newly-planned multi-family dwellings district heating systems (18%) are an important secondary source behind heat pumps (77%). Given growing environmental awareness and the sharp rise in the prices of fossil fuels, oil and gas heating systems can be expected to disappear completely from newbuild plans in the near future – with a very few exceptions for technical or regulatory reasons.

Long lifecycles a hurdle to renovating existing buildings

The situation is rather different in existing housing, however. Here the long depreciation period of many building elements is the major obstacle to achieving sustainable building stock. The lifecycle of a building in Switzerland frequently amounts to 100 years or more. While the lifecycle of the heating system may work out at “only” 15 to 25 years¹, facades, windows and roofs, which are likewise of crucial importance to energy-related renovations, have lifecycles of between 30 and 50 years. Due to the high writedown costs involved in any early replacement, renovations are very rarely embarked on much earlier than necessary. This problem can be resolved by government subsidy programs only to a limited extent. Another dead weight in the renovation process is the difficulty of condominium ownership associations reaching a decision-making consensus. Indeed, as the necessary agreement for a total renovation is lacking in many places, the situation in the condominium ownership area has been described as a “renovation logjam”.

Major knowledge gaps in respect of existing stock

To compound matters, there are also significant knowledge gaps when it comes to the energy situation of residential buildings in Switzerland. There is currently no data available at all on the timing and scope of renovations carried out to date. On the other hand, there is information on heating systems (Fig. 4). However, the data available in Switzerland’s Register of Buildings and Dwellings (RBD) needs to be treated with great caution, as 49% of all information on heating systems dates back to the census of 2000 (Fig. 3). With an average lifecycle of 15 to 25 years, many of these systems ought to have been replaced already. Whether they work on the basis of fossil fuels or another form of technology such as a heat pump is unclear. Although Switzerland’s municipalities have been urged to update their data, in many cantons there is still plenty of work to do in this regard. As a consequence, the proportion of heating systems relying on fossil fuels has probably been overestimated.

60% of building still reliant on fossil fuels

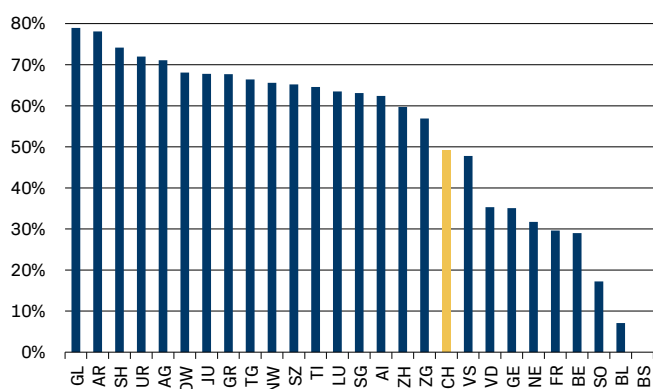
This appears to be confirmed by a comparison with the survey on residential building heating systems carried out by the Federal Statistical Office in 2017 (Fig. 4). This random sample reveals a lower proportion of oil-fired heating systems than the 2022 RBD. According to the 2017 survey, oil heating was installed in 39% of all residential buildings, compared to 21% for gas heating. A further 7% of buildings relied on electricity for heating purposes. In 2017, heat pumps had a market share of 18%, while 10% of buildings were heated by wood and 4% by remote heating.

Significant differences in cantonal zeal in energy legislation

The political establishment is aware of the challenges it faces with regard to the high proportion of older buildings with a suboptimal energy footprint, and has responded. In 2014, the requirements stipulated by energy legislation in the building area were tightened in the “model cantonal provisions in the sphere of energy” (“MuKEn”). However, implementation in cantonal energy legislation is a slow process. By the end of September 2022, entry into force of the 2014 MuKEn had only

Fig. 3: Major gaps in the register regarding heating type

Proportion of heating data in the Register of Buildings and Dwellings (RBD) still based on the 2000 census

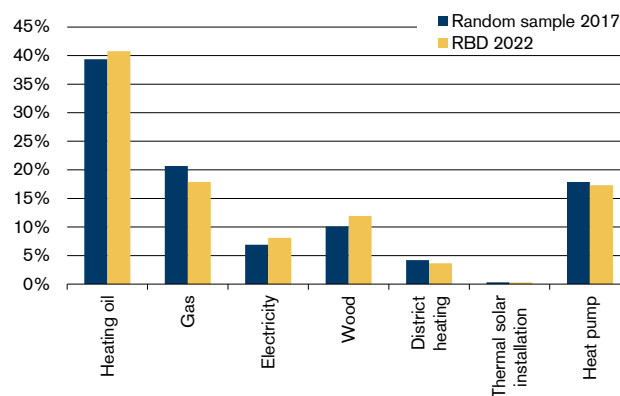


Source: Federal Statistical Office

Last data point: 09/2022

Fig. 4: 60% of residential buildings still reliant on fossil fuels

Building stock by heating type, random sample



Source: Federal Statistical Office

Last data point: 06/2022

¹ Lifecycle tables can differ, depending on the source. For the purposes of this article we have drawn on data from hausinfo.ch.

been formally timelined or implemented in 21 cantons. Furthermore, every canton is free to determine the rigor of its own energy legislation. In Canton Zurich, for example, even in old buildings it has not been possible to replace an old oil heating system with a new oil system since September 2022. By contrast, the draft version of Canton Aargau's partially revised Energy Act, which was put out to consultation in mid-2022, continues to allow oil-based heating replacements, and there is no mandatory requirement for newbuilds to generate electricity independently through solar energy.

Replacement rate also limited by construction capacity restrictions

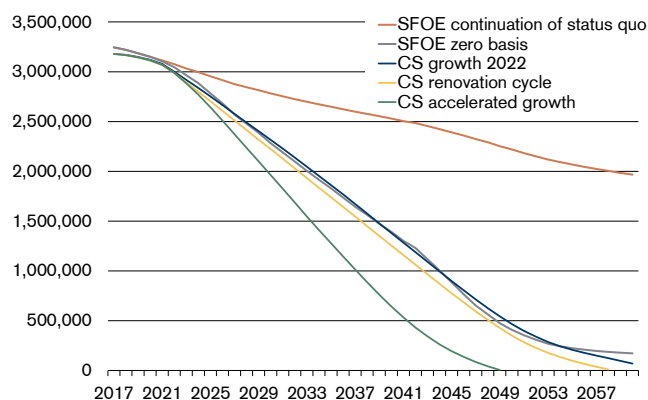
As a consequence of the gradual rise in legal requirements and high fossil fuel prices, the replacement of conventional heating systems by sustainable solutions has accelerated sharply recently – a trend that is likely to strengthen further over the next few years. However, as the changeover of heating systems is generally closely coupled to the energy condition of building parts such as facade, roof, and windows, the long lifecycles of these building parts are slowing the tempo of changeover. While a heat pump can be installed in a badly insulated house, it will have to be a high-performance version. And if the insulation is then improved, this heat pump will end up being unnecessarily powerful. According to Energy Perspectives 2050+, the frequency of facade renovations ought to increase by 40% over the period 2015–2035 if the targets set are to be actually met. The capacity limits of the construction sector become apparent here: In 2022, the waiting time for a heat pump was more than 12 months. Furthermore, apart from the healthcare and retail sectors, there is no other sector of economic activity in Switzerland with more vacant positions right now than the construction industry. This can likewise be expected to slow the transition to sustainable heating systems

Future belongs to heat pumps and remote heating

In the future, an increasing number of buildings will go down the heat pump road when selecting their heating system. According to the scenarios of the Swiss Federal Office of Energy (SFOE), heat pumps will be used in more than 90% of single-family-home newbuilds in the future. In the case of multi-family dwellings, by contrast, district heating solutions (30%) will play an important role alongside heat pumps (69%). Where the former is concerned, the focus is set to shift from garbage incineration to hydrothermal technology using lake water, as the latter has huge long-term potential and a superior CO₂ footprint. Exploiting this potential will take time, however. A number of projects have been initiated recently, including an initiative launched in Zug aimed at supplying the entire city of Zug and neighboring districts in Baar with long-distance heat extracted from Lake Zug. Canton Thurgau meanwhile has set itself the target of covering 10% of heating needs currently provided by fossil fuels by hydrothermal power from Lake Constance and the River Rhine in the future. But this is just the tip of the iceberg: According to estimates of the Swiss Federal Institute of Aquatic Science and Technology (Eawag), the hydrothermal potential of Lake Constance and Lake Geneva is far higher than the maximum regional demand.² Geothermal heating likewise still has potential, despite recent setbacks in Basel and St. Gallen. Canton Geneva only recently unveiled ambitious plans for exploitation of this technology.

Fig. 5: Number of homes heated by fossil fuels

Reduction path by scenario

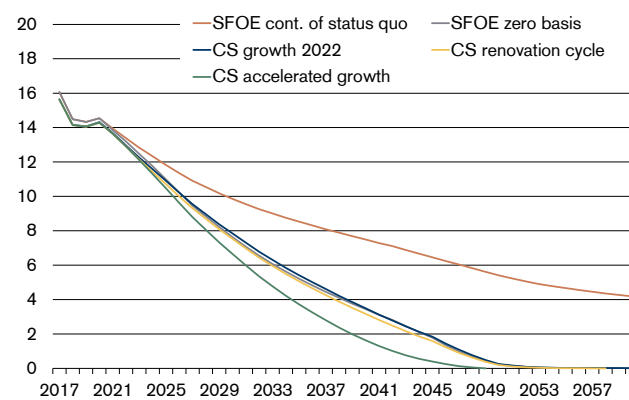


Source: Credit Suisse, Swiss Federal Office of Energy

Last data point: 2017

Fig. 6: Development of CO₂-equivalent emission intensity

Reduction path by scenario, CO₂ equivalents (CO₂e) in kg/m² energy reference area (only direct emissions, i.e. Scope 1)



Source: Credit Suisse, Swiss Federal Office of Energy

Last data point: 2017

² Gaudard A., Schmid M., Wüest A. (2018). Hydrothermal use of lakes and rivers – the potential of Swiss surface water. Aqua & Gas 2/2018.

<p>SFOE scenario "Zero basis"</p>	<p>Due to the high proportion of fossil energy fuels and the above-mentioned restrictions, the path to a fully sustainable Swiss residential building stock will remain challenging. In particular, the medium-term target for 2030 looks very difficult to achieve. In its principal "Zero basis" scenario, the SFOE anticipates a 25% decline in fossil fuel heating systems between 2022 and 2030 (Fig. 5). By 2050, just 6% of all homes would then be heated by gas, and 1% by oil. These would mainly comprise buildings for which heat-pump or remote-heating solutions are not possible. Nonetheless, the target of Swiss housing being free of greenhouse gas emissions by 2050 would almost be achieved, as by that stage gas heating would be based on biomethane. This would bring down the CO₂-equivalent consumption of Swiss homes to 0.22 kg per m² of energy reference area (Fig. 6). The last oil heating systems would then be replaced by 2060, essentially reducing consumption to the zero level (0.03 kg/m²).</p>
<p>Residual lifecycles slow reduction path</p>	<p>An analysis of possible reduction paths based on our own scenarios shows that achieving the net zero target is a challenge, as the tempo of heating system change in Switzerland needs to be accelerated further. Specifically, annual heat pump sales would have to rise by 69% by 2027 compared to the 2021 level. If we remain at the level of 2022 (CS scenario "Growth 2022"), our forecasts show that it would not be until 2063 that fossil fuels played no part in the heating of Swiss homes (Fig. 5). However, if growth can be accelerated further, it is actually possible that – with a few exceptions – fossil energy sources might cease to play a part in the heating of Swiss homes from as early as 2050 (CS scenario "Accelerated growth"). However, when we factor in the heating system restrictions that result from residual lifecycles having to play out before facades, windows, and roofs can undergo energy renovation, this date gets pushed back by eight whole years (CS scenario "Renovation cycle"). After analogously feeding in assumptions regarding improved energy efficiency and the use of biomethane, Swiss residential building stock would on average only emit 0.19 kg CO₂e/m² in 2050 under our main "Renovation cycle" scenario (Fig. 6).</p>
<p>Uncertain status quo gives rise to significant differences</p>	<p>Despite restrictions on the renovation front, our main scenario leads to a more rapid decline in the number of homes using fossil fuels than the "Zero basis" scenario of the SFOE. However, this is primarily attributable to the difference between the two scenarios at the start. And this is probably where one of the greatest challenges lies when trying to assess the most realistically conceivable reduction path: Without precise data on how many Swiss homes currently rely on fossil-fueled heating, we will be stumbling around in the dark for several more years without knowing whether we are actually on the right path to achieving the set targets in a timely way. It is therefore essential to establish transparency here as quickly as possible.</p>
<p>Targets for 2030 under threat due to specialist labor shortfall and long delivery times</p>	<p>According to our reality check, the target set for 2050 may be challenging, but is nonetheless realistically attainable given the changed social and political environment. By contrast, achieving the interim 2030 target is likely to prove rather more difficult. The key obstacles here are the capacity limits of the construction industry due to the shortage of specialist labor, and long delivery times for key building parts. Although the latest figures show impressive growth, this trajectory is unlikely to be sufficient to achieve the 2030 targets.</p>
<p>"Continuation of status quo" no longer an option</p>	<p>The latest initiatives in respect of sustainability, accelerated growth in the changeover to sustainable heating systems, and persistent political pressure should help to keep us on the right path to eliminating greenhouse gas emissions from Swiss housing. A "continuation of status quo" scenario that simply continues the existing energy and climate policy measures of the last few years is unlikely to materialize (Fig. 5).</p>
<p>Conclusion: feasible but challenging</p>	<p>In summary, we believe that while the goal of Swiss residential building stock becoming climate-neutral by 2050 may be challenging, it should nonetheless be attainable given rising awareness of sustainability in an increasing number of households and the sharp rise in the use of heat pumps and solar panels in recent years. That said, efforts will have to be stepped up if this target really is to be achieved. In particular, an answer must be found to how the energy-related renovation of facades, roofs, and windows can be accelerated. In view of the modest success of voluntary energy savings attempts and compensation concepts (such as the CO₂ compensation of air travel), things are unlikely to move forward at a sufficient tempo without legislative pressure. If undesirable effects are to be largely avoided, the cost of fossil energy fuels will have to be increased in a very direct way via a CO₂ levy.</p>

Demand in decline

The interest rate trend reversal has led to a sharp decline in demand for owner-occupied housing. As a result of the strong recent price rises, fewer households are now in a position to even contemplate owning their own four walls.

Interest rate hikes spark trend reversal

The market for owner-occupied housing is currently experiencing a trend reversal, which was triggered by the sharp rise in mortgage interest rates in 2022. After homeowners benefited from a decade of mortgage interest rates at unprecedentedly low levels, they were then confronted by a situation of rates more than doubling last year. For example, the interest rate on a 5-year fixed mortgage had increased from 1.0% at the end of 2021 to 2.7% by the end of 2022. However, this new, higher level of interest rates should be viewed in perspective – it is not that high in the context of the long-term average 5-year fixed mortgage rate in Switzerland, namely 4.0%.

Strong rise in mortgage interest costs

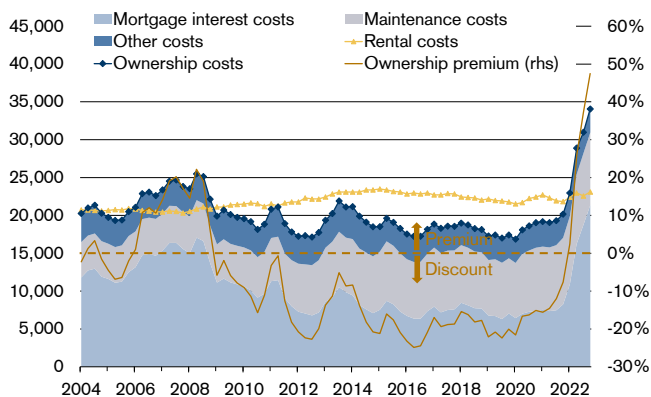
The rise in Swiss interest rates has led to much higher interest costs for both new homebuyers and homeowners extending existing mortgages. For a buyer of an average condominium containing 4.5 rooms, the interest costs for a 5-year fixed mortgage would have risen rapidly from CHF 8,250 at the end of 2021 to a level of CHF 21,380 by the end of 2022 (Fig. 7). The same picture now confronts homeowners refinancing their mortgages in the money markets: Since the end of negative interest rates in mid-2022, the interest costs for the above property have risen from CHF 7,390 to CHF 17,110. However, the rise in home ownership financing costs is not down to higher interest costs alone – the rising house prices have also played their part.

Buying now much more expensive than renting

In a full-cost calculation, the financial outlay for the above condominium in the case of a 5-year fixed mortgage now stands at CHF 34,060 per year. In addition to maintenance (1% of property value), a number of other factors need to be assessed here, such as tax aspects (imputed rental value and debit interest deduction), opportunity costs in the form of investment alternatives for the tied-up capital, risks such as financial cluster risk and short-term property illiquidity, but also profit potential thanks to long-term appreciation in the value of the property. When all these factors are considered, the annual financial outlay for an owned property is now some 47% higher than for a comparable rental apartment (Fig. 7). After 13 years in which buying was cheaper than renting, buyers are now paying not just an ownership premium, but a very hefty one. Prior to the low-interest phase, the average premium stood at just 29% between 1993 and 2008.

Fig. 7: Ownership premium soars to historic high

Financial outlay: owner-occupied and rental housing in comparison, taking into account all relevant cost factors

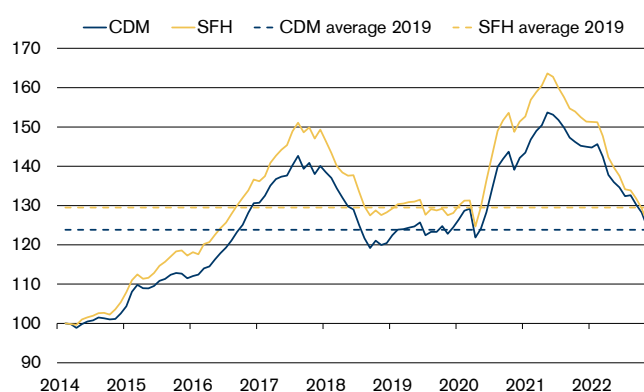


Source: Credit Suisse

Last data point: Q4/2022

Fig. 8: Demand for owner-occupied housing falls sharply

Demand indices for owner-occupied housing (CDM = condominium, SFH = single-family home); index: February 2014 = 100



Source: Reamatch360

Last data point: 12/2022

Demand falls back to long-term average

As a consequence of the sharp rise in interest costs, demand for owner-occupied housing fell strongly over the course of 2022. Over the last year, the demand indices published by Realmatch-360, which analyze residential property search engine subscriptions, declined by 14% for condominiums and by 17% for single-family homes (Fig. 8). But despite this striking decline, the demand indices for both segments are not that far from their long-term averages, and indeed from pre-pandemic levels. In other words, we are hardly witnessing a slump in demand. However, the extraordinary boom witnessed during 2020 and 2021 has come to an end.

Expensive regions record greater fall in demand

Where the size of accommodation is concerned, a bifurcated picture emerges: Whereas in the condominium segment interest in large apartments has suffered the most, large single-family homes have actually fared the best. In other words, the increasingly evident desire for more space since the outbreak of the pandemic has not completely evaporated. However, recent price rises have put a limit on what size of home is affordable for an increasing number of households. This is evident from the fact that demand indices in the more expensive regions – around Lake Zurich, in other regions in Canton Zurich, and various regions around Lake Geneva – have fallen the most.

Demand for vacation homes holds up better

By contrast, interest in residential property in the Alpine regions has receded less strongly, and remains above the long-term average in many places. This is attributable to persistently strong interest in vacation homes, particularly as many affluent households are continuing to look for a vacation home in Switzerland's prime locations. Better-off households are less sensitive to interest rates than "threshold households" that can only just afford a property of their own. Another factor that continues to stimulate buyer interest is the knowledge that no new second homes can be built in the future without restrictions on use.

Existing homeowners will not face rising interest costs until 2023

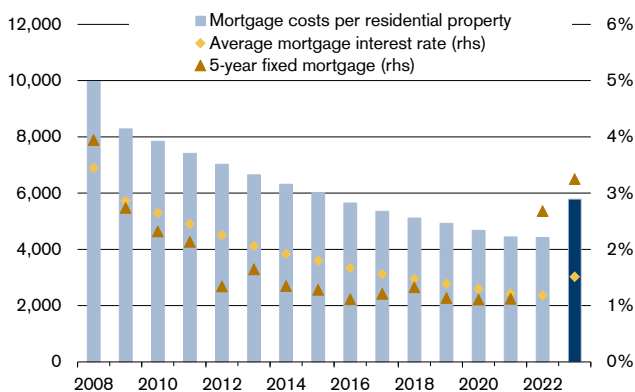
On average, existing owners were not yet affected by higher accommodation costs in 2022 (Fig. 9). As expiring mortgages were in some cases still being refinanced at even cheaper rates, average accommodation costs actually declined slightly last year. However, mortgage extensions will increasingly involve a higher rate of interest this year. We are expecting the annual mortgage interest costs of existing owners to rise from CHF 4,421 to CHF 5,785 on average. In other words, that costs will rise to a similar level to 2016 but still remain well below the level recorded in 2008.

Imputed affordability becoming an unsurmountable hurdle

Demand will additionally be weakened by the growing affordability problem. Strong rises in prices, particularly since the outbreak of the COVID-19 pandemic, have reduced the number of households that can contemplate buying residential property at all. For example, a household with an average income of CHF 119,000, a debt capital proportion of 80% and an imputed interest rate of 5% would now have to spend 40% of its income on a medium newbuild condominium – and as much as 59% of its income on a new single-family home of an average size. Both of these figures lie well beyond the typical threshold level, which stands at a third of gross income. In other words, the imputed affordability guidelines that banks have to apply are becoming an unsurmountable hurdle for an increasing number of households.

Fig. 9: Costs set to rise for existing owners too in 2023

Mortgage interest costs per property in CHF; average mortgage interest rate as per September 30; 2023: forecast

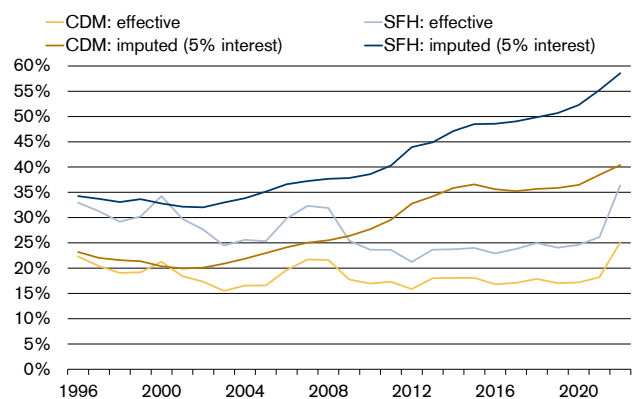


Source: Credit Suisse, BWO, SNB

Last data point: 2022

Fig. 10: Imputed affordability becoming an ever higher hurdle

Affordability for average household as % of income (assumptions: newbuild, 1% maintenance, 80% loan-to-value ratio, amortization to 2/3 within 15 years)



Source: Credit Suisse

Last data point: 2022

Affordability a problem in an increasing number of regions

For a household on an average income, just 22% of all advertised properties for sale across Switzerland were theoretically affordable at the end of 2022. The affordability problem is at its most acute in Canton Zurich, around Lake Geneva, in the Basel region, and in central Switzerland (Fig. 11). However, it is now also increasingly spreading to Cantons Thurgau and Aargau, from where the major centers of Zurich and Basel can be rapidly and easily reached.

Outlook for 2023 remains bleak

We are anticipating a further decline in demand in 2023. However, as mortgage interest rates are only expected to record a slight further rise, this fall will not be excessive. By contrast, the persistently positive labor market situation is having a stabilizing effect on demand. In the event of a prolonged recession the labor market situation would deteriorate significantly, however, in which case demand could be expected to take much more of a hit. That said, we do not consider such a scenario to be very probable.

Purchase of buy-to-let properties no longer makes financial sense

Rising interest rates make purchase of buy-to-let properties unattractive

In recent years, almost a fifth of all newly built condominiums and single-family homes were not lived in by the buyers themselves, but were let to third parties. The key driver of the buy-to-let boom was the low interest rate environment between 2009 and 2021. The sharp interest rate rises of 2022 have now fundamentally changed this situation, however: Higher financing costs are going hand in hand with declining yields, as the prices of residential properties have risen much more strongly than rents.

Calculation example – Dietikon (ZH)

Accordingly, when all costs are taken into account a buy-to-let investment is unlikely to make financial sense now. Figure 12 illustrates this with a calculation example for Dietikon (ZH). Here we analyze a middle segment 4.5-room newbuild condominium with 110 m² of living space. After the deduction of all costs, the purchase of such a property in 2019 would have resulted in an annual profit of CHF 9,100, which equates to a return on equity of 2.7% after taxes.³ But if such a purchase were made in 2022, the owner would be out of pocket to the tune of CHF 2,820 a year.

Strong decline in buy-to-let mortgage lending expected

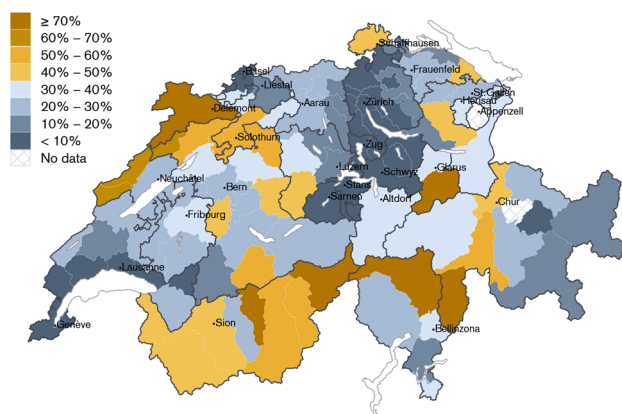
The buy-to-let proportion of new mortgages has remained relatively stable in recent years at just under 20%. We are expecting this figure to recede sharply as a result of the interest rate trend reversal and the removal of negative interest rates. Indeed, we have already observed a significantly lower level of demand for mortgage loans of this type in the last two quarters of 2022.

Many existing owners better prepared

By contrast, for many existing owners of buy-to-let properties their investment will continue to make financial sense. Many owners were able to conclude fixed mortgages at very low rates of interest, and in many cases will have purchased their property at much lower price levels. However, rising interest rates will reduce yields here too, as for existing rental arrangements it will only be possible to increase rents with a time lag due to the sluggish nature of Switzerland's reference interest rate.

Fig. 11: Affordability problematic in an increasing number of regions

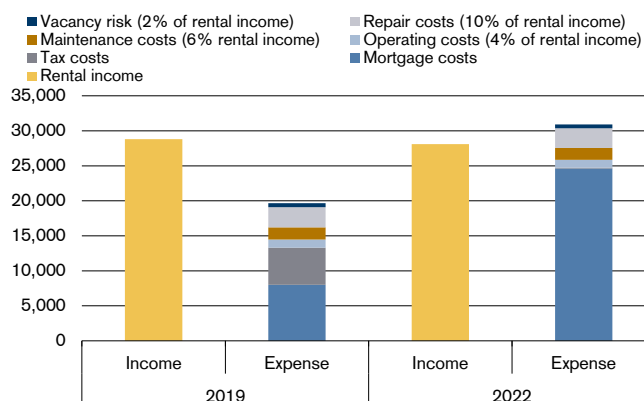
Proportion of affordable advertised properties (SFH and CDM) with four or more rooms for households on an income of CHF 119,000 (average income)



Source: Credit Suisse, Federal Statistical Office, Meta-Sys, Geostat
Last data point: Q4/2022

Fig. 12: In many places, buy-to-let no longer makes financial sense

Simplified example for the municipality of Dietikon (ZH), in CHF per year



Source: Credit Suisse
Last data point: Q3/2022

³ Further assumptions: debt financing: 66.7%; household income: CHF 250,000; operating costs: 4% of rental income; maintenance costs: 6% of rental income; repair costs: 10% of rental income; vacancy risk: 2% of rental income.

Building activity down in 2023 too

New construction activity in the residential real estate segment is declining further. Nothing will change in 2023 in this respect. However, due to the waning interest in buy-to-let investments, more properties are likely to be available to buyers than last year.

Newbuild activity already in decline in 2022

New construction of condominiums and single-family homes is continuing its downward trajectory. Last year saw the construction of just 11,600 condominiums and 6,600 single-family homes, a year-on-year decline of 3%. The fall is as much as 41% compared to the peak recorded in 2011. When measured against existing building stock, the increase in condominiums amounted to 1.0% and in single-family homes to 0.6%.

Decline in building activity to persist in 2023

Despite the great scarcity of owner-occupied housing, there is still no trend reversal in sight, with the number of construction approvals having fallen in 2022 too: Building permits were issued for just 10,560 condominiums, a decline of 5.6% compared to the previous year (Fig. 13). By contrast, the number of approved single-family homes – 6,340 units – rose slightly by 0.7%, as it did the previous year. Given the recent volumes of submitted planning applications, it is likely that the slowdown in construction activity will persist into 2024.

More buying opportunities nonetheless

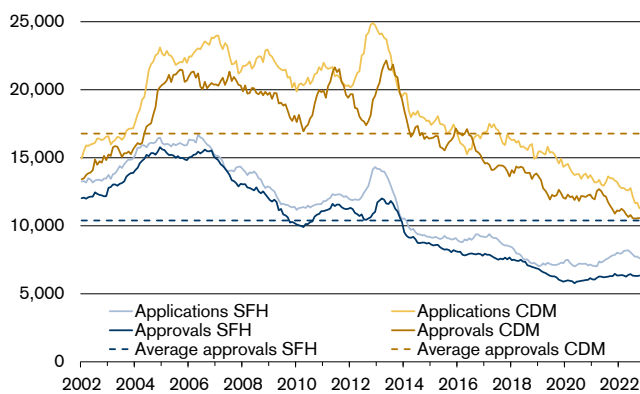
As a result of the reduced appeal of buy-to-let properties, it is nonetheless likely that more homes will be available to buy in 2023. Based on the assumption that the number of new buy-to-let financings – which accounted for just under 20% of all mortgages in recent years – will halve over the course of 2023, the number of available residential newbuild properties for owner-occupiers should be as much as 1,500 units more than in the previous year. That said, this is still rather a drop in the ocean given the decline in construction activity seen in recent years.

No uniform regional picture

Only in 29 of Switzerland's 110 regions will the existing stock of residential real estate rise by more than 1% in 2023. These regions are spread all over the country, making it difficult to identify any focus of construction activity (Fig. 14). In most mountain regions, planned expansion volumes are very low due to the ban on the construction of new second homes other than with usage restrictions. Overall, the proportional breakdown between center and periphery remains broadly the same: 55% of planned condominiums and 77% of planned single-family homes will be built in municipalities outside of the large and mid-sized centers and their surrounding urban areas.

Fig. 13: Building permit issuance at record low

Planning applications and building permits in number of residential units, moving 12-month average

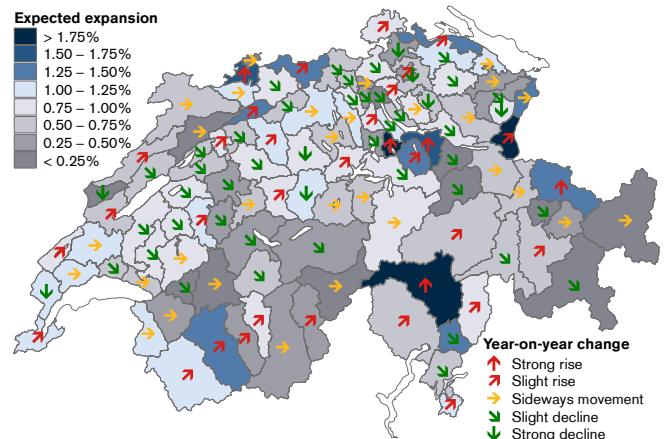


Source: Baublatt, Credit Suisse

Last data point: 10/2022

Fig. 14: Lowest newbuild activity in mountain regions

Planned expansion in owner-occupied housing segment 2023, in % of existing stock



Source: Baublatt, Credit Suisse, Geostat

Last data point: 10/2022

Scarcity of supply props up prices

Thanks to record-low construction activity, the decline in demand is feeding through into higher marketing expenses to a limited extent only. Price growth can be expected to weaken significantly in 2023, though without falling into negative territory yet.

Declining newbuild activity a buffer against oversupply

In the current market environment, the multi-year trend of declining newbuild activity is not unwelcome, as the decline in demand might otherwise have resulted in oversupply. As both planning applications and building permit issuance continue to fall, we are expecting a persistent scarcity of owner-occupied housing once again this year.

Higher marketing costs

But the decline in demand is not yet reflected in supply (Fig. 15). The supply remains close to its all-time low, and in the fourth quarter of 2022 amounted to 1.6% of existing stock for condominiums and 1.5% for single-family homes. Quite how scarce supply is can be gleaned from a comparison with rental apartments: For every condominium currently being advertised for sale, 5.9 rental apartments are on the market. Scarcity is a common feature of almost every Swiss region. Only in Ticino, the Lower Valais, Canton Jura and the shores of Lake Geneva can supply rates in excess of 2% be found. By contrast, the cost of marketing has slightly increased recently. In the second semester of 2022, average time-on-market rose from 70 to 81 days for condominiums and from 60 to 78 days for single-family homes.

Vacancies likely to rise slightly in 2023

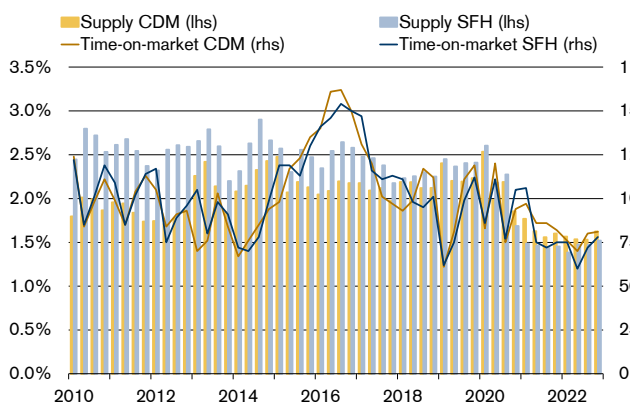
For the next few quarters, we are expecting a slight rise in both the supply rate and time-on-market due to the persistent slowdown in demand. Properties coming onto the market should continue to find buyers as long as they are not priced exorbitantly. However, it is likely to take more effort and patience to sell a property than in recent years. Vacancies will also likely rise slightly. However, vacancy rates should rise only slightly from their current lows of 0.37% (condominiums) and 0.44% (single-family homes), to levels no higher than 0.45% and 0.50% respectively.

Price growth to weaken sharply in 2023

While the price of owner-occupied housing may have risen strongly until very recently due to the scarcity of supply, the peak of price growth was passed in the summer of 2022. Nonetheless, price growth was still impressive in the fourth quarter of 2022, namely +5.2% for condominiums and +5.5% for single-family homes. We are expecting a sharp slowdown in price growth over the next few quarters due to persistently declining demand. On the other hand, the very meager supply will prop up prices, hence we are not expecting prices to fall for the time being. For 2023 we are expecting a price rise of 0.5% for condominiums and 1.5% for single-family homes.

Fig. 15: Supply languishing at nadir

Existing properties, supply rate as % of existing stock, time-on-market in days

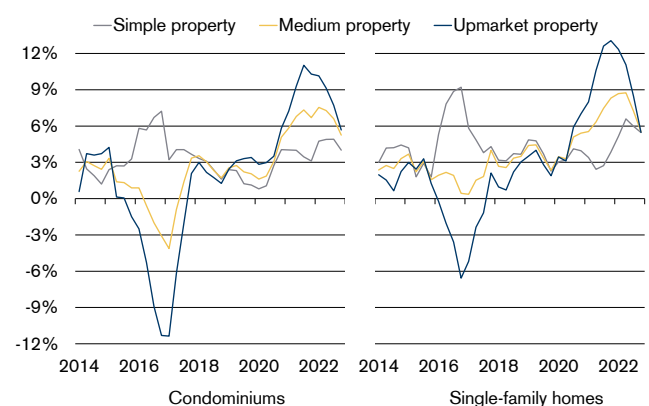


Source: Meta-Sys, Credit Suisse

Last data point: Q4/2022

Fig. 16: Little weakening of price growth so far

Annual growth rates by price segment



Source: Wüest Partner

Last data point: Q4/2022

Market imbalance has accentuated sharply

With prices having risen by 17.7% since the start of 2020, many observers are increasingly questioning the sustainability of price developments in the owner-occupied housing segment. The divergence between income development and price development became much more pronounced in 2021 and 2022 (Fig. 17). Since 1996, prices have risen 3.4 times more strongly than incomes. This development is not sustainable in the long term, and will require a correction sooner or later.

Nonetheless, no real estate bubble

The driver of this development has been the low interest rate environment, which held sway until very recently and fueled demand for owner-occupied housing. However, it would be wrong to talk of a speculative real estate price bubble, as in our view some of the defining characteristics of such a bubble are absent. (Fig. 18). Construction activities are at a record low, and there has been no excessive growth in mortgage lending volumes. Quite the reverse: At 2.9%, mortgage growth is currently well below the long-term average of 5.0%. Moreover, Switzerland has one of the world's strictest credit assessment regimes for mortgage lending. Hardly any residential property is being acquired for speculative purposes, nor are there any signs of excessive liquidity or unhealthy risk appetite thanks to the rise in interest rates and poor consumer sentiment.

Price declines likely in the medium term, however

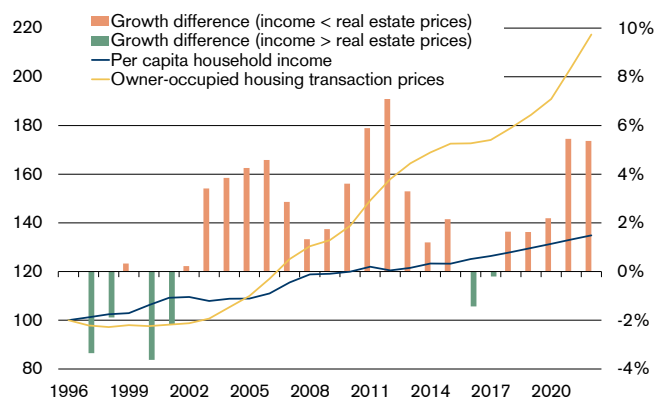
With the market environment having become gloomier and price levels no longer looking sustainable, price declines nonetheless look likely in the medium term. Whether or not such a correction will occur, and how severe it might be, will largely depend on the development of interest rates and the economy. Tight supply and Switzerland's strict financing rules in the area of mortgage lending will in any case reduce the magnitude of the fall. Accordingly, any decline is unlikely to extend beyond lower single-digit percentage territory per year. On the other hand, depending on economic developments going forward, a correction could last for several years. Even then, however, real estate prices would not end up in bargain territory: Even after the bursting of the real estate price bubble at the start of the 1990s, the transaction prices of condominiums never fell more than 3.9% in a single year, and the overall decline over nine years amounted to just 13.7%. The prices of single-family homes recorded even smaller declines back then.

Residential property remains coveted

Despite possible price declines on the horizon, the acquisition of residential property can be expected to remain a cherished goal of many Swiss households. Most people buy residential property in order to own their own four walls. And once the desired property has finally been identified, many households will seek to realize their ambition as long as financial circumstances allow. As an additional factor, we can expect to see land prices trend upward in the longer term. A few years ago, with the help of data compiled by IAZI we showed that land prices recorded an average increase of 4% annually between 1978 and 2014. Over the same period, inflation worked out at 2.6% annually. Anyone buying property today must be aware that they are doing so at inflated price levels, and entering the market now brings with it the likelihood of having to sit out medium-term value corrections. It is therefore important that households do not stretch their finances to breaking point when realizing their home purchase dream.

Fig. 17: Price development no longer sustainable

Development of residential real estate prices and incomes; index: 1996 = 100; growth difference: right-hand scale



Source: Wüest Partner, Credit Suisse

Last data point: 2022

Fig. 18: Criteria for a real estate price bubble

As of Q4 2022

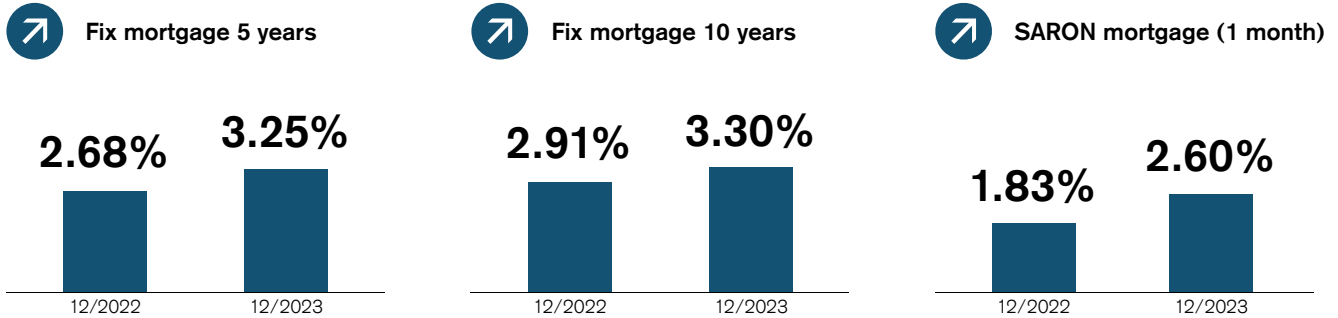
- ✓ Applicable ~ Insufficiently pronounced ✗ Not applicable
- Excessive liquidity
 - Excessive risk appetite
 - Prolonged phase of rising real estate prices
 - Decoupling of real estate prices from income development
 - Higher proportion of speculative real estate transactions
 - High/excessive growth in mortgage lending volumes due to pressure on margins at mortgage lending institutions
 - Absence of credit check when granting mortgages (false incentives)
 - Overshooting of construction activity and supply overhang

Source: Credit Suisse

Last data point: 12/2022

Home ownership boom at an end

Mortgage interest rates (market average)



Demand

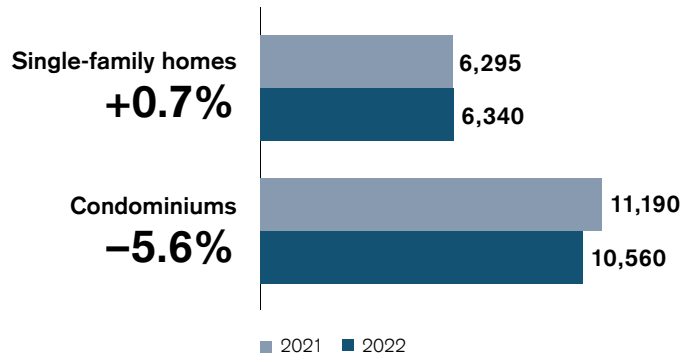


- Renting accommodation once again cheaper than buying
- Ongoing interest rate rises push up cost of ownership
- Rigorous financing requirements act as drag

2023: Demand to keep falling

Supply

Building permit issuance in number of homes

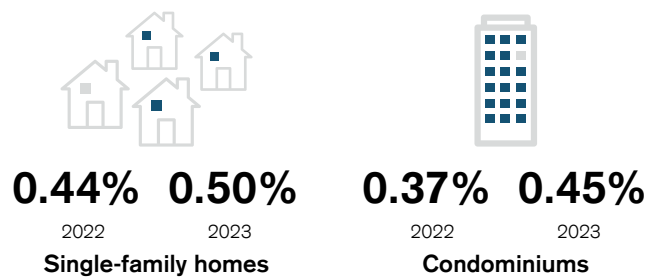


2023: Decline in construction activity to continue

Vacancies

- Supply increases due to fears of change in price trend
- Fewer buy-to-let investors
- Demand falls more sharply than supply

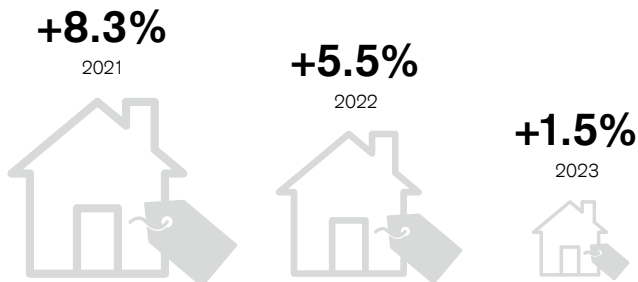
2023: Vacancies to rise slightly



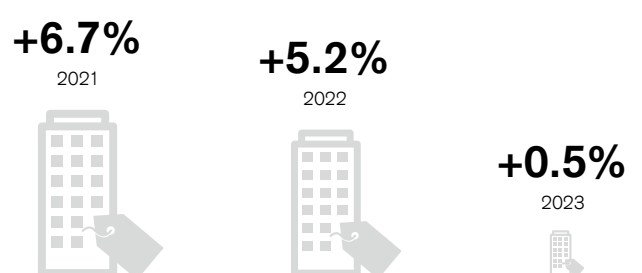
Price growth

Transaction price growth in %

Single-family homes



Condominiums



2023: Price growth weakens sharply but remains positive

Iceberg ahead!

Due to declining construction activity, Switzerland faces the prospect of a dire shortage of housing over the coming years. The desired paradigm shift on the spatial planning front has put all the emphasis on densification, but without yet delivering the corresponding prerequisites. As a result, the pressure to act is growing and urgent measures are required.

From oversupply to scarcity in record time

The Swiss housing market has experienced a complete trend reversal in the last two years. Gone are the times in which the oversupply issue was omnipresent in the rental apartment market, with dramatic predictions of ghost towns being trumpeted. The boot is now on the other foot: Phrases such as "housing shortage" and even "housing crisis" are increasingly being trotted out by market observers and in media reports.

Decline in residential construction: extent and drivers

Simply not enough building going on

The primary reason for the trend reversal in the housing market is construction activity, which has exhibited a general decline – albeit with the occasional hiatus – since 2016/2017 (Fig. 19). Between 2015 and 2018, the average number of homes being built exceeded 54,000 on average. The equivalent figure for 2022 is likely to come in at around 45,000. What's more, the number of newly projected homes has once again declined by 5%; we therefore anticipate a further decline in housing production to around 42,000 units for 2023 and 2024 (Fig. 20).

Shortage of housing to become dramatically more acute

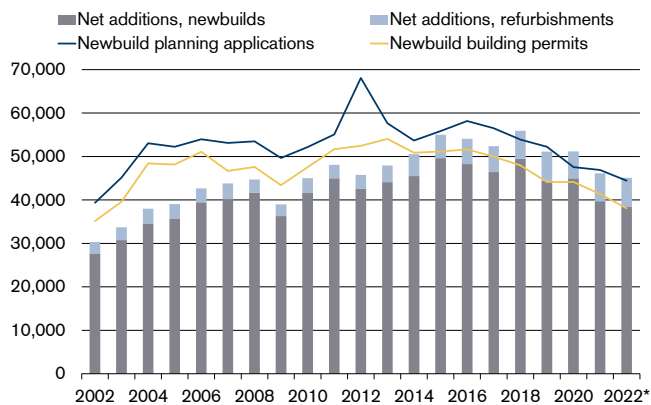
The rapid decline in vacancies in the rental apartment market is also due to the development of demand, which has been boosted by pandemic effects and a rise in net immigration since 2020. In its "high" household scenario of 2021, the Federal Statistical Office (FSO) envisaged annual growth of around 45,000 households. According to this scenario, there will be a shortfall of 15,000 apartments by 2024 (Fig. 20). However, given the actual development of household growth, this number is likely to be around twice as high. Even this figure is likely to be an underestimate, given that it does not take into account the net influx (to date) of around 62,000 refugees from Ukraine. We expect the vacancy rate to fall below 1% by as early as 2024 – without any prospect of a rapid trend reversal on the horizon. In other words, Switzerland is headed toward a housing shortage of a magnitude not seen since the end of the 1980s.

Why is so little being built?

Given the developments of the last three years, the question of why so few homes are being built and why the construction industry is not responding to the imminent shortage of housing is increasingly being asked. There is no simple answer to this. However, we have identified one of the main suspects. If we are correct, eliminating the housing shortage will be anything but easy, and even in the best scenario could take several years.

Fig. 19: Downward trajectory of housing construction to continue

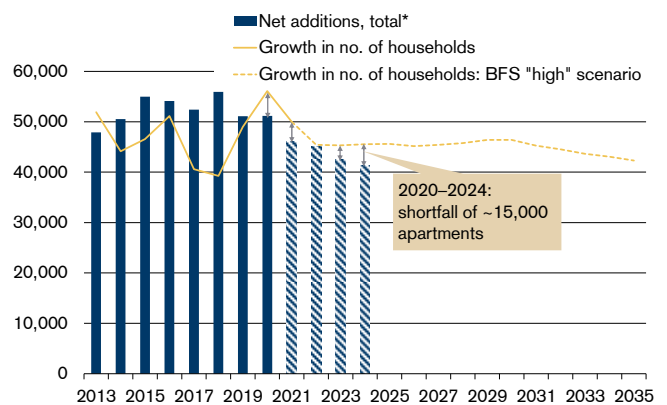
Net annual increase (from 2021: Credit Suisse estimate); building permits and planning applications in no. of residential units (* 2022: 12-month total as at 11/2022)



Source: SFO, Baublatt, Credit Suisse Last data point: 11/2022

Fig. 20: Building activity is now lagging household growth

Annual net increase in homes and change in number of households (* from 2021: Credit Suisse forecast)



Source: SFO, Baublatt, Credit Suisse Last data point: 2021

What lies behind the decline in construction activity?

A look at planning activity reveals that both planning applications and building permit issuance embarked on a downward trajectory from 2017 onward. This then began to feed through into the number of completed homes from 2019 onward. What were the causes of this? Did rising rental apartment vacancy figures, which increased by between 5,000 and 8,000 units annually over the period 2014–2018, reduce investment interest, particularly as net immigration in these same years declined by some 80,000 persons to just around 50,000? Possibly, but there are also reasons to doubt that causal link.

Conditions for developers were almost ideal

For example, there was no shortage of capital in the period in question. The amount of money raised by real estate funds and listed real estate companies via issues and capital increases rose by almost 70% between 2016 and 2021. Moreover, financing conditions were extremely favorable, as mortgage rates had fallen to an all-time low while the yield premiums of real estate investment peaked between the fall of 2015 and the fall of 2020, making real estate an almost essential component of an investment portfolio. Despite higher vacancy rates, there were simply no better investment alternatives, particularly as the economy recorded above-average growth between 2016 and 2018, providing a favorable demand outlook. Up until May 2022, therefore, record prices were being paid for residential investment properties in the transaction market. It is difficult to believe that real estate investors could have actively decided to avoid investing in residential property during this period.

Was COVID-19 a factor?

We cannot rule out that the coronavirus may have acted as a drag to a certain extent. But as it became apparent – very soon after the outbreak of COVID-19 – that the pandemic had increased the allure of the home, sending demand for attractive living space up sharply, this argument likewise appears rather implausible. Above all, it is remarkable that even after repeated, pronounced declines in vacancies and the start of the debate on a potential scarcity of housing, neither planning applications nor building permit issuance responded in any way.

Paradigm shift in spatial planning

The answer to why housing supply has failed to react to the growing signals of scarcity must therefore lie elsewhere. In the period in question, a fundamental transformation was taking place in Switzerland's spatial planning policy. Indeed, this structural factor probably bears principal responsibility for the current slump in residential property construction. As spatial planning is a highly complex factor, we will explore its role in greater detail over the next few pages.

The role of spatial planning

Revision of spatial planning prevents urban sprawl ...

The fight against urban sprawl and a thriftier approach to land as a resource has been given top priority in Switzerland's spatial planning policy ever since entry into force of the revised Spatial Planning Act (SPA) in May 2014 – if not earlier. Instead of allowing building zone "growth by breadth" through the expansion of permissible building zones, the emphasis has been placed on growth within existing urban boundaries, with the cantons required to do their bit. The implementation of federal government laws by the cantons and municipalities involves various stages, and takes a great deal of time. The first stage in this case, namely the adjustment of cantonal structure plans and building laws to the federal government's requirements, was not finally completed until October 2022 with the approval of Ticino's cantonal structure plan. In a second step, the onus is now on municipalities to adapt their planning and local building laws to the requirements of these cantonal plans. It is likely to take quite some time before the implementation of the SPA is effectively implemented in all municipalities.

... by restricting zoning permission

The revised SPA and its implementation by the cantons and municipalities has direct repercussions for the availability of building land. On the one hand, a moratorium on zoning permission was issued with effect from entry into force of the partially revised Spatial Planning Act on May 1, 2014 until the approval of the cantonal structure plans by the Federal Council. During the period of the moratorium, it has not been possible to increase construction zone areas overall. On the other hand, cantons that missed the five-year deadline for implementing the revised SPA (May 1, 2019) or that submitted (in the view of the Federal Council) insufficient cantonal structure plans were punished with a complete zoning permission freeze. This affected eight cantons (GL, OW, TI, GE, LU, SZ, ZH, ZG). Although this measure has now been rescinded, the prerequisites for the new zoning approval of building land have generally risen. In particular, zoning permission can only be issued if it meets the requirements of the cantonal structural plan, and if the land in question "will probably also be needed, made ready for development and developed within the next 15 years even if internal use reserves in existing building areas have been exploited to their full potential" (Art. 15, para. 4b SPA). In particular, this is unlikely to be the case in cantons that have excessively large building zones, which explains why certain new zoning approvals in these cantons have been successfully contested.

Switzerland does have building land reserves, ...

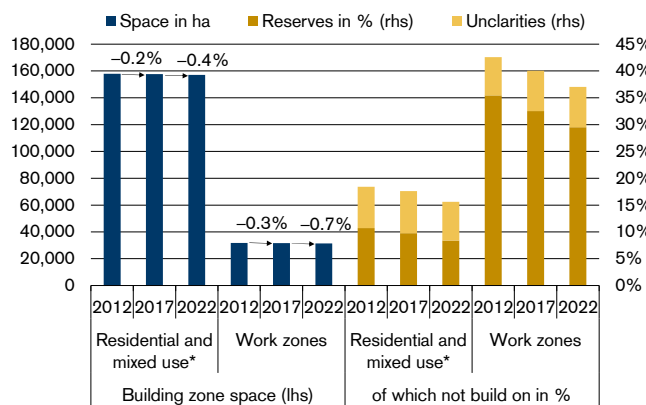
And indeed, building zone areas for residential use (residential, mixed-use, and central zones) have not grown further over the last ten years (Fig. 21). According to the building zone statistics published by the Federal Office for Spatial Development (ARE), there has actually been a slight decline of 0.5% in total space. Accordingly, the volume of building zones that have not yet been built on (building zone reserves) has recently recorded an accelerated decline. This proportion still amounted to 8.4% of residential, mixed-use, and central zones in 2022, or 15.6% if vacant plots within existing residential areas are included. In 2017, this share was still as high as 17.6%. According to the ARE, the building zones still available would provide space for up to 1.6 million additional residents even in the absence of any change to urban density.

... but reserves are dwindling across the country, ...

While the regional differences in building zone reserves remain very pronounced, the trend of decline is apparent almost everywhere (Fig. 22). In particular, the cantons of French-speaking Switzerland continue to exhibit generous reserves for residential construction, and the proportion of undeveloped building zones here is in excess of 20% in certain places, well in excess of what is needed for the next 15 years in some cases. Local requirements depend on expected population growth, which is why the still considerable reserves around Lake Geneva are not really that plentiful, for example. However, the structure plans of a number of cantons explicitly envisage “de-zoning” – i.e. reductions in zone size. The de-zoning requirement is particularly substantial in Cantons Jura and Valais. But in Cantons Neuchâtel, Graubünden, Schaffhausen, Basel-Country, and Lucerne too, de-zoning is being enforced in a number of municipalities – in some cases without financial compensation. Accordingly, the process is dragging on in many places, with landowners choosing to take legal action in some cases.

Fig. 21: Stagnating building zone areas, dwindling reserves

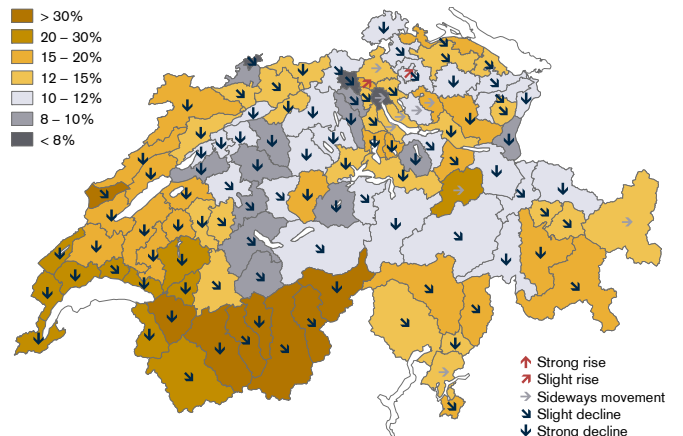
Development of building zone areas by zone type and extent of development
* Residential, mixed-use, and central zones



Source: Federal Office for Spatial Development, Credit Suisse
Last data point: 2022

Fig. 22: Decline in building zone reserves across the board

Undeveloped building zone area* as % of total building zones: residential, mixed-use and central zones; * Includes smaller vacant lots within residential area, 2022



Source: Federal Office for Spatial Development, Credit Suisse, Geostat
Last data point: 2022

... and not all reserves are suitable for development in the near future

In summary, the hurdles for construction land zoning permissions have been raised significantly since entry into force of the revised SPA, and the granting of zoning permission was for a while not even possible in some cantons over a period of years. This is likely to have had a slowing effect on residential construction – and can be expected to do so over the coming years too. On the other hand, there is still plenty of undeveloped building land within Switzerland when viewed in overall terms. The threat of de-zoning is therefore likely to have prompted many a landowner to initiate the development of previously hoarded building land. However, the quantity of still available building zone is one thing, but its quality is very much another. The largest reserves are often to be found outside of the major urban areas that need them most (Fig. 22). Furthermore, many undeveloped building zones are currently “off the beaten track”. Either the quality of location is low generally, or a great deal of time and money would have to be invested to improve access. For example, some 40% of building zones in rural and periurban municipalities outside of the large urban centers do not have public transport access, or such access can only be described as marginal (Fig. 23). This applies to more than a half of the land in undeveloped building zones.

Attractive building land being hoarded, not built on

The supply of available building land is also often restricted by a further problem: hoarding. In some cases, attractively located building land is deliberately not built on by the landowner, e.g. because there are no funds for development and the land is intended to remain in family ownership. But above and beyond this, Switzerland's property gains tax is likely to be conducive to the hoarding of building land. This tax is being raised by cantons and municipalities across Switzerland, with

this rate declining in line with length of ownership. The latter is a requirement of the federal government (Tax Harmonization Act) and has been designed to combat speculation. Previously, municipalities could simply plan zones for additional land on their periphery if the most suitable plots for development were not approved for that purpose. However, with the requirement for inner development now in place, this option is typically no longer available to them. The legislator has at least recognized this dilemma, and in the revised SPA envisages cantons being able to design measures for the mobilization of building land in local building legislation. These can extend from a compulsory purchase right for the municipality itself (e.g. BS, BL, GE, LU, SG) to de-zoning (e.g. LU, VD) through to the repeal of an incentive tax on undeveloped building land (e.g. AG, BE).⁴ In many cantons, however, these instruments have not been available to the municipalities for long. They will therefore only exert their full effect if they are consistently applied.

Densification – the only way out of the political “trilemma”

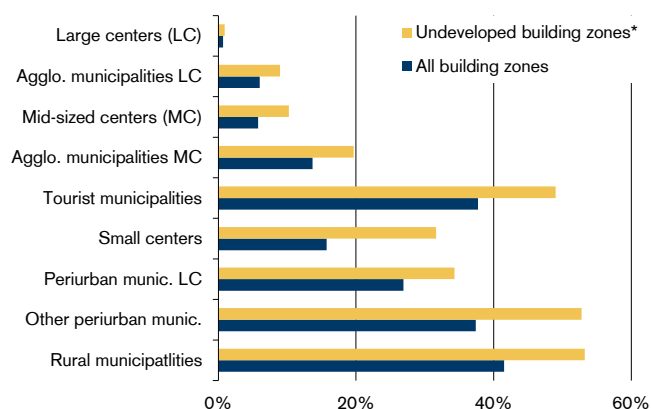
Switzerland is a country of immigration, committed to the free movement of people. This openness has secured Switzerland’s prosperity, but over the years has considerably increased the pressure on a precious resource: land. And recently, the paradigm shift in spatial planning was intended to slow urban sprawl and therefore “growth by spread”, but without jeopardizing the sufficient supply of living space. There is only one way out of this political trilemma – densification.

Densification is making some progress, ...

Various indicators suggest that progress has been made in recent years. After many decades of growth in per-capita consumption of residential space, a turnaround has become apparent in the last decade (Fig. 24). The decline has been most evident in large regions dominated by urban centers such as Zurich (–9.3%) and the Lake Geneva region (–5.2%). Moreover, the progress of building densification is also evident in the rising number of apartments per building (Fig. 25), and a continuously rising average number of storeys.

Fig. 23: Undeveloped building zones often difficult to access

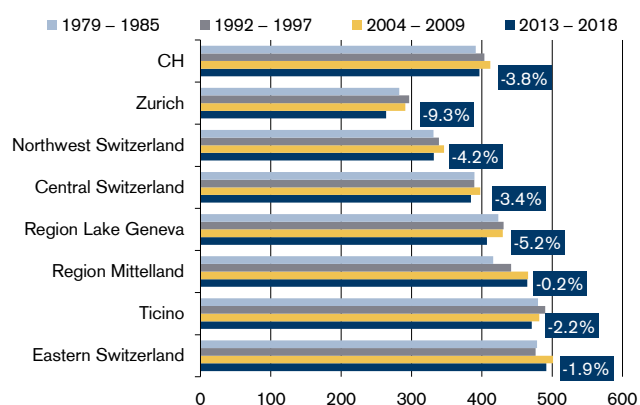
Proportion of building zone area (all zone types) with no or only marginal public transport access in 2022; * Excluding smaller vacant lots in residential areas



Source: Federal Office for Spatial Development, Credit Suisse
Last data point: 2022

Fig. 24: Residential area growth goes into reverse

Residential area per capita in m², by survey year of land-use statistics and region



Source: Federal Statistical Office, Credit Suisse
Last data point: 2018

... but is being thwarted in many places

But “inner densification” initiatives are also encountering lots of resistance. While they enjoy broad political support, projects often get a very different reception locally. Many parties – some directly affected, some less so – raise objections to obstruct or delay projects. In addition, there are also various significant conflicts of political objectives, such as between densification and the goals of cultural heritage / noise protection. Overly laborious approval processes (Fig. 26) also suggest that major residential development projects are facing ever higher hurdles. This is particularly true of the large centers, where on average more than a year now elapses between the submission of a planning application and the issuance of the legally valid permit. Some cantons and cities are reporting a rise in objections and appeals. For example, the number of cases that the Zurich Court of Construction Appeals had to process in 2020 and 2021 amounted to more than 950 in each year, or some 25% more than in the period 2012–2019.⁵ Indeed, the construction of around 1,000 apartments is currently on ice in Canton Zurich simply due to objections in connection with a new judicial interpretation of Switzerland’s noise pollution legislation.

⁴ EspaceSuisse (2022): Baulandmobilisierung – Vergleich der kantonalen Regelungen (as at 12.01.2022, German only).

⁵ Administrative Court of Canton Zurich: Accountability Report 2021 (German only).

Acceleration of “inner densification”: areas of action

Conclusion: Zone planning U-turn was ill-conceived

The paradigm shift in zone planning was overdue, as the majority of Swiss voters had repeatedly spoken out against a continuation of urban sprawl. However, the implementation of the spatial planning U-turn was at best devoid of any plan, and at worst pushed through negligently. By making zoning permission significantly more difficult, the pressure to provide additional housing space suddenly fell on densification alone. It should have been foreseen that this would not deliver the desired results at the required speed and to the necessary extent. The legislator effectively failed to promote the densification with appropriate accompanying measures. It should have been clear right from the start that the cantons and municipalities would need years to create workable instruments to accelerate densification. The subsequent housing shortage is therefore very much home-made, even if it has been exacerbated by the unexpected Ukraine crisis.

Rapid action urgently needed

The problem is only partly recognized, particularly as it has only been in the last year that rental prices have entered what will probably be a growth cycle lasting years. This makes it important to initiate rapid measures to ward off worst-case scenarios. As this will need adjustments to legislation, even the best outcome will probably require several years before any improvement is achieved. Moreover, the coming housing shortage is likely to lead to louder calls for more regulation of the housing market, along the lines of the example set by Geneva and Basel.

Possible areas of action

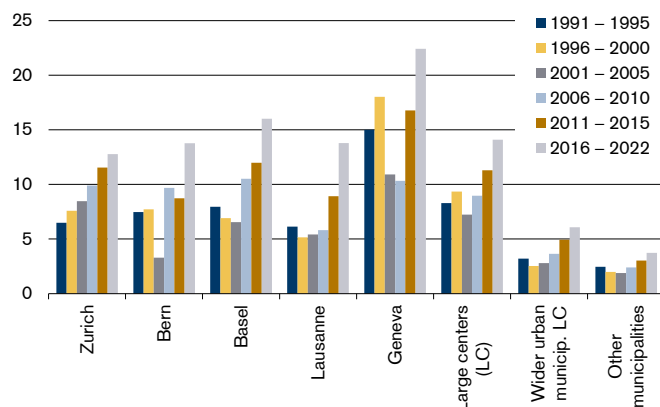
In order to accelerate densification and ward off a housing shortage, we have identified the following areas of action in which targeted measures could be taken relatively swiftly:

- **Combat the hoarding of building land:** Cantons have the freedom of maneuver to take effective measures against the hoarding of building land, such as incentive levies or compulsory purchase rights. Moreover, incentives that encourage the hoarding of building land – such as attractive lower rates of property gains tax according to length of ownership – should be abolished.
- **Align building law in urban centers more closely with densification:** Utilization ratios and maximum building heights need raising, with utilization bonuses introduced for replacement newbuilds, as envisaged by the recently rejected CO₂ Act.
- **Defuse conflicts of political interests:** The importance of densification must move up the priority table compared to cultural heritage and noise protection. The “ventilation window practice” should be enshrined in the Environmental Protection Act, as proposed by the Federal Council (dispatch to parliament of December 16, 2022).
- **Encourage use conversion:** The use conversion of office or hotel properties should be promoted through rezonings in locations suitable for urban residential use.
- **Accelerate construction approval process:** The submission and processing of planning applications in digital form should be encouraged, and headcount increased in relevant building authorities where necessary.

The overall aim should be to make residential construction more attractive once again. Because the past teaches us that state action alone cannot resolve problems in the housing market.

Fig. 25: Rising number of apartments per building

No. of apartments per building (of mainly residential use), by year of construction

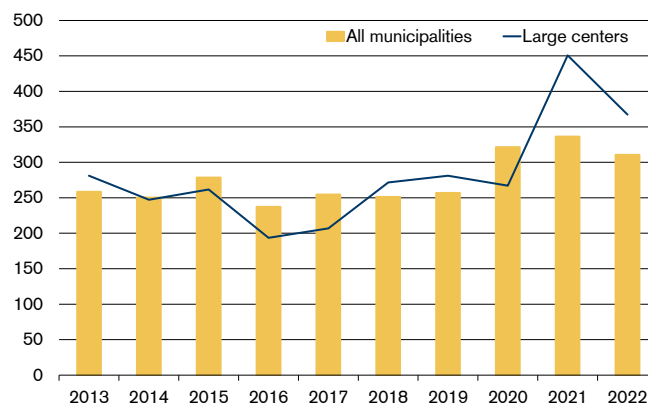


Source: Federal Statistical Office, Credit Suisse

Last data point: 04/2022

Fig. 26: Larger residential construction projects take time

Timespan between submission of planning application and issuance of building permit in number of days: Projects involving 50 apartments or more, newbuilds, refurbishments and renovations



Source: Baublatt, Credit Suisse

Last data point: 10/2022

Rental apartments coveted

Demand for rental apartments has accelerated further over the last 12 months, the key driver being the highest net immigration rate for eight years. Despite darkening economic skies, rental accommodation can be expected to remain sought-after in 2023 too.

Strong rise in immigration

Demand for rental apartments has recently been fueled by multiple factors. For one thing, large parts of the Swiss economy were in robust health last year, despite clear slowdown tendencies. At the same time, due to higher mortgage interest rates, renting makes more financial sense than buying for the first time in a long while (see p. 11). But above all, there has been a strong rise in immigration recently. As this coincided with ever-fewer foreigners turning their back on Switzerland compared to the era before the pandemic, net immigration in 2022 worked out at some 78,000 (+29% year on year) according to our forecasts, the highest figure since 2014 (Fig. 27).

High dependency on foreign workers

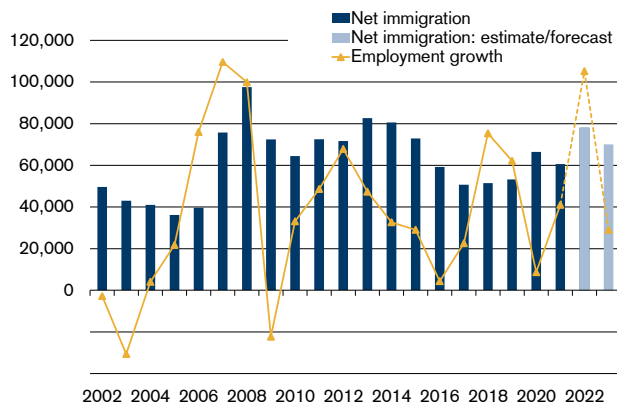
The strong economic recovery that followed the pandemic-related shock is still impacting on the Swiss labor market. For the first time in 15 years, a net total of more than 100,000 new full-time positions were created in 2022 (Fig. 27). This high demand for labor was only satisfied by workers moving to Switzerland from abroad. Around 90% of last year's increase in immigration therefore relates to working migrants. Particularly active sectors on the recruitment front included planning/consultancy/IT, hotels & catering, and healthcare. These three sectors, which are heavily affected by the shortage of specialist labor, together accounted for more than a half of all last year's increase in migrant laborers.

“New German Wave”

A striking number of German citizens chose to relocate to Switzerland last year. The net influx from this northern neighbor amounted to 12,000, the highest figure for more than a decade (Fig. 28). Among other things, this is likely to be due to the fact that the German economy is recovering only slowly from the pandemic-rated slump, and is now being battered by the energy crisis and high inflation. In addition, there has also been a remarkably strong rise in net immigration from Romania, Poland, and Croatia. Full freedom of movement of persons has theoretically applied to Croatia since January 1, 2022, but quotas were reimposed by the Federal Council with temporary effect from January 1, 2023, by activating the corresponding protective clause.

Fig. 27: Highest net immigration since 2014

Net migration of permanent residential population (excluding registry corrections, including Swiss citizens); employment growth in full-time equivalents



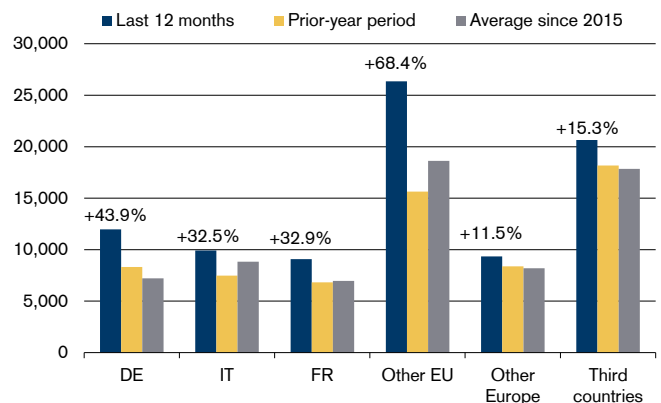
Source: State Secretariat for Migration, Federal Statistical Office, Credit Suisse
Last data point: 11/2022

Immigration boosts demand for housing in urban centers

The additional demand for housing generated by immigrants has become evident recently, particularly in the urban centers and tourist municipalities. In the large centers, internal migration to other Swiss regions has increased sharply since the start of the COVID-19 pandemic (from a net 8,000 persons in 2019 to 17,400 persons in 2021). In 2021, immigration from abroad therefore no

Fig. 28: Rise in immigration geographically broad-based

Net migration of permanent foreign residential population by nationality (excluding registry corrections)



Source: State Secretariat for Migration, Credit Suisse
Last data point: 11/2022

longer compensated for migration away from the urban centers, which duly led to a slump in population growth. However, the powerful surge in immigration last year (international net migration to large centers: +21,500) is likely to have caused a turnaround here. This is also reflected in apartment vacancy figures, which continued to rise in the centers in 2021 – in contrast to the wider Swiss trend – but then came down again the following year.

2023: slight decline in immigration, ...

We are anticipating a slight weakening of net immigration to around 70,000 persons for 2023 (Fig. 27), particularly as employment growth is likely to react to the economic slowdown with a certain time lag, and should decline from 2.6% to a (still positive) level of 0.7%. For Switzerland (GDP forecast 2023: +1.0%) we expect a less pronounced slowdown than for the eurozone (+0.5%). Switzerland's growth advantage can be expected to prevent a more significant decline in immigration and keep the number of emigrants low. The pronounced shortage of specialist labor still apparent in many sectors of the economy and the growing number of retirement-related departures from the labor market should likewise ensure that demand for foreign workers in Switzerland remains high.

... but record-high population growth

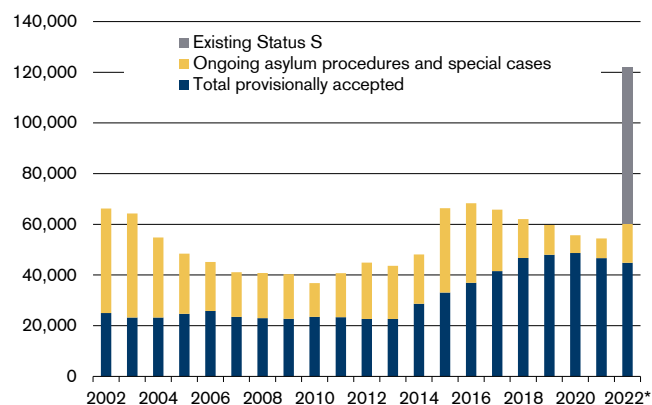
An additional factor supporting the strong demand for rental apartments is the growing number of asylum-seekers generally, and the high number of people fleeing Ukraine in particular (Fig. 29). Since war broke out in February 2022, Switzerland has accepted a net total of 62,000 refugees from Ukraine. Although these people should at some point return to their homeland, the protection status "S" afforded to them allows them to remain in Switzerland until at least March 4, 2024. However, an end to this brutal war looks anything but imminent. Status S allows refugees to seek employment, and the longer their stay in the country, the greater the likely number of refugees who will be able to rent their own apartments or move into apartments rented by municipalities. What's more, once they have been in Switzerland for a year, refugees are then subsumed into official population figures. The Federal Statistical Office (FSO) is likely to record population growth of up to 140,000 persons for 2023 – which would be the highest since the early 1960s. The number of residents in Switzerland could therefore break through the nine-million threshold as early as 2024.

Pandemic leaves lasting scars on structure of demand

Based on the number of property search registrations, demand for rental accommodation was 4.1% higher in 2022 than the previous year. Increasingly in demand are smaller apartments, in contrast to the two previous years, when for pandemic-related reasons interest was focused primarily on larger apartments. A combination of poor consumer sentiment and rising rents as well as ancillary costs is likely to force many renters to compromise over the next few quarters when it comes to apartment size or fit-out. While the growing demand for rental apartments is apparent in much of Switzerland, it continues to be primarily rural, periurban, and tourist regions that are benefiting from above-average growth in demand (Fig. 30). As we expected, the breakthrough of teleworking appears to be ensuring that demand for housing is spread rather more equally across the country, even after the mastering of the COVID-19 pandemic.

Fig. 29: Number of persons seeking asylum has doubled

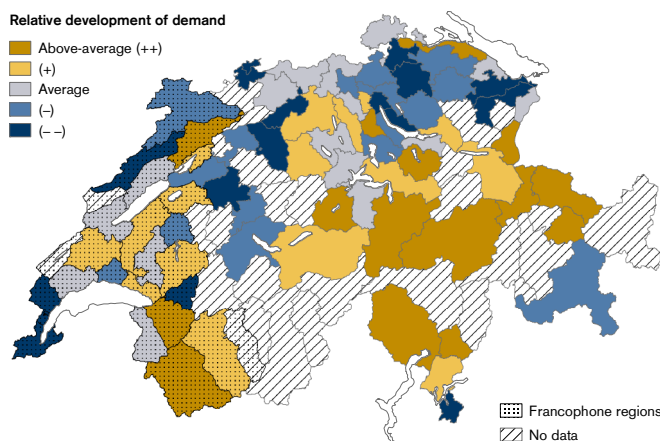
Development of number of asylum-seekers
 * 12-month total as per end November 2022



Source: State Secretariat for Migration, Credit Suisse Last data point: 11/2022

Fig. 30: Stronger demand momentum outside of urban centers

Development of number of property search registrations in 2022 compared to 5-year average (NB: Figures for French-speaking Switzerland are separately standardized, and are therefore not comparable with those of other language regions)



Source: Realmatch360, Credit Suisse, Geostat Last data point: 12/2022

More apartments needed

Despite vibrant demand for apartments, construction activity continues to decline. There is no end to this trend in sight, with the nadir yet to be reached in a majority of regions.

Persistent construction lull and no prospect of imminent trend reversal

Over the last year, the number of rental apartments approved for construction has fallen by a further 2,800 units. Never in the last ten years have fewer rental apartments been approved (Fig. 31). Moreover, a glance at the number of newly submitted planning applications dashes any hope of an imminent trend reversal, as these have likewise declined again (–900 residential units year on year). However, there are glimmers of light coming from construction sites at the moment: With the repeal of the coronavirus containment measures and an easing of widespread supply problems in connection with various construction materials, two temporary factors that are likely to have exacerbated the decline in construction activity have now been eliminated.

Construction activity too low in majority of regions

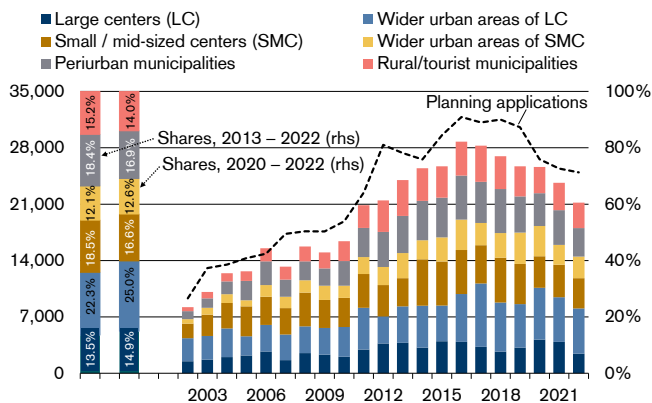
Over the last three years, construction activity has increasingly shifted toward the large centers and their surrounding urban areas. However, the large centers recorded a 38% year-on-year fall in the number of building permits issued for rental apartments in 2022, the sharpest decline of all (Fig. 31). Relative to the absorption of previous years, rental apartment production can be expected to fall short of what is required in 65 of Switzerland's 110 regions over the next one to two years (Fig. 32). These include wide swathes of the "Mittelland" region, as well as many largely rural areas that have seen excessive construction activity in the past. Too many apartments continue to be built in southern Ticino. In a number of regions close to urban centers such as the Furttal and the Zimmerberg and Nyon regions, the expected expansion is likewise higher than previous absorption rates. However, these regions have a high level of absorption potential that has not been fully exploited in the past.

Construction a much more expensive activity now

The paradigm shift in Swiss spatial planning and the high hurdles standing in the way of greater densification are likely to have made a significant contribution to the current construction lull (see p. 18 et seq.). In view of wider developments over the last 12 months, namely high inflation and rising interest rates, the prospects of a rapid improvement in the situation appear to have become even more remote. Financing costs for developers have increased sharply, while construction prices have likewise picked up significantly. In October 2022, construction prices were some 8.7% above the prior-year level for a multi-family dwelling newbuild. We are expecting some easing of price inflation over the course of 2023, but without a return to pre-pandemic price levels occurring any time soon.

Fig. 31: Building permit issuance at ten-year low

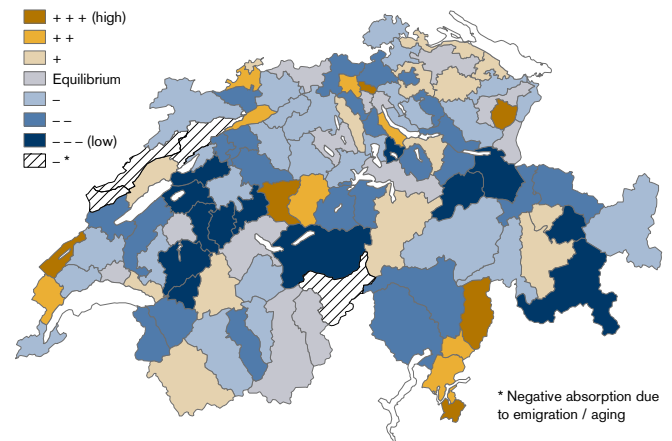
Approved rental apartments (newbuild), by municipality type (2022: 12-month total as per end November 2022)



Source: Baublatt, Credit Suisse
Last data point: 11/2022

Fig. 32: Rental apartment production too low in a majority of regions

Expected expansion of rental apartment stock in 2023 relative to past absorption (2016 – 2020)



Source: Baublatt, Federal Statistical Office, Credit Suisse, Geostat
Last data point: 10/2022

Renters on the back foot

The upturn in the rental apartment market, which dates back to before the coronavirus pandemic, has gained further momentum. The supply of apartments is shrinking in a majority of regions, and rents can be expected to surge in 2023.

Trend reversal in record time, ...

Given its fairly sluggish nature in the past, the rental apartment market has executed an astonishingly rapid U-turn over the last two years. Thanks to stronger housing demand and a decline in construction activity, the rental apartment vacancy rate has fallen from a record-high 2.75% to just 2.13% in the space of two years (Fig. 33). This is equivalent to a decline in vacant apartments of some 17,300 units – or more or less the total housing stock of the town of Zug. For this reason, the talk is now much more about apartment scarcity than vacancies. Other market indicators confirm this impression: The supply rate, which rose above 6.0% as recently as 2020, most recently stood at 3.7%. And whereas it would take an average of 48 days for an advertised apartment to find a tenant between mid-2019 and 2020, the average time-on-market over the last four quarters has been just 32 days.

... particularly in German-speaking Switzerland

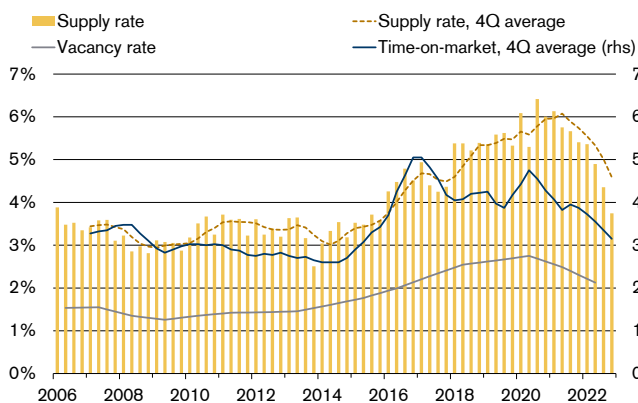
This trend reversal is broad-based and essentially extends to all apartment sizes and price classes, as well as to both old buildings and newbuilds. It has also manifested itself in a clear majority of Switzerland's regions, albeit to very different degrees. A regional comparison of 2022 vacancy rates with their long-term averages (Fig. 34) reveals a clear divide between German-speaking Switzerland and the rest of the country. In the majority of German-speaking regions, vacancy rates have come back down to levels close to their long-term regional averages. In central Switzerland and parts of the wider Zurich conurbation, vacancy rates have in some cases fallen below these long-term averages. In six regions of central Switzerland, the Upper Valais, and Cantons Glarus and Graubünden, rental apartment vacancy rates are even at historic lows.

Vacancies still above long-term averages elsewhere

The picture elsewhere in Switzerland looks rather different. Here vacancy rates are for the most part still above their long-term averages, with historic peaks even recorded in five regions last year. In addition to the high level of construction activity in Ticino and parts of French-speaking Switzerland, this is also due to the development of immigration. In the 2019 edition of this study, we first flagged up the “Rösti divide” – or the divergence between German-speaking Switzerland and the rest of the country – in patterns of immigration, which was above all caused by residents of Portuguese nationality returning to their homeland. This phenomenon has continued.

Fig. 33: Upturn in rental apartment market

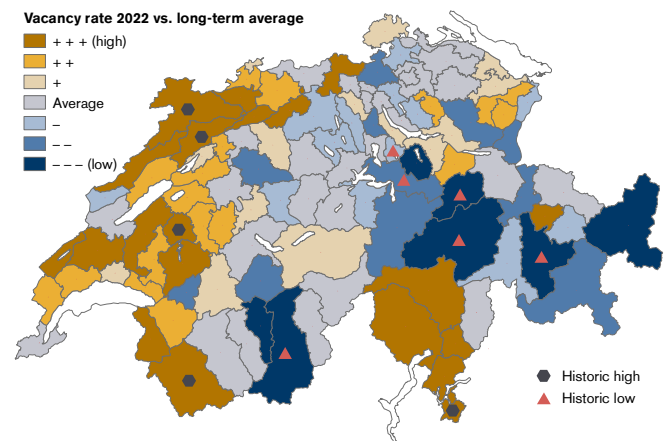
Rental apartment market indicators: supply rate as % of rental apartment stock, time-on-market in number of days (median), rental apartment vacancy rate



Source: MetaSys, Federal Statistical Office, Credit Suisse
Last data point: Q4/2022

Fig. 34: Vacancies shrink noticeably in German-speaking Switzerland

Vacancy rate (VR) for rental apartments in 2022 compared to long-term average (since 2003)



Source: Federal Statistical Office, Credit Suisse, Geostat
Last data point: 06/2022

Home-hunting in urban centers: important to be quick off the mark

The overall result of the strong surge in immigration in recent years has been a decline in vacancies in the urban centers too – a year later than elsewhere in Switzerland – to the point where the city of Zurich in particular now has an acute shortage of housing (vacancy rate: 0.07%). This trend is now reflected in marketing times in the large and mid-sized centers too (Fig. 35). The average time-on-market (median) has declined in 32 centers, with only Mendrisio bucking the trend with a minimal rise. But it is not just in Zurich (15 days) that prospective tenants need both rapid reactions and a good dose of luck. The average time-on-market in Chur has fallen to ten days, and in Zug to just six. Indeed, a quarter of all adverts for rental apartments in Zug are removed from the listings of online marketers of rental apartments after just two days or less. The market is similarly heated in a number of tourist regions, such as Davos (15 days) and Visp (22 days).

Greater scarcity, higher prices

The trend of greater scarcity in the rental apartment market is increasingly feeding through into market rents (Fig. 36). After a continuous decline for a period of many years, advertised rents recorded an annual growth rate of 1.6% in the fourth quarter of 2022 – the highest figure for seven years. This trend is confirmed by other rental price indices (contractual rents, FSO Rental Price Index). The cantonal rental price indices of Homegate likewise exhibit an upward trajectory in all 26 cantons, whereby this is most pronounced in Zug, Graubünden and the two Appenzell half-cantons, and least pronounced in Solothurn, Basel-Country, and Fribourg.

2023: scarcity problem to become more acute, ...

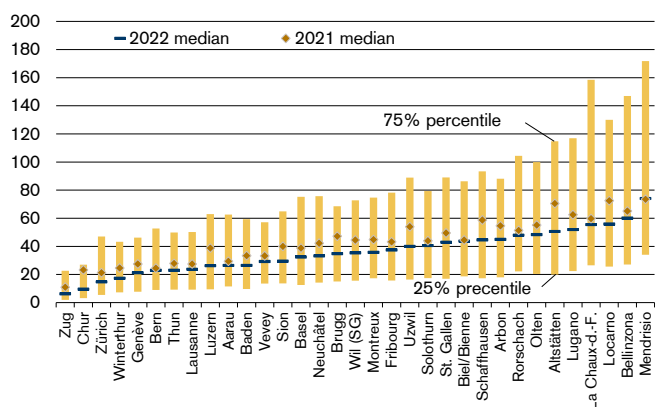
Despite the economic slowdown, the rental apartment market is likely to continue to heat up as 2023 unfolds. Although immigration should fall slightly, it will not collapse, and Ukrainian refugees should increasingly become a demand factor. At the same time, the number of new apartments coming onto the market is likely to fall again, by some 2,000 residential units. We therefore expect another sharp decline in the rental apartment vacancy rate to just 1.75%.

... and tenants will face sharp cost increases

The rising scarcity of housing should further increase the upward pressure on market rents. By the end of 2023, we are expecting advertised rents to record an accelerated rise of around 3%. Due to the first increase in the mortgage reference rate from 1.25% to 1.5%, which we expect in September, landlords will be able to increase rents under existing agreements by 3% – providing they have previously passed on earlier cuts to their tenants. As this did not occur in all cases, less than a half of landlords will be able to claim higher interest costs this year. However, landlords may pass on 40% of accrued inflation to tenants, along with general cost increases. Overall, this could result in a rise in rents of 4% for existing stock. Most of this increase will not take effect until 2024 due to compliance with tenancy law deadlines. But other nasty surprises await apartment occupiers too: In particular, tenants whose apartments are heated by fossil fuels can expect to see a major leap in their ancillary cost bills. On top of this can be factored in strong price rises for electricity, although these will differ from one municipality to another. All of this will weigh on household budgets, and is likely to lead to apartment-seekers increasingly having to lower their sights with regard to apartment size or locational quality.

Fig. 35: Apartments more difficult to find in urban centers

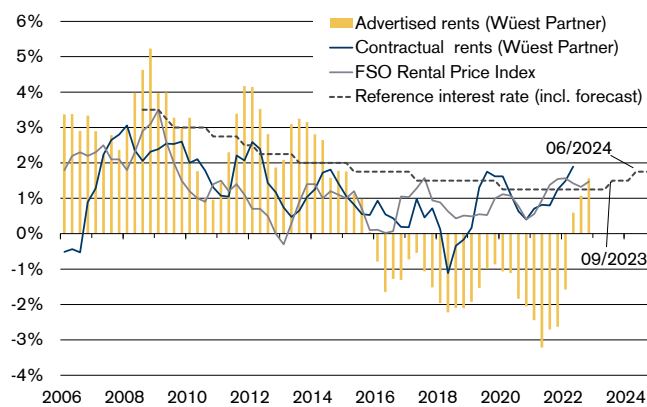
Rental apartment markets of large and mid-sized centers: time-on-market in days



Source: Meta-Sys, Credit Suisse
Last data point: Q4/2022

Fig. 36: Renting becomes much more expensive

Annual growth rates of rental price indices, development of reference interest rate

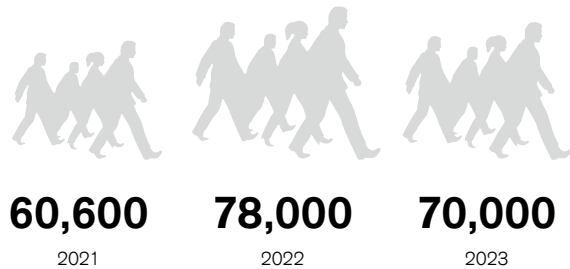


Source: Wüest Partner, Federal Office of Housing, Credit Suisse
Last data point: Q4/2022

Landlords regain upper hand

↘ Demand

Net immigration

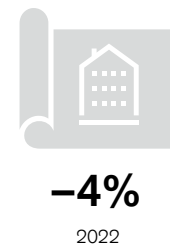


- Lower growth slows immigration only marginally
- Refugees support housing demand

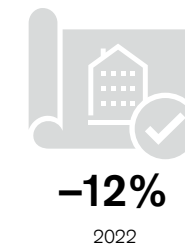
2023: Demand to weaken slightly

↘ Supply

Planning applications



Building permits

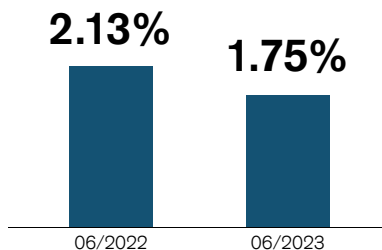


- Number of approved rental newbuilds declines further
- Insufficient building activity in some 60% of Swiss regions

2023: Production of newbuild apartments to fall again

↘ Vacancies

As % of rental apartment stock

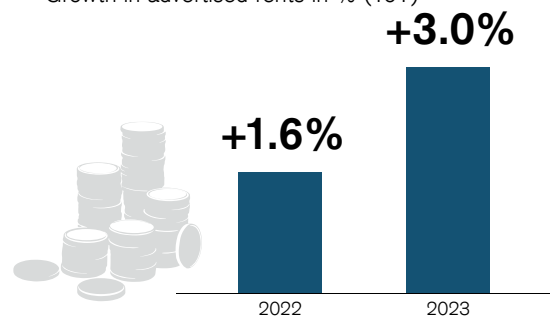


- Decline by a further 8,000 to 9,000 apartments
- Evidence of scarcity well beyond urban centers

2023: Vacancies to continue unbroken decline

↗ Rental price growth (as per year end)

Growth in advertised rents in % (YoY)

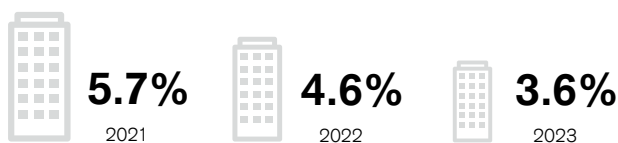


- Rental price growth accelerates again
- Rents on ongoing contracts also rising (inflation, reference interest rate)

2023: Rents to rise across the board

↘ Supply rate

As % of rental apartment stock



- Supply rate falls to below 4% for first time since 2015
- Time-on-market declining in all regions

Market power shifting toward landlords

↘ Performance

Total return of residential investment properties¹



- Discount rates rise for first time
- Value increases only if portfolio is actively managed
- Focus switching to cash flows

Interest rate turnaround reduces appeal of real estate

¹These forecasts are not reliable indicators of future price developments.

Annual movement of people

Every year, some 800,000 people – or more than one in 10 residents – move house in Switzerland. In 2021, as many as one in every four Swiss between the age of 25 and 30 changed their place of abode. By contrast, analysis of relocation behavior also shows that we become more settled with increasing age. However, it is not just age that decides how often we move and where we move to. For landlords, it is therefore useful to know the other factors that influence relocation behavior.

How often have you moved house in recent years?

In 2021, some 845,000 people moved house in Switzerland. Compared to previous years, this represented a slight decline – from 10.3% to 10.1% of the total population (Fig. 37). However, it should be noted that these figures relate to housing moves of individuals rather than households. Unsurprisingly, young adults aged between 18 and 34 are particularly likely to move house. They represent just 21% of the population but account for 43% of all moves and have the highest probability of changing their place of dwelling. Up until the age of 27, the probability of moving house rises until peaking at just over 26%, before then declining continuously up to the age of 64 or 65 (Fig. 38). The likelihood of relocating then rises again slightly in the few years after retirement.

Key motives for moving house

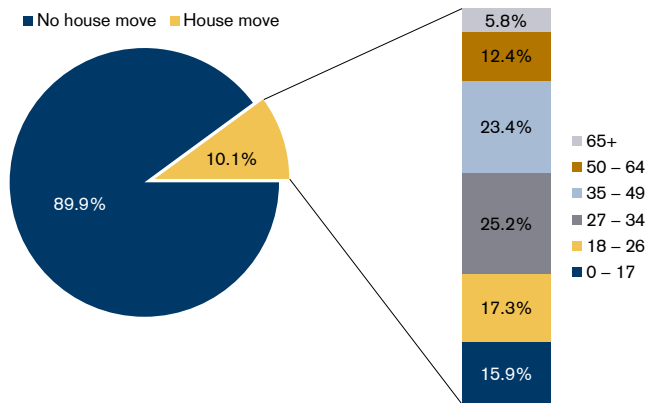
Why do people move house? The 2020 edition of NZZ’s “Immo-Barometer” (Real Estate Barometer) identified the following three key reasons for moving house: a “change in life situation”, typically triggered by the acquisition of (or separation from) a partner, “dissatisfaction with own property”, and “apartment/house too small”. Other key reasons cited include “job-related reasons” and “dissatisfaction with location”. In addition, the high latent inclination to move house is revealing: 63% of respondents were essentially keen on the idea of moving, i.e. were either planning a move or at least toying with the idea of switching domicile.

Seeking a new home across cantonal lines remains unusual

Although “dissatisfaction with location” was cited as the fifth most common reason for moving house, the majority of people in Switzerland at least appear to be happy in their canton of residence. More than 80% remain in their canton when moving, and a half of these do not even leave the confines of their municipality (Fig. 39). It should also be noted that the number of moves within the same municipality is underestimated, as moves within the same building are not captured in the relocation statistics. Analysis of trans-municipal moves shows that the great majority involve relocations within the same economic region. In other words, even when a person changes municipality they are more likely to opt for a neighboring municipality than the other side of the canton.

Fig. 37: Under 50-year-olds account for more than 80% of moves

Relocations in Switzerland in 2021 broken down by age category, in %

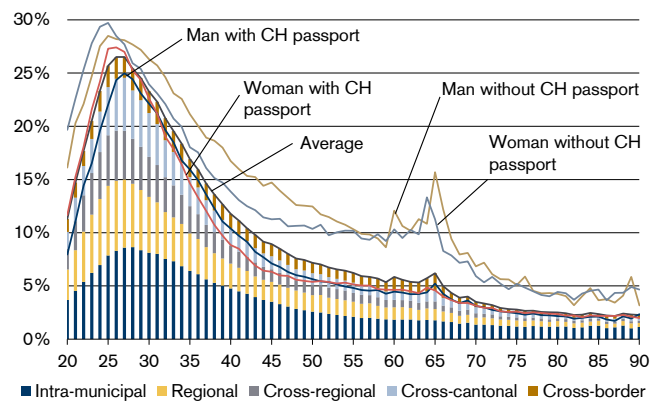


Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

Fig. 38: Probability of moving house recedes after the age of 27

Probability of relocation by age, in %; spatial distribution of relocations



Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

Low average relocation distance of just 13 km

An analysis of relocation distances confirms the picture of small-distance moves within Switzerland. Overall, the average relocation distance in the years since 2018 has always been between 12 and 13 kilometers (km). Particularly striking is that children and young people (0 – 17 years) exhibit the lowest average distance of relocation (Fig. 39). As the integration of children into their social environment and the availability of the corresponding infrastructure are key considerations when families move house, households with children have the greatest probability of relocating in their immediate neighborhood (< 50 meters) or within the same district (50 – 500 meters). With increasing age and a greater likelihood of leaving the family home, so too does the relocation distance increase. As is the case with relocation frequency, here too it is the cohort of 18- to 34-year-olds that moves further away on average, as well as being most likely to leave their existing municipality or canton in percentage terms.

72% of demand for housing falls within a radius of just 10 km

Figure 40 shows the cumulative population share by relocation distance for the individual age categories. This information can help construction project planners to get a better feel for demand potential and the age categories that can be targeted. For example, 60% of the population never moves further than a radius of 5.5 km. And just 28% of the population moves more than 10 km. In other words, an average 72% of demand for a construction project development comes from a catchment area of just 10 km. Although there are likely to be notable differences in these figures from region to region, they are nonetheless relatively easy to calculate. For project developers and marketers, it is therefore crucial to know these key metrics.

Foreigners account for a disproportionately high share of relocations

Relocation behavior is not decided by age and distance alone, however. Residents without a Swiss passport move house almost twice as frequently as the Swiss. This can be explained by immigrants being quicker to adjust their residential situation after having initially moved close to their place of work in many cases. If they decide to remain in Switzerland for a prolonged period, they are then rather more familiar with the real estate market and optimize their housing situation in a second step. Furthermore, the disproportionately high frequency of non-Swiss residents emigrating also increases their likelihood of moving. Finally, the median age of foreigners in Switzerland is just 38, seven years less than the median Swiss age.

Women leave parental home earlier than men

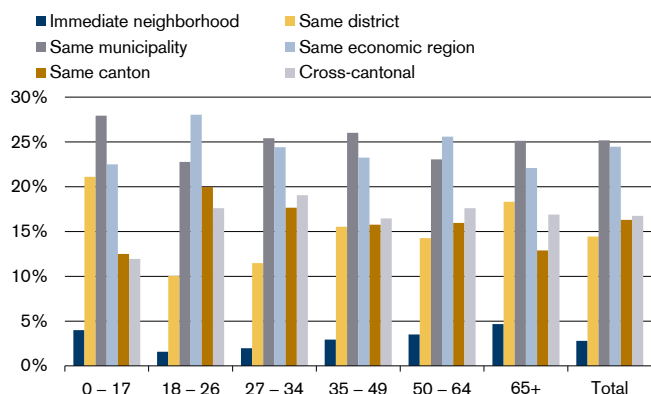
Gender also plays a role. Two statistics particularly catch the eye here: On the one hand, men are likely to move further away from their previous home than women, particularly after the age of 50, while on the other the probability of moving house rises and falls more quickly with women than with men (Fig. 38). Accordingly, on average women move out of the family home well before men.

Age the best indicator for likelihood of moving house

In summary, where both nationality and gender are concerned, the following applies: The key factor influencing our relocation behavior and likelihood of moving house remains our age. This is hardly surprising given that a “change in living situation” is the most frequently cited reason for moving. Just as life situations change with age, so too do housing needs. Over the next few sections we will therefore scrutinize the differences between the individual age categories in more detail.

Fig. 39: Families with children move the shortest distance

Domestic moves by type, in % per age category

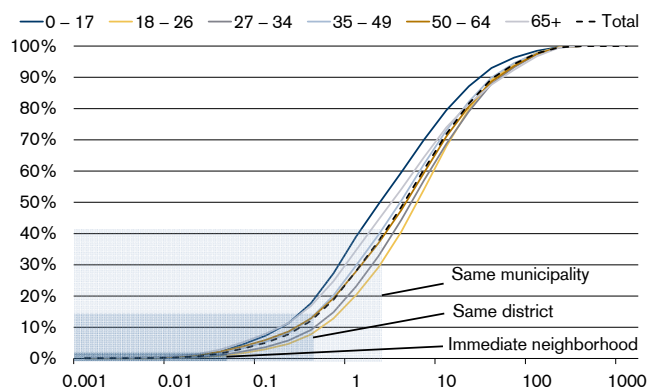


Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

Fig. 40: 60% of Swiss residents move no more than 5.5 km

Cumulative population shares by relocation distance, in km, for all age categories



Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

**Young adults:
mobile and flexible**

Fewer responsibilities, fewer possessions, greater flexibility, greater mobility: When you're young, you tend to carry around much less baggage. Whether moving into shared student accommodation or signing that first rental agreement after leaving university – the start of the relocation odyssey starts with the move out of the parental home. For example, the data shows that 18- to 26-year-olds move from a single-family home to a multi-family dwelling more than four times as frequently as the other way round (Fig. 41). For young people choosing to leave their home municipality, the large centers and their wider conurbations exert a strong pull. Cities therefore continue to attract many young people. When factoring out immigration, the age cohort of 18 to 26-year-olds is the only age category exhibiting positive net relocation to the large centers. Even among 27- to 34-year-olds, all of Switzerland's large centers recorded more leavers than arrivals in 2021. The mid-sized centers exhibit a similar picture.

Life after 30: starting a family and the need for more space

As illustrated in our Real Estate Market Study 2022, COVID-19 has put the brakes on urbanization. The section above also shows that the large urban centers lost their pulling power for most age categories during the pandemic. Based on absolute figures for 2021, it is above all persons aged between 35 and 49 that are increasingly moving away from the large centers. As (according to the Federal Statistical Office) the average age upon the birth of a child was 32.3 years for mothers and 35.2 years for fathers in 2021, it is logical to assume that an expanding family is a key driver of this age category choosing to relocate. And with the starting of a family, relocation behavior also changes: The frequency of relocation declines, and larger apartments or houses are sought. Where financial circumstances allow, owner-occupied housing is the goal of many. This is clear from the fact that 35-to 49-year-olds are the key demand group for single-family homes (Fig. 41).

Price level as factor when switching municipalities

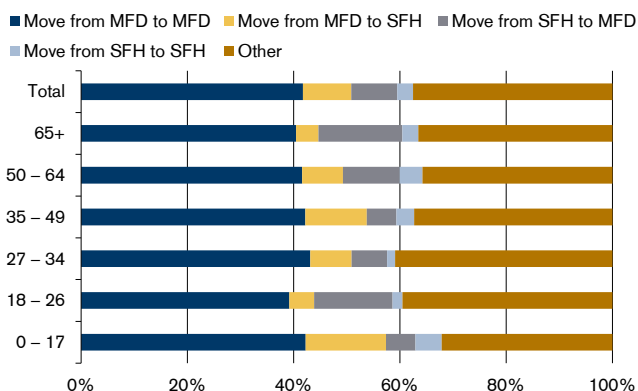
As residential real estate prices have long since moved only in one direction, would-be homeowners also (or primarily) look for suitable properties outside of the main centers. According to relocation statistics, first-time buyers of a single-family home opt for a municipality with at least a 10% lower price level in 48.8% of cases, while a more expensive municipality is selected in just 16.2% of cases. In the case of relocations to multi-family dwellings, the trend is rather less pronounced: 22.9% choose cheaper municipalities, while 20.8% go for pricier municipalities and in 56.3% of cases no significant change in price level is apparent. This is likely to be due in particular to the fact that many households are moving from one rental apartment to another, and the cost of housing is not as significant a factor for renters seeking an apartment as it is for those looking for a condominium to buy.

From the age of 50 to post-retirement: downsizing

The desire to move house declines noticeably from the age of 50. In addition, the trend of moving to a property with more rooms reverses after the age of 50. People of this age cohort who move at all typically move from a larger to smaller home. After retirement, it is above all foreigners who are more likely to relocate again (Fig. 38), in most cases to their native or another country. Overall, the relocations of persons aged more than 65 account for just 6% of all house moves. Moreover, there is a larger proportion of people moving out of a single-family home in this age category than in all others. (Fig. 41). At just under 18%, this form of home switch is most common among 75- to 79-year-olds – so the age-related trend of downsizing clearly continues.

Fig. 41: Strong fluctuation in moves to single-family homes across the various age categories

Moves by building type, in % per age category

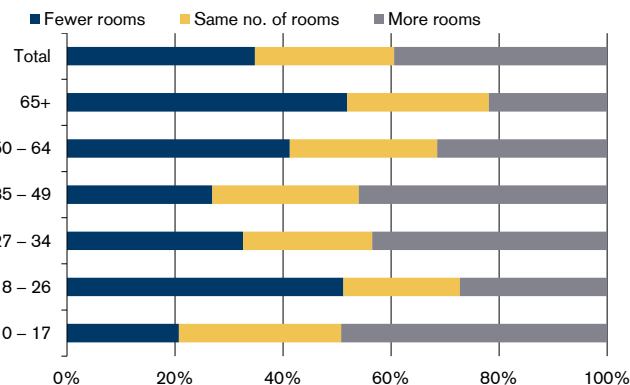


Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

Fig. 42: Age also plays a role when selecting a home by number of rooms

Moves by change in home size, in % per age category



Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

What should developers and investors be aware of?

As mentioned in the above sections, distance of relocation and population structure in the surrounding area of the property are key pointers to housing demand. For investors and developers, this means that demand will first and foremost come from within the same municipality. It is therefore all the more important to incorporate into the planning process not just the aspect of intensity of relocation, but also competitor products in the surrounding area. Moreover, it is important to know where potential movers might relocate from in the first place. Figure 43 shows that the demand from beyond the same municipality will differ greatly depending on the type of municipality in question. For example, it is easy to identify where people are moving to and where they are moving from, above all between the heart of a large center and its wider conurbation. We will now analyze this in detail using the City of Bern as an example.

Relocation analysis – Bern

In 2021 there were around 25,000 relocations to and from Bern, of which around a third involved moves within the city limits. When moves across national borders are included, around 8,700 people moved away from Bern, while 7,800 moved to the Swiss capital. This negative relocation balance is fairly atypical, and is attributable to the consequences of the COVID-19 pandemic.

Where do the new arrivals come from?

Of these 7,800 or so people to move to Bern, a good quarter come from abroad. In addition to other large centers such as Zurich, Basel and Lausanne, the key regions feeding the influx include the wider conurbation municipalities of the Swiss capital (Fig. 44). It is therefore clear that relocations tend to be across short distances, whereas longer-distance relocations often involve moves between the same type of municipality. Analysis of the breakdown by age category shows that more than half of people moving to Bern were between 20 and 34 years old. The net influx balance is above all positive for 20- to 30-year-olds, which is explained by the fact that many young people of this age cohort are drawn to Bern for education or employment purposes.

Where are people leaving Bern going to?

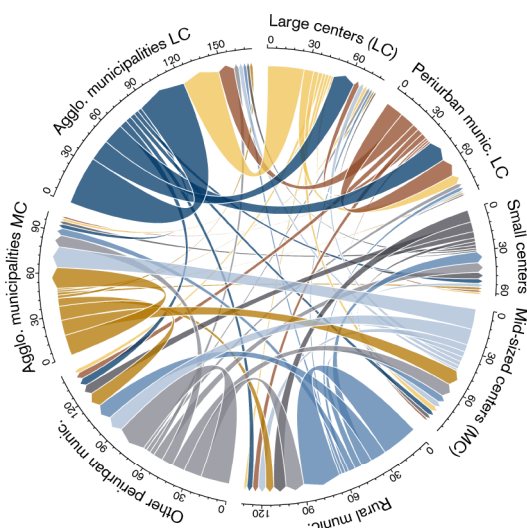
In all age categories above the age of 30, it is moves away from Bern that predominate. In particular, it is clear that in the City of Bern too, families with children often move away from the city. In the great majority of cases, the destinations of these leavers are the contiguous conurbation municipalities of the city. It would therefore be mistaken to talk of an urban exodus to rural areas during the pandemic – as in overall terms more people moved from rural areas to the City of Bern than vice versa.

Key findings for landlords and property management companies

Landlords and property managers have an interest in being able to assess how long a potential tenant will remain in an apartment. The likelihood of relocation by age, gender, and nationality as ascertained by our analysis can be used as a yardstick in this regard. For example, the average probability of a 25-year-old woman with a Swiss passport choosing to move house works out at 27.3%, whereas the equivalent figure for a 50-year-old man without a Swiss passport is just 12.5% (Fig. 38). In addition, the example of Bern shows how detailed analysis at municipality level can supply important information for the planning, sale, or letting of a residential building.

Fig. 43: Many moves are between the same municipality type

Relocation streams between various municipality types, excluding moves within the same municipality, absolute figures (in 1,000)

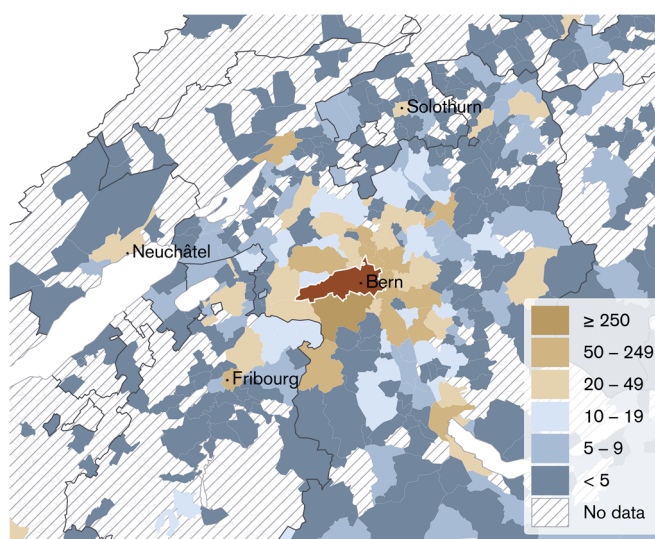


Source: Federal Statistical Office, Credit Suisse

Last data point: 2021

Fig. 44: Key catchment areas of the City of Bern

Number of moves to Bern



Source: Federal Statistical Office, Credit Suisse, Geostat

Last data point: 2021

Interim surge in demand

The very robust labor market situation in 2022 propelled demand for Swiss office property to an interim high. But demand for office space is likely to lose significant momentum going forward due to the sharp global economic slowdown.

Total employment at record level

Although employment growth had begun to slow in the second half of 2022, until deep into the fall it remained at an above-average level of 2.4% compared to the prior-year quarter. The unemployment rate, which remained persistently low right up until the year-end, likewise testifies to a surprisingly strong labor market that will continue to feed demand this year too.

Office employment records solid growth

Where demand for office space is concerned, the key factor is not the general employment situation but rather the development of office employment. Generally speaking, this has been rising steadily in all sectors due to increasing digitalization, with a growth trajectory for the most part steeper than that of overall general employment. However, the sectors that have recently been recovering from the coronavirus crisis have fewer office-based jobs; hence the annual rise in office employment (2.4%) is for once no more than in line with employment in the wider economy.

Home working here to stay

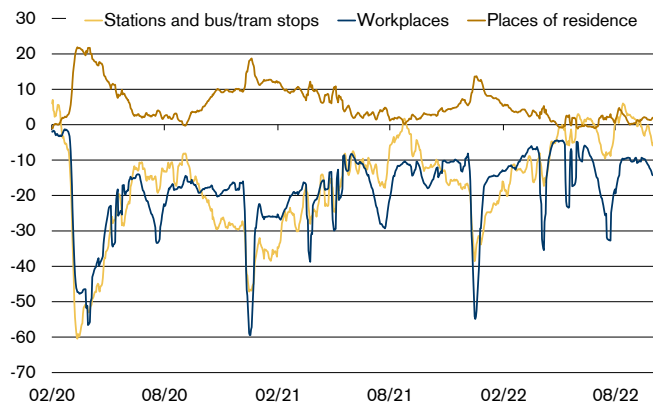
Although many companies have abandoned their reluctance to rent new premises in the wake of the repeal of the coronavirus containment measures, hybrid forms of working and above all home working have left their mark. This is abundantly clear from Swiss mobility data (Fig. 45). Specifically, footfall in Swiss workplaces was still almost 10% below the pre-crisis level in the fall of 2022. In the current environment characterized by a shortage of specialist labor, many companies are offering flexible working models in order to retain their appeal as employers. Home working therefore remains a factor to be taken seriously, as it reduces occupancy rates in offices, strengthens the desk-sharing trend, and thereby reduces demand for space.

Interim peak prior to expected slowdown

Despite this restriction, catch-up effects and strong employment growth have temporarily provided a very dynamic additional boost to demand for office space. Some firms have not been able to put off their decision any longer and have rented additional premises. For the last year, we are estimating high additional demand amounting to 840,000 m² in total. However, growth is set to weaken in the wake of the economic upheaval triggered by the war in Ukraine, which will also result in a cooling of the labor market. As the job market has already peaked, for 2023 we are anticipating a stabilization of additional demand for office space at a much lower level of around 130,000 m² (Fig. 46).

Fig. 45: Swiss mobility data

Moving 7-day average; 0 = reference value prior to pandemic

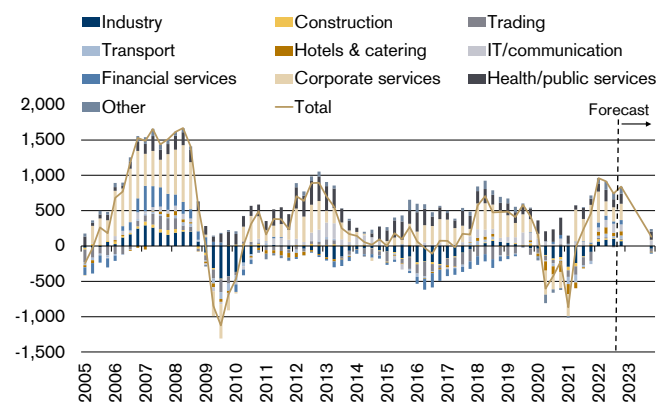


Source: Google

Last data point: 15.10.2022

Fig. 46: Additional demand for office space

Estimated additional demand compared to prior-year quarter in 1,000 m²; Forecasts for Q4 2022 and 2023



Source: Credit Suisse, Federal Statistical Office

Last data point: Q3/2022

Home working slows absorption

Given the strong recent growth in employment, the advertised supply of space should really be declining sharply. However, we can discern only a modest decline in the minutely detailed aggregated data on publicly available office premises. This means that while the home working trend may not be reducing the demand for space excessively, it is doing so noticeably.

To what extent is employment growth boosting absorption?

The unexpectedly strong growth in employment accompanying the recovery from the COVID-19 pandemic since mid-2021 has led to a noticeable pickup in demand for office space. Many companies that essentially adopted a wait-and-see approach during the pandemic suddenly found themselves unable to postpone their office rental decisions any longer and were forced to act. As the economy recovered from the coronavirus crisis, offices started to see more workers return, which increasingly dispelled fears of vacant premises. Reports of letting successes began to accumulate, and tenants felt compelled to nail down letting agreements in certain locations in order to avoid missing out altogether. In the wake of this development, hopes also grew that supply rates – which had risen once again during the pandemic – were on the verge of a trend reversal.

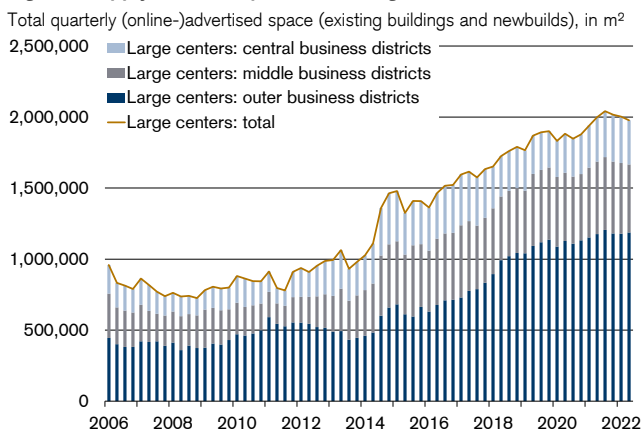
Supply of space declines, but only very slightly

This expectation has proved correct: 54% of office premises advertising vacant space have succeeded in reducing their available supply over the last 12 months, hence the decline in the supply rate for three successive quarters (Fig. 47). However, the fall in the supply rate is not that pronounced. This is because – in addition to new space relating to newbuild projects advertised at an early stage – newly vacated space in existing buildings has appeared elsewhere as existing tenants have served notice. Accordingly, the amount of available space has only come down partially, and is to some extent a shift of vacant space from one property to another. Given the dynamic level of demand and a backdrop of employment growth, this relatively modest level of absorption would suggest that the home working trend has weighed on demand for office space.

Gap between center and periphery widens further

Whereas the supply of space in Switzerland's central business districts (CBDs) recorded only a slight year-on-year decline and fell by a few percentage points in the neighboring city areas (middle business districts), the supply of space rose further in the outer suburbs (Fig. 48). Geneva and Basel were major contributors to this development. The theory that inner-city locations are better placed to enjoy superior absorption rates due to the trend toward flexible working models therefore appears to have been borne out. What's more, the gap is widening due to the greater volume of new building projects focused on the outer business districts. In other words, the challenge facing marketers of office space currently differs considerably in the individual markets – depending on whether a property is based in the heart of the city or on its periphery.

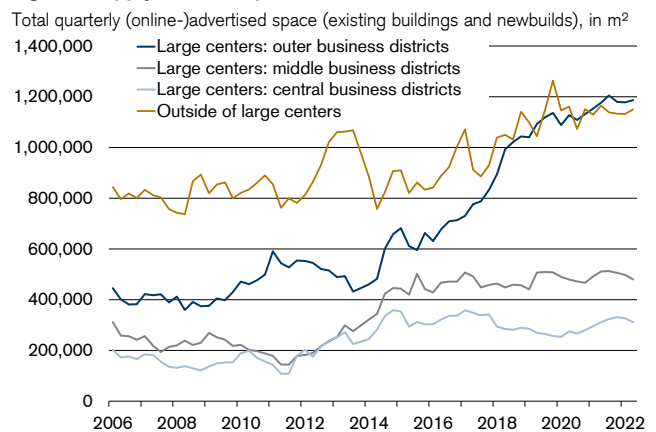
Fig. 47: Supply of office space in the large centers



Source: Credit Suisse, Meta-Sys

Last data point: Q2/2022

Fig. 48: Supply of office space in Switzerland



Source: Credit Suisse, Meta-Sys

Last data point: Q2/2022

Muted newbuild activity

Both planning applications and building permit for office properties remain below their long-term average across Switzerland. At the same time, refurbishment applications are exhibiting an upward trend, which points to energy-related renovations and necessary adjustments to the working world of the future.

Little momentum in newbuild planning applications and building permits

While demand for office space recovered swiftly from the pandemic-related slump, investors remain hesitant about newbuild projects in the office sector. Over the last 12 months, approval was issued for an office space investment volume of just CHF 1,710 mn (Fig. 49). Although this nominal figure indicates a certain recovery compared to the previous year, it is still a hefty 11% below the long-term average since 1995. Similarly, planning applications are almost 13% below their long-term average. Bearing in mind the rise in building costs, the planned real expansion of space must be even further below the long-term average. On the one hand, uncertainty over the future need for office space has still not been fully eliminated due to hybrid working models, which is acting as a drag on newbuild activity. On the other, higher financing costs and construction price inflation are not conducive to a higher investment volume.

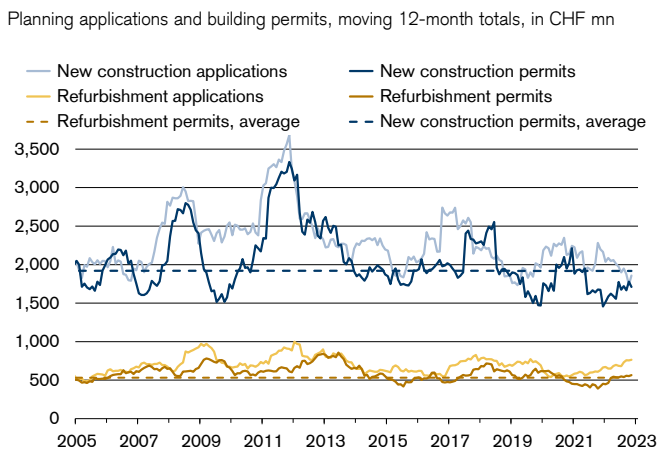
By contrast, refurbishment activity is vibrant

The volume of planned investment in office refurbishment declined in the wake of the COVID-19 pandemic, but has recovered to some extent since the start of 2022. At CHF 563 mn, the volume of refurbishment approvals issued over the last 12 months is moderately above the average figure recorded over the last 27 years (CHF 532 mn). But in addition, the volume of refurbishment applications is a striking 23% higher than the long-term average. This can be explained by a number of factors: First, energy-related renovations are increasingly in vogue due to the huge inflation in ancillary costs. Second, hybrid working models are driving the trend of modifying old office premises in line with modern needs. And third, owners of office buildings are giving increasing thought to use conversion given the risk of vacant offices on the one hand and the scarcity of building land as well as residential housing on the other.

Not much building activity in most large and mid-sized centers

The individual office markets of the mid-sized and large centers are illustrated in Figure 50. The vertical axis shows the expected future expansion of space compared to the long-term average. With the exception of Lausanne, this is below the long-term average in all large centers. But in the majority of mid-sized centers too, planning activity is currently at low levels. This reticence on the part of investors is helping to improve the market situation, particularly as rising supply rates in recent years have for the most part been closely linked to above-average construction activity. It is therefore unlikely that many office markets will see any major imbalances building up over the next few quarters.

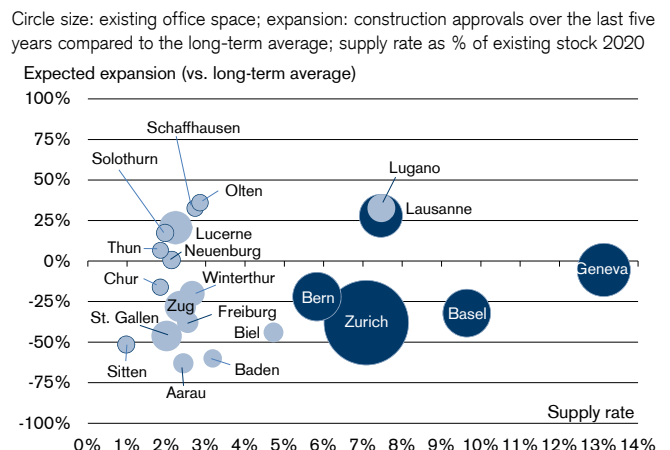
Fig. 49: Planned expansion of office space



Source: Baublatt, Credit Suisse

Last data point: 11/2022

Fig. 50: Expansion and supply in the large and mid-sized centers



Source: Credit Suisse, Meta-Sys, Baublatt

Last data point: 06/2022

Fortified against downturn

The interim surge on the demand side due to the healthy labor market situation is reflected in the office property markets of Switzerland’s large cities by declining vacancy rates and rising contractual rents.

Vacancies decline again

Thanks to the economic upturn, the office markets of the large centers are recovering from the ravages of the COVID-19 pandemic. Vacancies are down in all regions for which official figures were compiled⁶ (Fig. 51). In some cases the declines were only small, however, such as in the Lausanne region (-2%) and Canton Neuchâtel (-1%). In cities where greater falls were recorded such as Geneva (-16%) and the two Basels (-14%), this development may not prove sustainable given rising supply rates in both markets. In these cases, the higher level of supply can be expected to feed through into vacancies too after a certain time lag. Overall, the volume of all measured vacancies remains at a relatively high level, and the next downturn is already becoming apparent.

Rents increase sharply

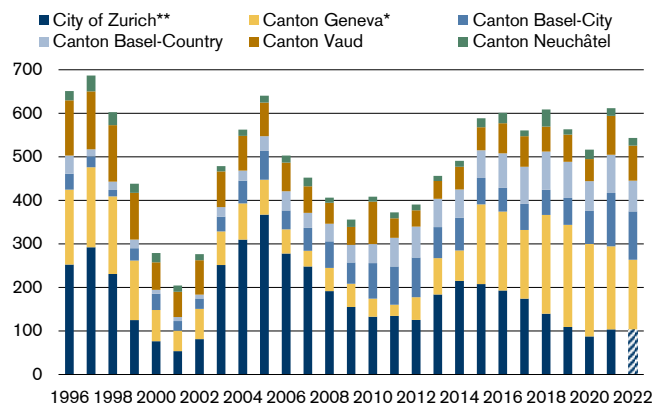
In addition to robust employment growth and a decline in their supply rates, the two large centers of Lausanne and Zurich have also reported superior rental price growth (Fig. 52). In Lausanne, the growth in rents last year (+7.1%) was significantly higher than the average of all large centers (+4.4%). The second-highest rental price growth was reported by the City of Zurich (+4.5%). However, all large centers recorded strong growth in contractual rents, posting figures in excess of 3.0%. The significant rise in the cities is probably explained by the fact that many companies are exhibiting a greater willingness to pay for high-quality, energy-efficient, and centrally located space – including with a view to having a potentially lower space footprint in the future. However, special rental terms – i.e. incentives – are not factored into these figures, as contractual rents only reflect the successful aspect of offerings. The average year-on-year decline in advertised rates of 2.6% makes it clear that this situation has changed where the totality of advertised space is concerned.

Outlook varies – depending on quality and location

Strong current employment growth should ensure robust demand for office space until into next year at least. However, the inexorable rise of flexible working models will also leave its long-term mark and make the task of marketers more challenging. This is particularly true of premises on the periphery, energy-inefficient existing buildings, and premises with rigid floorplans that are not so easily adapted to new forms of working. Given the additional factor of an impending economic downturn, we are therefore anticipating a rise in vacancies outside of the main centers. By contrast, vacancies can be expected to fall further in central locations. Where rents (contractual and advertised) are concerned, we are expecting sideways movement.

Fig. 51: Office vacancies

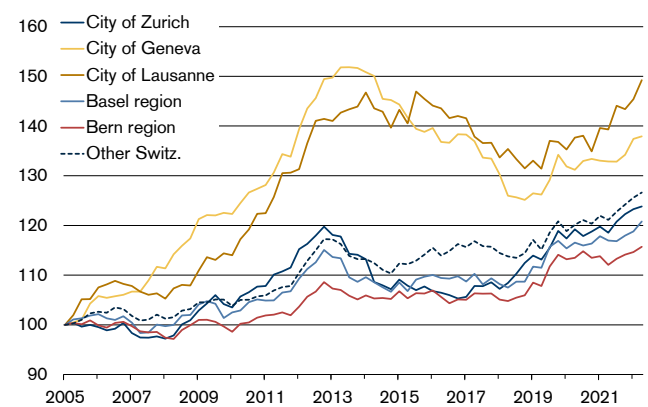
Vacant office space as per June 1, in 1,000 m²



Source: Various govt. statistical sources, Credit Suisse Last data point: 06/2022

Fig. 52: Regional office rents

Hedonic rental price index based on signed contracts, index: 2005 = 100.



Source: Wüest Partner, Credit Suisse Last data point: Q2/2022

⁶ The City of Zurich did not publish any figures for commercial property vacancies in 2022. In Bern, the corresponding statistics were discontinued. *In Fig. 51 the figure for Geneva in 2020 has been interpolated. ** The figure used for Zurich is that for 2021 in order to facilitate an overall comparison.

Home working, office living

Given the scarcity of residential space in cities and the increasing prevalence of vacant offices, use conversions look like a logical way forward. However, these cannot be implemented just like that. First of all, such conversions must meet zone planning criteria. Then the technical challenges need to be resolved. And above all, the high investment costs must translate into higher income. All of this presents quite a challenge.

Numerous criteria need to be met

In order for vacant offices to be converted to residential use, the first step is to undertake the obligatory clarifications regarding Swiss zone planning regulations, and establish whether the location is appropriate for residential use, e.g. with respect to noise pollution and available infrastructure. If nothing stands in the way of conversion from a zonal planning or location-specific perspective, the next question is whether the office building is suitable for conversion to residential space from a technical perspective. Depending on the relevant static parameters, it may not be possible to move outer and inner walls around just like that. Fire protection and noise insulation pose major challenges for older buildings, while the materials used in such buildings will often not comply with modern standards. Another factor that can often complicate a use conversion is a building being subject to historic preservation regulations.

Significant technical hurdles

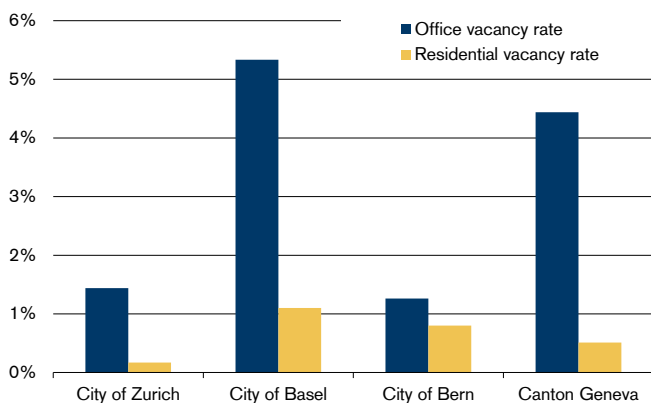
Irrespective of building age, the issues of natural light and access will require a new solution to be found for a conversion from office to residential use. For example, office buildings typically have a level of spatial depth that barely provides enough light for residential purposes. Measures such as reducing window breast heights or attaching balconies can address this problem. As residential complexes are made up of many smaller-scale units, access needs to be secured in a different way, which can often necessitate additional stairwells that will typically reduce the rentable space. The same is true of the sanitary infrastructure, as kitchens and bathrooms require significantly more than just the few shafts required to connect small office kitchens and sanitary areas.

Profitability is key

The key problem in most cases is profitability, as the construction costs of a conversion typically exceed 50% of the cost of a newbuild, hence the expected income generated by new apartments must significantly outstrip rent generated through office use. As such, it has typically been properties with high and above all persistent vacancies that have been converted in the past. If the prospect of even a minimum level of office rental income looks bleak, owners will be more likely to bite into the “sour apple” of conversion. The result is then typically upscale condominiums or rental apartments. This in turn makes the location of such projects critical, as the conversion to residential use must not only reduce vacancies substantially, but also push rents to levels well beyond those achievable through office use. These prerequisites make use conversions extremely challenging, despite high office vacancy rates and a scarcity of housing in many parts of Switzerland. So while they will be seen sporadically, they are unlikely to become a mass phenomenon.

Fig. 53: Vacancy levels far higher for offices than apartments

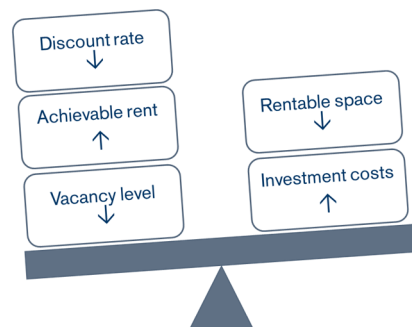
Office and apartment vacancy rates in selected centers



Source: Various regional statistical offices, Federal Statistical Office, Credit Suisse
Last data point: 06/2021

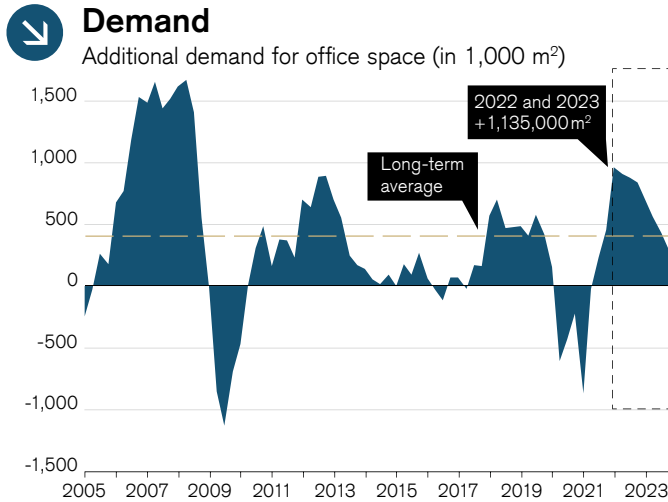
Fig. 54: Economic factors influencing use conversion

Schematic representation for the conversion of offices to apartments

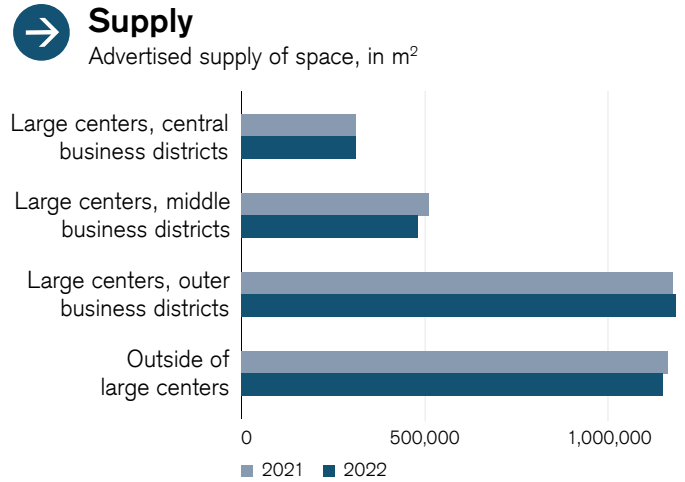


Source: Credit Suisse

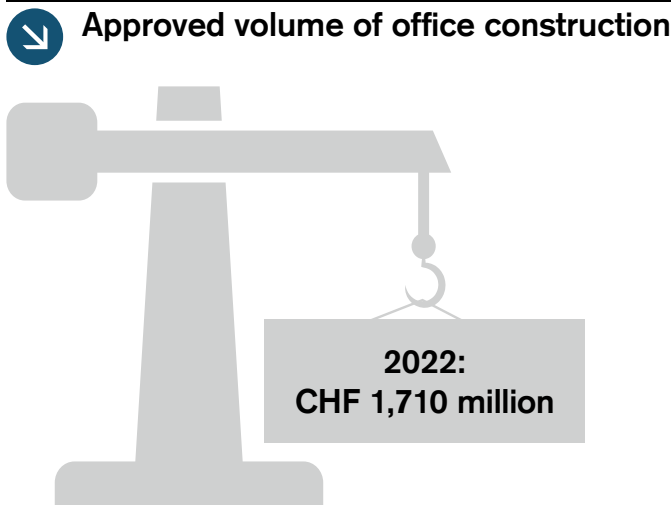
Slowdown to follow interim high of 2022



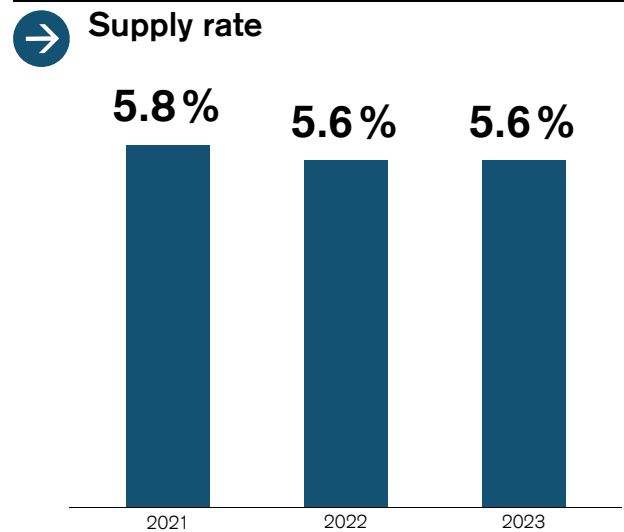
2023: Demand flattening off due to economic slowdown, but should remain positive



2023: Supply gap between center and periphery becomes more accentuated

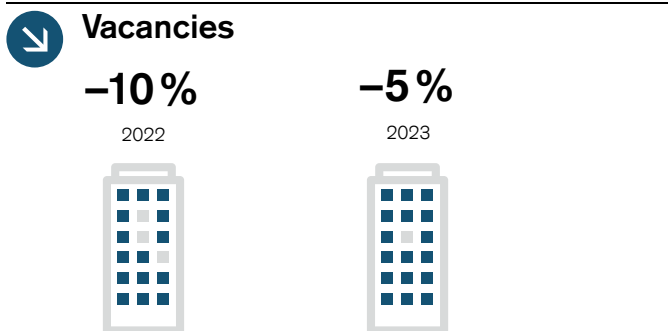


Approved construction volume of office space 11% below long-term average



Supply rates generally higher in regions with high level of recent expansion

2023: Ongoing investor restraint prevents excessive rise in supply rates



2023: Further decline in vacancies in central locations but a rise elsewhere



2023: Lower growth in contractual rents

Stop the rating confusion!

As the standards for sustainable investing have only been established gradually, confusion reigns. The multitude of current initiatives and ratings seem to stand in direct contrast to the actual progress being made in the area of sustainability. A single set of metrics focusing on climate and transparency would be a decisive breakthrough – which is precisely the approach being consistently pursued by non-profit association REIDA.

Dispersal, not focus

If a project is thwarted, attempts are made to pursue activism in as many possible secondary theaters so as to distract from the main theme. The battle against climate change appears to have adopted this logic for quite some time now, although in this case it may be not so much a deliberate desire to distract attention as sheer necessity resulting from a lack of data and a consequent lack of orientation. The dissemination of criteria for environment, social, and governance (ESG) performance is providing a further boost to this trend. This very broad-based concept for responsible investing has led to a plethora of ratings and valuation systems that differ from each other considerably with regard to their focus, objectives, and target groups. For example, the differences in the real estate area are so great that it is very difficult to illustrate all the ratings in a single overview graphic.⁷ Without in-depth knowledge of the rating methodology, it is impossible for users of these ratings to interpret the results correctly, never mind draw any benefit from them.

Less would be more

Some ratings in this area encompass several dozen indicators, to the point where it is ultimately unclear what they are trying to show. For example, the Global Real Estate Sustainability Benchmark (GRESB), a benchmarking process that is now globally established in the sustainable real estate area, encompasses over 90 indicators and aggregates these in order to come up with an overall score. This has led to the emergence of an entire advisory industry whose purpose is to help real estate investors achieve better ratings. And as some ratings evaluate not just sustainability performance but also the organization itself, companies have all sorts of ways of improving their rating without actually delivering any sustainability benefit. Another shortcoming is that ratings such as GRESB only reward improvements but not absolute top values per se.

Lack of ratings precision

A number of studies have attracted widespread attention for comparing the ESG ratings of leading rating providers and identifying significant discrepancies between them.⁸ The correlations have turned out to be in a bandwidth of 0.38 to 0.71, whereby a value of 1 indicates complete homogeneity, and a value of 0 indicates no correlation at all between the ratings of different providers. The only modest level of correlation highlights the difficulty of capturing sustainability through ratings. The principal reasons for deviations are the different methods for calculating ratings (56%), differences in demarcation between the factors measured (38%), and differences in the weighting of various attributes (6%).

Focus is needed

In July 2022, the British magazine *The Economist* waded in on this debate and arrived at the conclusion that the three letters ESG would not save the world.⁹ In its opinion, the presumably well-intentioned idea of drawing up criteria for responsible investments actually gives rise to contradictory targets for companies and distracts attention from the paramount task of fighting climate change. *The Economist* identified three fundamental problems of ESG: First, investors do not receive any coherent signposting as to how they should resolve conflicts of objectives given the large number of targets set – such as between those of an environmental and a social nature. Second, ESG does not resolve the problem of misplaced incentives, which are often the cause of environmentally-damaging conduct. Third, ESG has a data and a measurement problem. *The Economist* therefore called for these three letters to be split up so that a clearer focus can be placed on the letter E – the environmental theme. But even that is not enough: The respected British magazine wants to place the spotlight solely on greenhouse gas emissions, as climate change is by far and away the most urgent sustainability problem.

⁷ Miriam Kittinger, Marie Seiler (2022). Benefits and limits of ESG ratings. *Schweizer Personalvorsorge* 11/2022 (German only).

⁸ Florian Berger, Julian Kölbel, Roberto Rigobon (2022). *Aggregate Confusion: The Divergence of ESG Ratings*. University of Zurich.

⁹ *The Economist* (21.07.2022): ESG should be boiled down to one simple measure: emissions.

Transparency the solution

Such a focus would work for building owners too. If they can demonstrate that they are making a key contribution to containing climate warming, they would automatically attract less criticism. And precisely this could be achieved through transparency in respect of key environmental figures. What interested parties need are not advice-intensive ratings but utterly transparent key metrics – such as absolute energy consumption and the greenhouse gas emissions of individual properties. The Real Estate Investment Data Association (REIDA), a Swiss non-profit organization for the pooling of real estate data, wants to help this approach make the breakthrough, and has therefore – in keeping with its motto “knowledge rather than belief” – elaborated a standard for determining key environmentally-relevant metrics in the real estate area. This direction looks a more promising one, as due to the lack of comparability between ratings and labels, transparency and disclosure obligations are on the rise. In the second semester of 2022, for example, the industry associations AMAS and KGAST published sets of self-regulation that obligate their members to report sustainability metrics (or at least recommend that they do so).

REIDA CO₂ benchmarking

Transparent and uniform calculation methodology

For this to be achieved, the calculated metrics must be comprehensible and comparable, which in turn makes a uniform set of data and an identical calculation method essential. But as we know, the devil lies in the detail, and even simple metrics can be calculated in different ways. Accordingly, it is quite possible for two identical sample property portfolios to exhibit CO₂ intensities that differ wildly – depending on the calculation methodology applied.¹⁰ Differences arise, for example, through different demarcations (which scopes?), alternative types of reference area, or different greenhouse gas emission factors. For this reason, REIDA commissioned iccon, a subsidiary of Amstein + Walthert, to develop a highly detailed calculation methodology with a view to setting a standard in this respect. Because while industry associations recommend the reporting of key figures, they give little detail on how these are to be arrived at. What's more, given that transparency is an important element in comparability, REIDA has disclosed all methodological aspects.¹¹ Only with such an approach can environmentally-relevant figures of different real estate investment products be compared with one another, and – even more importantly – only this way can findings be arrived at that show how emissions can be efficiently steered in the right direction.

What is being measured?

In the REIDA benchmarking process, all environmentally-relevant key figures for the operating phase of real estate – as required for reporting purposes according to the industry associations AMAS and KGAST – are shown for the participating investment products (portfolios). These figures are determined at property level and aggregated across all portfolios to provide key figures at portfolio level, as well as for the benchmark. The 2022 evaluations encompass direct and indirect emissions (Scope 1 and Scope 2). For the time being, Scope 3 emissions – i.e. mainly energy such as electricity purchased on the tenant side – were not required. However, the aim is to refine the methodology on an ongoing basis and include energy purchased by tenants too in the future.

How are measurements undertaken?

A total of 36 real estate portfolios of eight different companies participated in the REIDA benchmarking process in 2022. The assessed portfolios comprise 3,984 existing properties, accounting for just under 23 million m² of energy reference area. Only real measured consumption figures are captured and recorded. This represents a significant difference to other surveys such as PACTA 2022, where in many cases no actual consumption data is available and the figures used are therefore mainly estimated values on the basis of guideline benchmarks. The energy data is deemed to be sufficient by REIDA if the energy purchased by the building owner is fully declared and the measurement period encompasses at least three months in the reporting year. Accordingly, estimating missing data by using figures from the prior year is not permissible. With these requirements, REIDA is setting high requirements of data quality, as it is pursuing the principle that only measured energy consumption can actually reflect reality.

Key metric – degree of coverage

The basic population of buildings in the REIDA CO₂ benchmark study is restricted to completed buildings. Buildings still under construction or that are being completely renovated are therefore excluded from the survey. The same is true of building transactions, as when new buildings are incorporated into the portfolio their measurement systems first have to be built up and harmonized. The benchmarking is undertaken on the basis of the energy reference areas of all completed buildings for which energy consumption is measured. The degree of coverage specifies how great this area is as a proportion of the energy reference areas of all completed buildings. On average the degree of coverage amounts to 83.1%. A half of all portfolios achieve degrees of coverage of between 65% and 93% (Fig. 55). The degree of coverage indicates the proportion of the portfolio

¹⁰ Miriam Kittinger, Marie Seiler (2022). Benefits and limits of ESG ratings. Schweizer Personalvorsorge 11/2022 (German only).

¹¹ www.reida.ch (CO₂-Benchmark/Dokumentation, German only).

for which the result is valid. The best portfolio in the benchmarking process has a degree of coverage of 100%. The worst achieves a figure of just 10%, hence the results are not representative for this portfolio. As it must be assumed that modern buildings have a superior data situation while at the same time exhibiting a better energy footprint, portfolios with lower degrees of coverage tend to fare better. This tendency is confirmed by the data (Fig. 56). Accordingly, if a meaningful comparison of two portfolios is to be undertaken, it is not just key energy figures that must be compared but also their degrees of coverage. For example, an analysis of the annual reports of listed real estate funds by pom+Consulting revealed that just 25% contained the same quantitative information on the degree of coverage.¹²

Benchmarking results and their classification

Energy consumption

For purposes of better comparability, the energy consumption of properties is expressed as a proportion of the corresponding energy reference area and this value is then designated as energy intensity. The average energy consumption in the REIDA benchmarking portfolio amounts to 97.4 kWh/m² of energy reference area (Fig. 55). The bandwidth lies between 59 and 146 kWh/m². For portfolios at the lower end of the bandwidth, special situations are likely to be responsible – e.g. where single tenants buy in lots of energy themselves, which under the current methodology cannot yet be taken into account in the reported energy metric. In an online survey conducted by the University of Lausanne, which analyzed 66 portfolios of institutional investors with over 31 million m² of floor space, a comparable figure of 105.5 kWh/m² of energy reference area was reported for the reference year 2020.¹³

Proportion of renewable energy

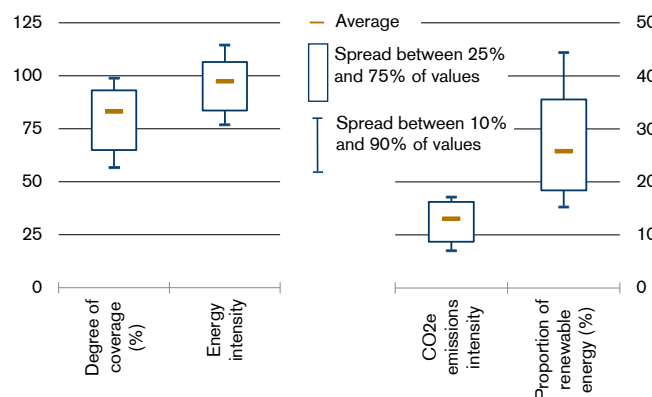
In the REIDA CO₂ benchmarking study, the proportion of renewable energy amounted to an average of 25.8%. A half of all participating portfolios lie in a bandwidth of between 18% and 36% (Fig. 55). In the PACTA 2022 survey, the proportion of renewable heating systems works out higher at 30%, although PACTA only measures Scope 1 emissions. The higher figure can be attributed to the fact that the metric reported for PACTA 2022 relates only to heating systems, whereas REIDA focuses more precisely on the proportion of energy actually consumed as its measurement basis.

Greenhouse gas intensity

On average, the greenhouse gas emissions of the portfolios that took part in the REIDA benchmarking study amounted to 13.1 kg of CO₂ equivalents per m² of energy reference area. In addition to carbon dioxide, this study also takes into account all other greenhouse gases such as methane and laughing gas, and calculates the CO₂ equivalents (CO₂e) on this basis. The REIDA portfolio 2022 therefore arrives at a very good figure – and a bandwidth of between 4.1 and 22.4 kg CO₂e/m². On average, the random sample taken by the University Lausanne ended up at 19.6 kg CO₂e/m².¹⁴ The correlation between low energy consumption, i.e. low energy intensity, and low CO₂e emissions intensity is relatively high here, as is clear from Figure 57.

Fig. 55: Environmentally-relevant metrics of the REIDA benchmarking process

Energy intensity in kWh/m², CO₂e emissions intensity in kg CO₂e/m²

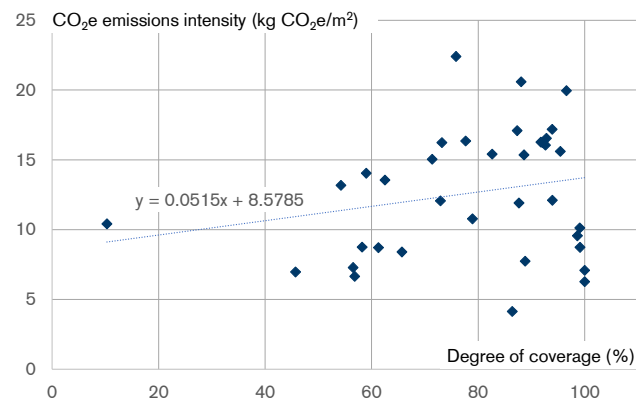


Source: REIDA CO₂ Benchmark Report 2022

Last data point: 2021

Fig. 56: Degree of coverage as important additional information

Real estate portfolios in the REIDA CO₂ Benchmark Report 2022



Source: REIDA CO₂ Benchmark Report 2022

Last data point: 2021

¹² pom+Consulting (2022). Not all that glitters is green – or is it? Whitepaper (German only).

¹³ F. Alessandrini et. Al. (2022). How sustainable is Swiss real estate? Evidence from institutional property portfolios. University of Lausanne.

¹⁴ Unclear reference areas and higher KBOB emission factors are also likely to explain the higher reported value.

Transparent approach to uncertainty

The consumption and emissions figures used exhibit uncertainties that may be due to possible sources of error (e.g. inaccuracies of measurement sensors). There are also sources of error in the calculation method, such as through the use of approximation values (e.g. when converting rentable space to energy reference area) or any required conversions (e.g. where the measurement period is not exactly the same as the reporting period). These uncertainties are aggregated and reported at metric level in the form of an uncertainty range that indicates how reliable the metric is. This uncertainty range gives rise to a double standard deviation, which means that the actual figure is likely to lie in the indicated uncertainty range with a probability of 95%. Where the metric of CO₂e emissions intensity is concerned, the individual portfolios exhibit uncertainty ranges of 0.3 to 5.8 kg CO₂e/m² (Fig. 58). For example, Portfolios 11 and 12 of the Benchmark Report 2022 have a similar CO₂e emissions intensity – but uncertainty ranges of different magnitudes. The REIDA CO₂ Benchmarking study therefore not only reports the corresponding figures, but also supplies information on their reliability. Over time, these uncertainty ranges will be narrowed down thanks to higher data quality and a refined calculation methodology.

Deviations from existing metrics

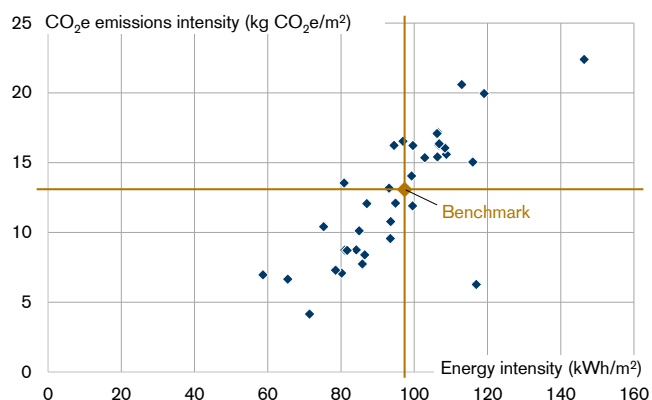
In almost all cases, the results of the REIDA CO₂ Benchmark Report reveal substantial deviations from the key figures determined previously by participants themselves. This was to be expected, as different measurement procedures and calculation methods have a strong impact on the final metrics. The following factors are primarily responsible for the deviations from existing calculations: 1) The use of measured rather than calculated energy data obviously leads to lower consumption figures, among other things because estimates that were on the conservative side are being replaced and the behavior of building users is suddenly now also shown. 2) Under the REIDA standard, the climate correction is undertaken on the basis of the more modern ATD (accumulated temperature differences) procedure, rather than the conventional approach of heating degree days. 3) The reference area is derived from the calculated energy reference area based on the rentable space, which involves a certain amount of haziness. 4) Prior-year figures are not accepted as proxy values for missing data in the reporting period. 5) The greenhouse gas emissions factors have been clarified and updated. In the case of most participants, the resulting figures were therefore lower than expected. This is not a case of generous calculations but learning effects. It is likely that revisions of the metrics will be repeatedly required as a result of further improvements to the methodology and to the quality of the data supplied. The era of precise measuring in the area of sustainability has therefore really only just begun.

Outlook: expansion to include further key figures

With the CO₂ Benchmarking, REIDA sets a standard and thus achieves a milestone in ESG reporting in Switzerland. The REIDA standard is looking to continuously improve not just in respect of methodology and data quality, but also – over time – by building in aspects of environmental sustainability that are not yet included. One of the key steps to be taken will be to cover real estate not just during the operating phase but across its entire lifecycle, and thereby incorporate the theme of gray energy in particular. The emancipation of ratings and certificates – which were originally helpful in providing transparency and comparability but have come up against their limits – and the transition to reporting “naked” metrics are therefore in full swing.

Fig. 57: Energy and CO₂e emissions intensity of the benchmark

Real estate portfolios in the REIDA CO₂ Benchmark Report 2022

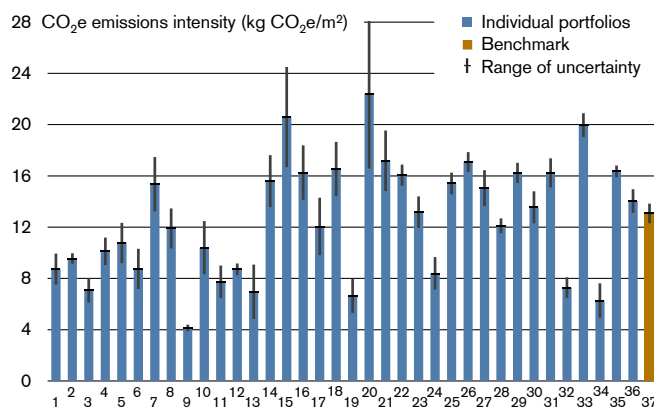


Source: REIDA CO₂ Benchmark Report 2022

Last data point: 2021

Fig. 58: CO₂e emissions intensity subject to uncertainty ranges

Real estate portfolios in the REIDA CO₂ Benchmark Report 2022



Source: REIDA CO₂ Benchmark Report 2022

Last data point: 2021

Concrete gold loses its glitter

Since the turnaround in interest rates, which began in 2022, investors have had alternatives to real estate investments. However, the positive development of user markets and Switzerland’s economic stability give this asset class protection against a hard landing.

There are now alternatives to real estate, ...

In the wake of rising inflation and the interest rate trend reversal initiated by the Swiss National Bank in June 2022, the era of negative interest rates – which greatly increased demand for real estate investments for many years and resulted in considerable value gains – came to an end. At the end of 2022 the yield difference between real estate investments and 10-year Swiss government bonds stood at just 144 basis points (bps), or some 100 bps below the long-term average (since 1996). In the negative interest era stretching from 2015 to August 2022, this yield premium averaged as much as 363 bps. (Fig. 59).

... but this asset class does offer some protection against inflation

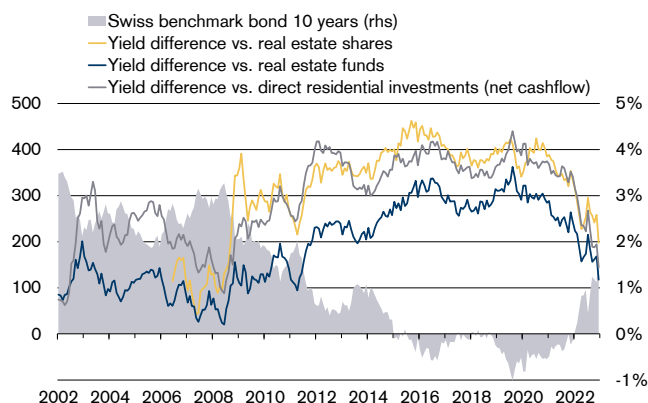
Real estate investments have therefore lost their special cachet as the “no alternative” asset category. However, the magnitude of the decline in yield premiums is likely to be exaggerating this loss in appeal. After all, real estate investments – unlike bonds – offer a certain amount of protection against inflation, as the underlying rental income is partially (residential property) or largely (commercial property) coupled to the consumer price index. Depending on the inflationary expectations of the investor and the scope for passing on higher costs, the real decline in the yield difference is therefore rather less than the above figures would suggest. However, there is no doubt that real estate investments have lost some of their luster.

Transaction market proves relatively robust

Despite this loss in attractiveness, the Swiss transaction market proved relatively robust last year, with prices rising – above all in the first semester. However, the transaction price index for multi-family dwellings published by Wüest Partner indicates that price momentum weakened in the second semester (Fig. 60). Two factors are likely to have prevented greater corrections thus far: First, a significant demand overhang had built up in previous years, which must first be worked through. Second, the Swiss economy is in extremely robust health, and higher rental income can be expected, particularly in the residential segment, thanks to scarcity in user markets. Nonetheless, market sentiment has clearly deteriorated over the last 12 months, and this is also feeding through into price expectations in the market (Fig. 60). The corresponding price indices, which typically capture market developments after a time lag, can therefore be expected to decline further over the course of 2023.

Fig. 59: There are now alternatives to real estate

Yield difference between real estate investments (dividend yield) and Swiss government bonds, in basis points, nominal



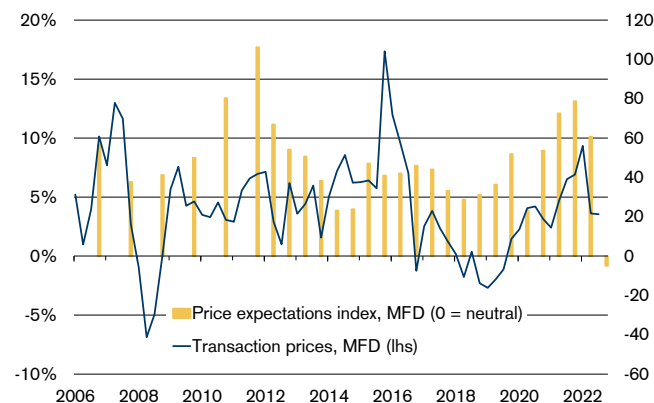
Historical performance data and financial market scenarios are no reliable indicator of future results.

Source: Refinitiv Datastream, IAZI, Credit Suisse

Last data point: 12/2022

Fig. 60: Price dynamism waning in transaction market

Transaction price index (annual growth rate) and price expectation index for multi-family dwellings (MFD)



Historical performance data and financial market scenarios are no reliable indicator of future results.

Source: Wüest Partner, HEV, FPRE, Credit Suisse

Last data point: Q4/2022

Imminent trend reversal in discount rates ...

The valuations of investment properties in existing real estate portfolios likewise largely defied the interest rate turnaround in 2022. Investment properties are generally valued on the basis of the discounted cash flow (DCF) method, where the discount rates applied play a crucial role as they determine the net present value of future cash flows (cf. next page). These discount rates, whose continual decline facilitated portfolio revaluation gains for so many years, mainly fell once again in 2022, as the example of valuations for listed real estate funds illustrates (Fig. 61). But the rate of decline slowed, however, and on average amounted to 12 bps for all funds in 2022 (previous year: -19 bps). Moreover, in contrast to the previous year, some real estate funds began to see a rise in their discount rates, which was the case for 3 out of 23 real estate funds whose financial year ended between March and September 2022. However, rising interest rate expectations and declining prices in the transaction market are likely to mean that rising discount rates will increasingly become the new reality as 2023 progresses, thereby putting the valuations of investment properties under pressure.

... will be partially cushioned by rosy income prospects

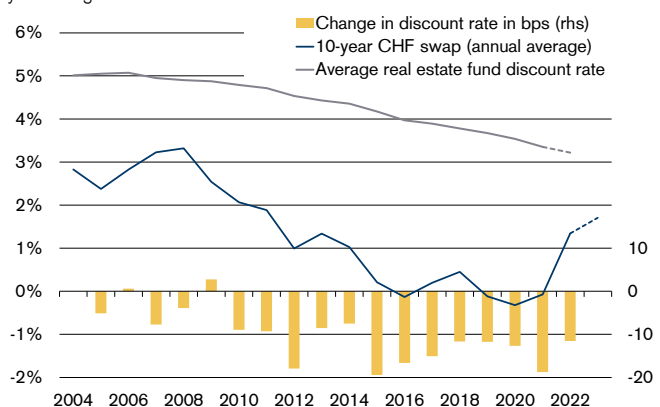
Valuations are better able to withstand this pressure when net rents are rising at the same time (Fig. 64). And in this respect, residential investment properties are particularly well placed. The trend of greater scarcity in the rental apartment market is feeding through into rising advertised rents. What's more, thanks to the expected increase in the mortgage reference interest rate this year, a proportion of rising debt capital costs and inflation can be passed on to tenants, albeit with a certain time lag (see p. 27). This market development is also reflected in the portfolios of institutional investors. In the case of residential property, rental income losses – which are largely attributable to vacancies – have halved within just three years. In the third quarter of 2022, they stood at 1.8% overall (Fig. 62). This decline manifested itself in all municipality types, but was particularly pronounced away from the urban centers. Rental income can therefore be expected to rise in real terms here too.

Declining risk premiums outside of urban centers

In contrast to a number of other market observers, we believe that while the slight shift of demand away from urban centers to other areas may have been partly caused by the COVID-19 pandemic, it will persist well beyond that phenomenon. In our view, this is attributable to insufficiently rapid densification in the urban centers, the associated price gulf between these centers and their surrounding areas, and the breakthrough of teleworking. In the medium term, we are therefore anticipating a declining risk premium for easily accessible locations in the municipalities of the wider urban areas, as well as in a number of rural regions. As a consequence, any price corrections here should be less pronounced than in prime locations in the large centers.

Fig. 61: Valuation trend reversal imminent

Level of average discount rate of listed Swiss real estate funds and average year-on-year change

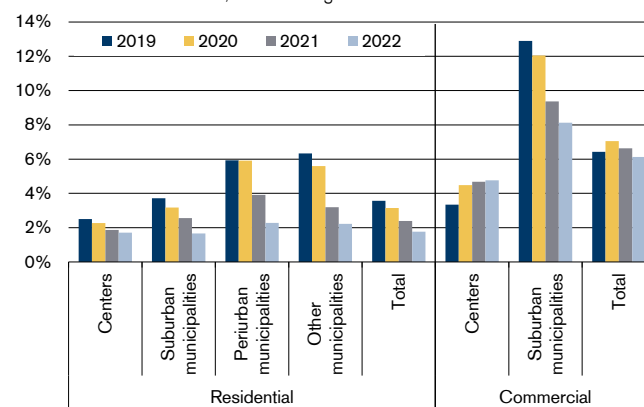


Historical performance data and financial market scenarios are no reliable indicator of future results.

Source: Refinitiv Datastream, Alphaprop, Credit Suisse
Last data point: January 22, 2023

Fig. 62: Sharp fall in vacancies, better income prospects

Vacancy-related rental income loss, as percentage of target rents, as per Q3; data source: more than 100,000 rental agreements of institutional investors



Source: Real Estate Investment Data Association (REIDA), Credit Suisse
Last data point: Q3/2022

How do rising interest rates impact the valuations of investment properties?

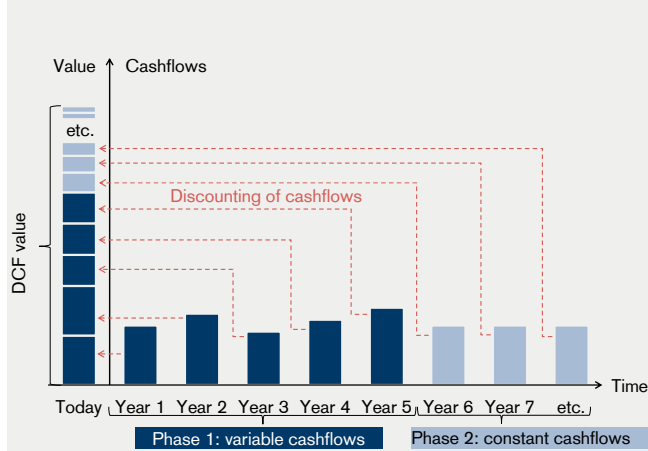
The properties held by institutional investors such as real estate funds and real estate investment companies are valued on an annual basis by an external real estate appraiser. For both multi-family dwellings and commercial properties, the most common valuation approach is the **discounted cash flow (DCF) method**, which is also found in other areas such as company valuation. The first stage in this process is to determine the free cash flows (income minus costs, provisions, and investments) for the coming five to ten years. Constant cash flows are then assumed for the remaining lifecycle. In order to ascertain the **DCF value** (present value or estimated current market value), these free cash flows are subjected to an interest charge on the basis of the applicable discount rate on the valuation reference date (Fig. 63).

This **discount rate** plays a crucial role in DCF valuations. The higher this figure, the less weighting cash flows expected in the distant future are given compared to more imminent cash flows. In addition to the estimation of the free cash flows, where assumptions have to be made regarding the development of various metrics such as rental income, vacancies, and ancillary cost elements, the determination of the discount rate is the greatest lever for the result of the property valuation. However, arriving at this figure is not so simple. There are various ways it can be determined, and the choice of method will depend on the information available, among other things.¹⁵ Two of the most commonly applied methods are the **analytical approach** and the **synthetic approach**. With the analytical approach, available figures for similar properties are used for comparative purposes. Furthermore, some of the larger valuation institutions have comprehensive databases of transactions that allow them to determine discount rates using statistical models (“hedonic pricing”). With the synthetic approach, a risk-free basic interest rate is taken, to which market-specific, location-specific, and property-specific supplements are then added. A common proxy for the risk-free basic interest rate is the yield on 10-year government bonds, where longer-term interest rate expectations are more important than present yields in this scenario. Among other things, this explains why discount rates react to changes in market interest rates only sluggishly.

Using a very simplified DCF valuation, it is possible to show how changes in the two key variables – discount rate and rental income – impact on the estimated market value (Fig. 64). Let us assume a residential investment property that has a DCF value of 100 after applying a real discount rate of 3.0% and real rental income growth of 0%. If the discount rate then rises to 3.5%, this would result in a value correction of 12.5%. However, if rental income growth were to rise to 2% at the same time, the value correction would amount to just 2.0%.

Fig. 63: Discounted cashflow method (DCF)

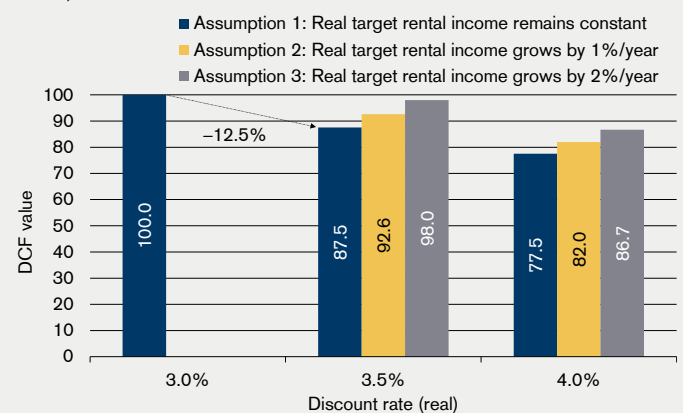
Schematic representation of valuation using DCF method



Source: Credit Suisse illustration based on Canonica (2009)¹⁶

Fig. 64: Impact of rising discount rates on market value

Simplified DCF valuation involving constant market-typical costs and income losses, taking into account various growth rates for real rental income (constant from Year 8 onward)



Source: Credit Suisse

¹⁵ Salzmann, B. (2014). Discount rates in real estate valuation, in: SIV-Infos 41, August 2014. (German only).

¹⁶ Canonica, F. (2009). Real estate valuation: an overview of appraiser knowledge, Swiss Association of Real Estate Appraisers (SIV). (German only).

Recalibration following interest rate turnaround

Listed real estate funds and shares reacted strongly to the interest rate turnaround in 2022. Following this correction, the market is now starting to recalibrate, and new investment opportunities are appearing thanks to more realistic valuations.

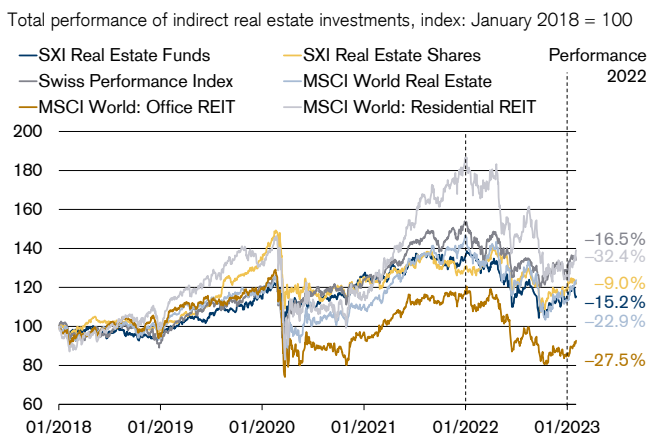
2022: a year to forget

For years, the possibility of an interest rate trend reversal hung like a Sword of Damocles over real estate funds and shares, which are sensitive to interest rates and in many cases were highly valued. The market's response was therefore pronounced when inflation rose strongly in Switzerland too in early 2022 and it became clear that the first key rate hike by the SNB since 2007 was imminent. For listed Swiss real estate investments, 2022 was an *annus horribilis*: The total performance of real estate funds since the beginning of the year was -23% at times (Fig. 65). The slump was likely exacerbated by institutional investors who were invested in direct and indirect real estate. Due to sharp corrections to the key equity and bond positions in their portfolios, the weightings of their real estate assets increased rapidly – in some cases beyond strategic or regulatory ceilings. This is clear from the average real estate quota of pension funds, which reached its highest year-end level at 25.9% in the fourth quarter of 2022 (Fig. 66). Some investors are thus likely to have been forced to reduce their exposure to liquid real estate positions, which will have weighed further on prices.

Swiss real estate takes less of a hit

However, a certain recovery was staged over the fall season, allowing real estate funds to end the 2022 stock market year with overall performance of -15.2% (Swiss Performance Index: -16.5%; Fig. 65). Even allowing for this recovery, 2022 was by far the worst stock market year for real estate funds since the start of the corresponding index in 1995. That said, Swiss real estate investors suffered a much less grievous correction than global real estate investors. Global real estate shares (or Real Estate Investment Trusts (REITs)) recorded overall performance of -22.9% in 2022. The correction suffered by European real estate stocks was even more severe (-36.6%). Swiss real estate shares meanwhile exhibited quite a strong relative performance (-9.0%), as compared to real estate funds they entered the downturn phase with less heady valuations.

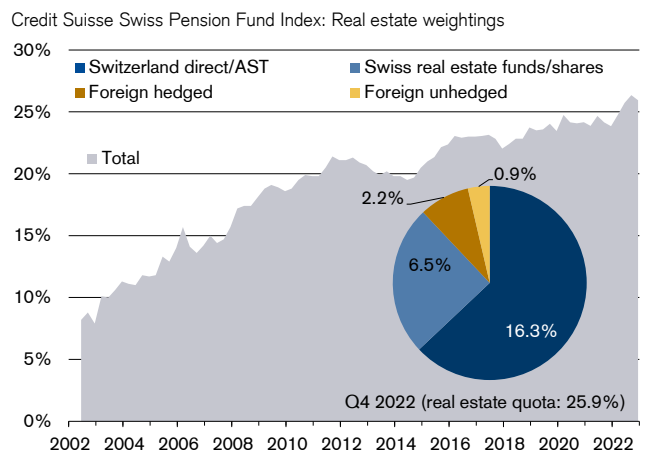
Fig. 65: Real estate investments consolidate after strong correction



Historical performance data and financial market scenarios are no reliable indicator of future results.

Source: Refinitiv Datastream, Credit Suisse Last data point: February 1, 2023

Fig. 66: Real estate weighting of pension funds at a peak



Source: Credit Suisse

Last data point: Q4/2022

Losers of the pandemic period perform best

A striking global development is that the real estate segments that suffered the mildest corrections in 2022 were those that had suffered most from the COVID-19 pandemic in previous years (above all hotels and retail premises, just -4.6% and -10.9% respectively). These investments benefited most after the coronavirus crisis had been mastered. By contrast, major corrections were recorded by residential real estate (-32.4%) and logistics (-29.8%). Both were among the

winners of the pandemic period, and the logistics and industrial real estate segment can continue to be classed as such, as it is still up 37.6% since the start of 2020. However, its valuations have suffered from the recent economic downturn, whereas the correction to the residential segment is likely to have been mainly driven by high global inflation, which reduces household purchasing power. This global picture was echoed in Switzerland too in 2022, where real estate investment companies (with their strong exposure to office and retail property, -9.0%) and real estate funds focusing on commercial property (-13.8%) outperformed residential real estate funds (-15.2%).

Slump in number of capital market transactions

With real estate investor sentiment having darkened and markets proving turbulent throughout the year, much less capital found its way into the various investment vehicles in 2022. In the case of real estate funds, the total volume of new launches and capital increases amounted to CHF 1.71 billion, a year-on-year decline of more than 50% (Fig. 67). Several planned capital increases with a total volume of CHF 500 million were postponed until further notice, as was the IPO of a large real estate fund. There was also little activity of note in connection with real estate investment companies. In particular, there was a collapse in the amount of new debt capital raised through the issuance of bonds, for which financing had become much more expensive (volume decline from CHF 1.7 billion in 2021 to just CHF 250 million).

Premiums now look fair following correction

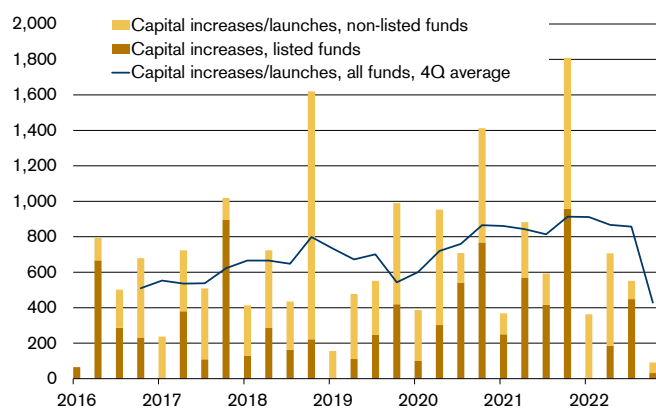
Due to the strong correction, the net asset value premiums being paid for indirect real estate investments have shrunk markedly (Fig. 68). In the case of listed real estate funds, premiums were still as high as 42.5% on average at the end of 2021 but plummeted to as low as 5.0% at one point in 2022. They bounced back as part of the wider recovery in the fall, however, with the average premium standing at 12.7% at the end of January 2023 (long-term average: 22.3%). With an average premium of -1.4%, funds focusing on commercial real estate remained relatively cheaply valued, and some were still trading at a discount. At 0.9%, the premiums of real estate shares were even further below their long-term average of 13.0% at the end of January 2023. In addition to a stronger focus on commercial property, these investments also differ from real estate funds in their financing structure, as they are 50% financed by debt capital (real estate funds: 27%).

Inflation-protected income an advantage

In the first few weeks of this year, listed real estate investments built on the recovery trend that first became evident at the end of 2022. Nonetheless, in view of rising bond yields, real estate funds and shares have lost some of their appeal. Premiums at the kind of levels seen before last year's correction are likely to be out of reach for a very long time. Net asset values (NAVs) could also come under pressure over the next few years, as annual property portfolio revaluations will no longer automatically show an increase. However, the correction of 2022 has opened up new opportunities for investors, particularly those with a long-term investment horizon. For example, commercial real estate funds exhibit not only relatively attractive valuations but also high dividend yields (4.1% on average), as well as a certain amount of protection against inflation.

Fig. 67: Capital inflows halved over the last 12 months

Capital increases and launches of real estate funds, in CHF mn

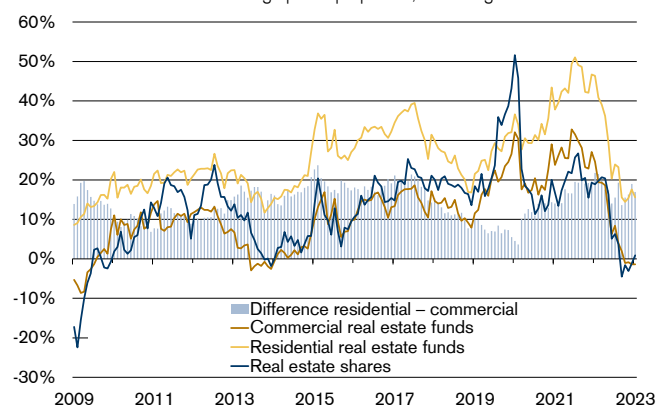


Source: Baublatt, Credit Suisse

Last data point: December 31, 2022

Fig. 68: Slump in premiums of listed real estate investments

Premiums of real estate funds and real estate shares, as % of net asset value; commercial real estate funds including special properties, excluding mixed funds



Historical performance data and financial market scenarios are no reliable indicator of future results.

Source: Refinitiv Datastream, Credit Suisse

Last data point: January 31, 2023

Market heads toward soft landing

Soft landing thanks to robust user markets

The last few years, which were characterized by lenders paying negative interest and inflation being almost non-existent, were exceptional and will be remembered as such in economic history. By contrast, neither the return of inflation nor rising interest rates in Switzerland were exceptional in 2022 – in stark contrast to Europe and the US. From an investor's perspective, the Swiss real estate market has experienced only a process of normalization following these Goldilocks years, rather than a reversal. However, even this normalization is painful, as it means the era in which considerable value gains could be achieved in portfolios with moderate risks and extremely favorable financing terms is over for now. Real estate valuations, which are still high in some cases, can be expected to come under greater pressure in 2023. Inflation has not gone away, and the SNB's key interest rate could rise to 1.75% by the summer. Accordingly, significant value corrections to investment properties in high single-digit to low double-digit territory over a period of several years cannot be ruled out. However, high user demand – particularly in the housing market – and growing indications of scarcity should facilitate a soft landing.

Interest rate turnaround calls for adjustments to investment strategy

The common strategy of focusing on core real estate with a focus on the urban centers, which proved successful in previous years, is likely to lose much of its appeal given low cashflow yields and rising discount rates. By contrast, active portfolio management combined with a balanced regional and sectoral diversification are gaining in importance. For listed real estate investments the correction has already occurred, which now makes it possible for investors to enter this market at modest premiums. However, as high annual valuation gains are likely to be a thing of the past, dividend yields will take on greater importance. Meanwhile, the even sharper corrections abroad – such as in the European market for listed real estate investments – in our view present a favorable market opportunity to reduce what is still a pronounced "home bias" in the real estate portfolios of many Swiss investors.

Our preferred real estate investments in 2023

Summary appraisal of individual real estate segments and preferred property types

Segment	General appraisal	Highest conviction
Residential	Thanks to brisk tenant demand and waning construction activity, income prospects have improved significantly, including in suburban and rural regions. Value corrections are a risk due to interest rate rises, although these should be at least partially cushioned by rising income. Particularly exposed here are core properties in prime locations whose yields no longer offer a sufficient risk premium.	<ul style="list-style-type: none"> - Properties in accessible municipalities in suburban and rural areas, particularly in German-speaking Switzerland - Flexible floorplans suitable for home working - Microapartments, student housing and co-living setups in large centers - Senior living (demographic change, declining number of new entries to retirement and care homes)
Office property	The reduced need for office space as a result of home working is likely to become more apparent for economy-related reasons. However, this trend is likely to be countered in the longer term by digitalization and employment growth. Furthermore, subdued construction activity will prevent an overshooting of supply.	<ul style="list-style-type: none"> - Premises in central locations easily reached by public transport - Modern, flexible floorplans that can be adjusted to hybrid working models with offices as communication zones - Urban co-working premises with an attractive operator
Retail property	Normalization of consumer behavior and shopping tourism is putting sales under pressure. Furthermore, the switch to the online channel is still not that advanced in Switzerland, which is why retail property is threatened by corrections on both the income and price side.	<ul style="list-style-type: none"> - Top high streets in the large centers - Urban shopping malls with high share of catering and services - Smaller retail centers with strong food anchor - Specialist stores (particularly gardening and DIY)
Logistics	Logistics properties are benefiting from both growing online trade and the urbanization trend. Supply is limited in Switzerland due to the scarcity of land, which makes long-term valuation gains likely.	<ul style="list-style-type: none"> - Packaging and distribution centers on main transport axes with a high degree of third-party usage - Small-scale city logistics premises
Hotels & catering	The catering industry and the vacation-focused hotel sector are on a recovery trajectory. Due to the significant expansion in the number of hotel beds in many large centers, however, it may be quite some time before occupancy figures return to pre-pandemic levels.	<ul style="list-style-type: none"> - Innovative city hotels with 3 to 4 stars that target an urban clientele of leisure travelers - Aparthotels/serviced apartments in alpine areas with co-working offers

Source: Credit Suisse

Ten questions – ten answers¹⁷

Where will interest rates lie come the year-end?

Interest rates will clearly take their cue from inflation this year. Although inflation has passed its peak in most countries, it is likely to take much longer for inflation rates to return to a level that central banks equate with price stability. The Swiss National Bank (SNB) is likewise anticipating a further decline in inflation, while at the same time forecasting another spike later on. It will therefore raise the key interest rate further in order to bring inflation back to its original levels for the longer term. In our main scenario, we are anticipating two further key rate hikes this year – in March and June – to a final level of 1.75%. With its money market operations, the SNB will ensure that SARON (Swiss Average Rate Overnight) more or less matches this level. The yield on 10-year CH government bonds, which is more difficult for the SNB to influence directly, is likely to end up at around 1.6% at the year-end.

Is a SARON mortgage a wiser choice?

SARON mortgages are a better option when there is no – or only a minimal – threat of short-term mortgage interest rates overshooting for quite a while and ending up higher than the interest rates on fixed mortgages, as was the case at the start of the 1990s. As the peak of the latest inflation cycle in Switzerland appears to have already passed and the SNB is keen to dampen down inflationary expectations by acting quickly, we believe there will only be – if at all – a short phase of higher SARON mortgage rates compared to the latest long-term mortgage interest rates. This is likely to be too short for the option of a long-term fixed mortgage to make sense on purely financial grounds. Only if mortgage interest rates were to rise over several years would a fixed mortgage be a better financial option in the current market environment. However, SARON mortgages are not suitable for all homeowners, as the residual risk of an unexpected interest rate development will never be eliminated, and for some households this poses too much of a financial threat. This is precisely the kind of risk that can be hedged against with a fixed mortgage. Accordingly, fixed mortgages will be the right choice for many households of limited means or those who wish to remove this anxiety.

When will the reference mortgage interest rate rise for the first time?

The rents of existing contractual arrangements in Switzerland are tied to a so-called reference mortgage interest rate. This is based on an average interest rate for all outstanding mortgages, as calculated by the SNB. As only a very small number of mortgages are added to (and removed from) the existing pool every quarter, the reference interest rate develops extremely sluggishly. Although the market rates for newly concluded mortgages have been rising ever since the end of 2021, the reference interest rate has yet to lift from its nadir of 1.25%. A number of market observers were confident that there would be an initial rise in March 2023, as due to a rise in SARON to 1.0% a substantial proportion of the entire Swiss mortgage portfolio is likewise experiencing a rate increase. We did not share this view, and are not expecting an initial rise (to 1.5%) until September 2023. According to our calculations, the second rise to 1.75% is then likely to follow in the summer of 2024.

By how much will rents rise in 2023?

The increase in the reference interest rate to 1.5% over the course of 2023 will allow landlords to increase rents by 3% – as long as they have passed on all previous cuts. As this applies to less than a half of property owners, only a certain proportion of landlords will be able to push through higher interest costs. Under Switzerland's rental legislation, however, landlords can pass on 40% of inflation to tenants, along with general cost increases. Some landlords will exercise this right as long as both components taken together justify a rent increase. For existing rental housing, we are therefore anticipating an overall rise in rents of 4%. Most of this increase will not take effect until 2024 due to compliance with tenancy law deadlines. Due to the growing scarcity of available rental property, market rents can also be expected to rise by the year-end, namely by an estimated 3%.

What about ancillary costs?

As ancillary costs are typically charged at the end of June, the sharp rises in energy prices over the last year will only fully feed through into rents in this year's ancillary cost billing round. This will above all affect tenants whose property is heated by oil or gas. Overall, they will have to swallow a cost rise of 58%. A small proportion is already likely to have made its way into the 2022 billing round. Ancillary heating costs are therefore expected to rise by around 40% in the 2023 billing

¹⁷ Where this material contains statements regarding the future, these statements are forward-looking and therefore entail various risks and uncertainties. They provide no guarantee of future results or price performance.

round. A further burden on tenants will come in the form of dramatically higher electricity costs, which will on average rise by just under 30% – albeit with significant differences from one municipality to another.

What valuation corrections to investment properties are likely?

As we expected, with just a few exceptions there were no valuation corrections recorded last year for portfolios with direct real estate holdings. We are now expecting such corrections for the first time in 2023. Rising discount rates can be expected to put valuations under pressure. Although positive fundamental data in the form of falling vacancies and rising rents in the two key segments of office and residential property should mitigate the decline in valuations in any case – as should higher rental income thanks to switches of tenants or valuation gains due to the improved positioning of properties by professional management – these factors are unlikely to prevent at least some decline in values. Spread over two or three years, a value decrease of around 10% cannot be ruled out.

Will we also see a price correction in the home ownership segment?

Despite declining demand for residential property, prices should rise once again in 2023, albeit at a negligible rate. The reason for this is the ongoing scarcity of supply. From 2024, however, price falls look very possible as a result of the more negative market environment, as a combination of rising interest rates and high property prices simply imposes too much of a cost burden. This in turn will reduce demand – to an extent that will sooner or later result in price corrections. Over the next one to two years we are expecting manageable price declines in low single-digit percentage territory, as the persistent scarcity of supply will cushion the decline. However, it is highly unlikely that property in Switzerland will end up in bargain territory. The transaction prices of condominiums only declined by 13.7% in total even after the collapse of the real estate price bubble at the start of the 1990s. In the case of single-family homes, the decline back then was even lower.

Will demand wane in the second homes market too?

The sharp rise in the level of mortgage interest rates will reduce demand for second homes too. However, the decline in this area will be less pronounced than for first homes. On the one hand this is because vacation homes – particularly in prime locations – are only really popular with fairly affluent households, which have a lower sensitivity to changes in interest rates than “threshold households”. On the other, in the great majority of tourist destinations it is no longer possible to build vacation homes, at least without usage restrictions. Accordingly, vacation homes of this kind will continue to attract strong demand. In the event of a further market slowdown, however, price declines are possible in tourist destinations too, although not all places will be affected to the same extent.

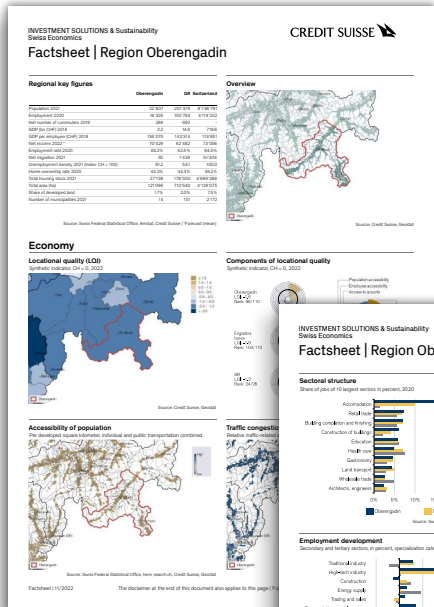
Is home working reducing demand for office space?

The breakthrough of flexible forms of working is just one of the trends currently playing out in the Swiss office property market. So this question is actually not that easy to answer. In view of remarkably strong employment growth in 2022 and pent-up demand during the pandemic – when many companies held back from renting new office premises – the decline in the supply rate should really have been greater than it was. This rate came down to just 5.6% in 2022 from a level of 5.8% in 2021. Compared to equivalent cyclical phases in the past, companies therefore appear to be requiring less additional space this time around. A similar picture is painted by vacancy figures, which are officially measured by some cities and cantons: Total vacancies have likewise seen a year-on-year decline, but much less so than in previous periods where strong employment growth was recorded. The home working effect can be expected to slow the market power of absorption for some time yet, before fundamental megatrends such as digitization and the tertiarization of the Swiss sectoral landscape ultimately provide a strong boost to demand for office space.

Do real estate investments still make sense in view of higher interest rates?

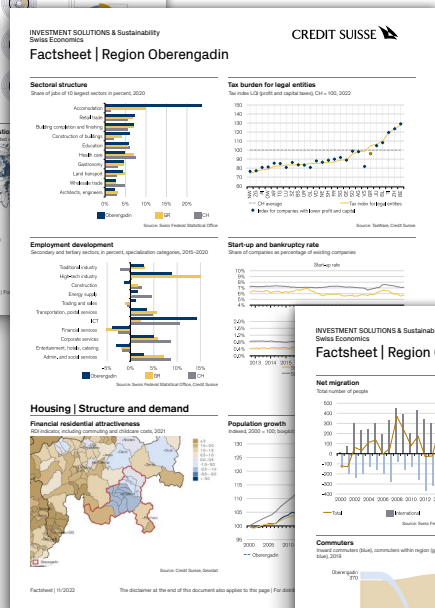
Even after the end of an extraordinary era in which there was no getting away from real estate as an investment, this asset class remains attractive. Sooner or later, the prosperity of a country is always reflected in a rise in the cost of land. In Switzerland's case, the scarcity of this commodity is likely to become even more of a problem, particularly over the next few years. Accordingly, real estate should remain an important part of almost every portfolio. Moreover, the record prices being paid for property right up until the spring of 2022 are now a thing of the past, and prices are gradually easing to more realistic levels.

Factsheets: Regional real estate markets at a glance



Periodically updated key indicators for the 110 economic regions

What are the locational qualities of the Oberengadin economic region? What sectors are particularly important for the region? How high are house prices in the region's municipalities? The Credit Suisse Factsheets answer these and many other questions concerning the regional economy, demographic developments and housing markets. Regularly updated statistics are presented in the form of meaningful diagrams, tables and maps.

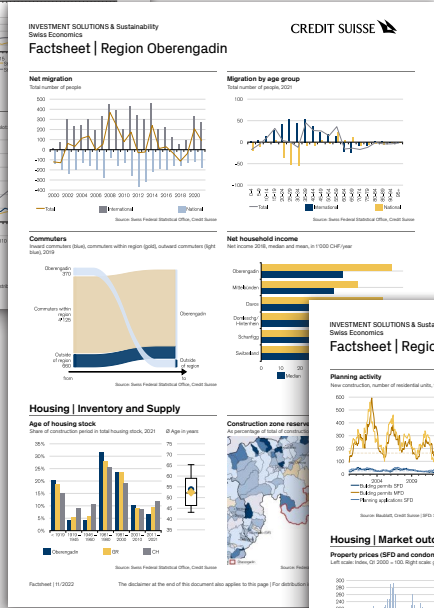


Regional economy and demographic developments

Are you planning to tap into new locations with your company or would you like to gain a picture of an economic region? The Credit Suisse Factsheets offer you up-to-date statistics on topics such as locational quality, accessibility and population developments.

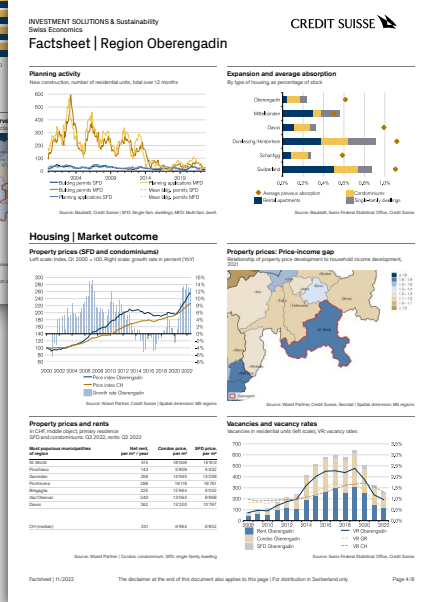
Regional housing markets

Are you planning to relocate or would you like to buy a home or investment property? The Credit Suisse Factsheets provide you with key facts about the regional housing market including indicators such as the age of existing housing, vacancy rates, planning activity and much more besides.



House prices and rents

Would you like to gain an overview of regional house prices and their development or compare the prices of different municipalities of the region? This information can also be obtained from the Credit Suisse Factsheets.



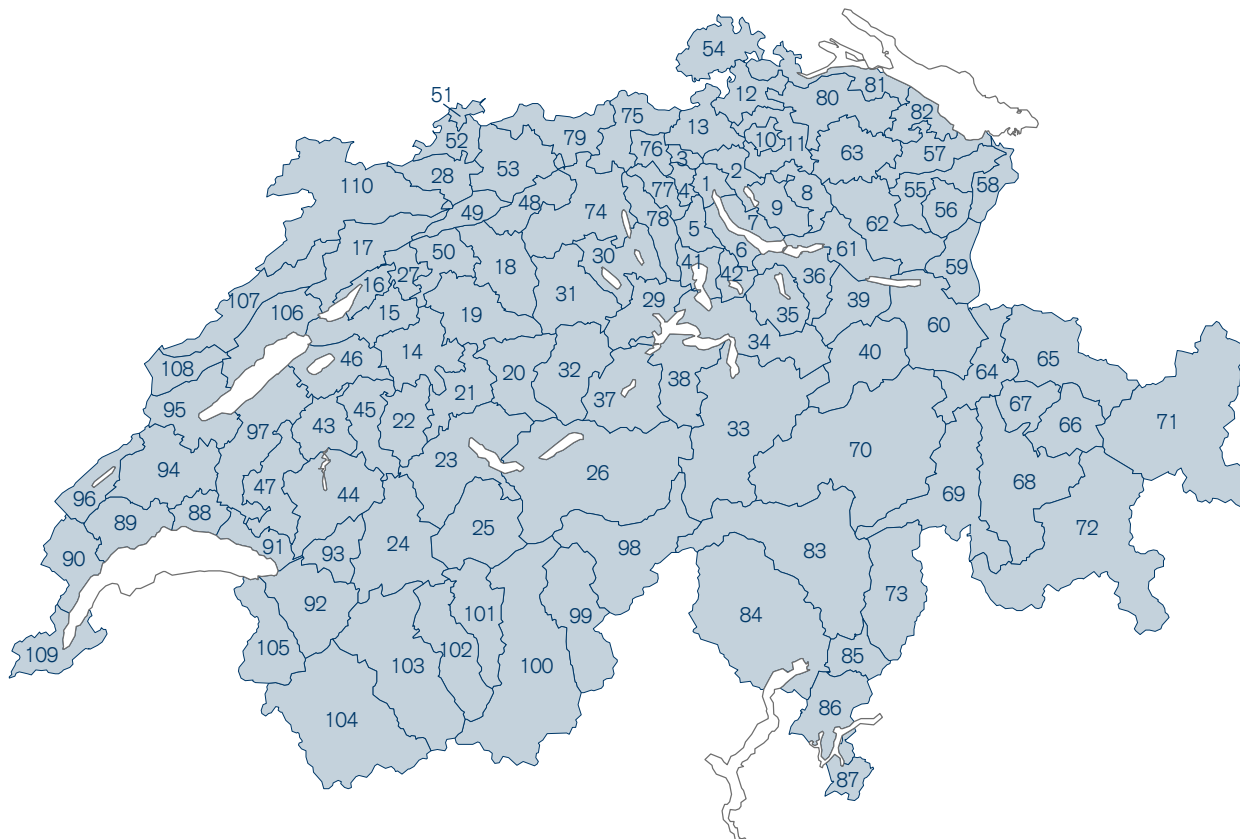
How to order individual Credit Suisse Factsheets:

Please contact your Credit Suisse client advisor to order factsheets on the individual economic regions in your preferred language (English, German, French or Italian). You will find a list of Switzerland's 110 economic regions on the next page.

Appendix : Switzerland's economic regions

Credit Suisse Real Estate Economics has defined these economic regions on the basis of the Mobilité Spatiale regions used by the Swiss Federal Statistical Office. Political borders play less of a role in the definitions than economic phenomena, geographical and demographic features, and mobility patterns. Consequently, some of these economic regions straddle cantonal borders.

Switzerland's economic regions



1 Zürich-Stadt	23 Thun	45 Sense	67 Schanfigg	89 Morges/Rolle
2 Glattal	24 Saanen/Obersimmental	46 Murten	68 Mittelbünden	90 Nyon
3 Furttal	25 Kandertal	47 Glâne/Veveyse	69 Domleschg/Hinterrhein	91 Vevey/Lavaux
4 Limmattal	26 Berner Oberland-Ost	48 Olten/Gösgen/Gäu	70 Surselva	92 Aigle
5 Knonaueramt	27 Grenchen	49 Thal	71 Engiadina bassa	93 Pays d'Enhaut
6 Zimmerberg	28 Laufental	50 Solothurn	72 Oberengadin	94 Gros-de-Vaud
7 Pfannenstiel	29 Luzern	51 Basel-Stadt	73 Mesolcina	95 Yverdon
8 Oberland-Ost	30 Sursee/Seetal	52 Unteres Baselbiet	74 Aarau	96 La Vallée
9 Oberland-West	31 Willisau	53 Oberes Baselbiet	75 Brugg/Zurzach	97 La Broye
10 Winterthur-Stadt	32 Entlebuch	54 Schaffhausen	76 Baden	98 Goms
11 Winterthur-Land	33 Uri	55 Appenzell A.Rh.	77 Mutschellen	99 Brig
12 Weinland	34 Innerschwyz	56 Appenzell I.Rh.	78 Freiamt	100 Visp
13 Unterland	35 Einsiedeln	57 St. Gallen/Rorschach	79 Fricktal	101 Leuk
14 Bern	36 March/Höfe	58 St. Galler Rheintal	80 Thurtal	102 Sierre
15 Erlach/Seeland	37 Sameraatal	59 Werdenberg	81 Untersee/Rhein	103 Sion
16 Biel/Seeland	38 Nidwalden/Engelberg	60 Sarganserland	82 Oberthurgau	104 Martigny
17 Jura bernois	39 Glarner Mittel- und Unterland	61 Linthgebiet	83 Tre Valli	105 Monthey/St-Maurice
18 Oberaargau	40 Glarner Hinterland	62 Toggenburg	84 Locarno	106 Neuchâtel
19 Burgdorf	41 Lorzenebene/Ennetsee	63 Wil	85 Bellinzona	107 La Chaux-de-Fonds
20 Oberes Emmental	42 Zuger Berggemeinden	64 Bündner Rheintal	86 Lugano	108 Val-de-Travers
21 Aaretal	43 La Sarine	65 Prättigau	87 Mendrisio	109 Genève
22 Schwarzwasser	44 La Gruyère	66 Davos	88 Lausanne	110 Jura

Source: Credit Suisse

Important Information

This report represents the views of Credit Suisse (CS) Investment Solutions & Sustainability and has not been prepared in accordance with the legal requirements designed to promote the independence of investment research. It is not a product of the CS Research Department even if it references published research recommendations. CS has policies in place to manage conflicts of interest including policies relating to dealing ahead of the dissemination of investment research. These policies do not apply to the views of Investment Solutions & Sustainability contained in this report. Please find further important information at the end of this material. Singapore: For accredited investors only. Hong Kong: For professional investors only. Australia: For wholesale clients only.

Risk Warning

Every investment involves risk, especially with regard to fluctuations in value and return. If an investment is denominated in a currency other than your base currency, changes in the rate of exchange may have an adverse effect on value, price or income.

This document may include information on investments that involve special risks. You should seek the advice of your independent financial advisor prior to taking any investment decisions based on this document or for any necessary explanation of its contents. Further information is also available in the information brochure "Risks Involved in Trading Financial Instruments" available from the Swiss Bankers Association.

Past performance is not an indicator of future performance. Performance can be affected by commissions, fees or other charges as well as exchange rate fluctuations.

Financial market risks

Historical returns and financial market scenarios are no reliable indicators of future performance. The price and value of investments mentioned and any income that might accrue could fall or rise or fluctuate. You should consult with such advisor(s) as you consider necessary to assist you in making these determinations.

Investments may have no public market or only a restricted secondary market. Where a secondary market exists, it is not possible to predict the price at which investments will trade in the market or whether such market will be liquid or illiquid.

Emerging markets

Where this document relates to emerging markets, you should be aware that there are uncertainties and risks associated with investments and transactions in various types of investments of, or related or linked to, issuers and obligors incorporated, based or principally engaged in business in emerging markets countries. Investments related to emerging markets countries may be considered speculative, and their prices will be much more volatile than those in the more developed countries of the world. Investments in emerging markets investments should be made only by sophisticated investors or experienced professionals who have independent knowledge of the relevant markets, are able to consider and weigh the various risks presented by such investments, and have the financial resources necessary to bear the substantial risk of loss of investment in such investments. It is your responsibility to manage the risks which arise as a result of investing in emerging markets investments and the allocation of assets in your portfolio. You should seek advice from your own advisers with regard to the various risks and factors to be considered when investing in an emerging markets investment.

Alternative investments

Hedge funds are not subject to the numerous investor protection regulations that apply to regulated authorized collective investments and hedge fund managers are largely unregulated. Hedge funds are not limited to any particular investment discipline or trading strategy, and seek to profit in all kinds of markets by using leverage, derivatives, and complex speculative investment strategies that may increase the risk of investment loss.

Commodity transactions carry a high degree of risk, including the loss of the entire investment, and may not be suitable for many private investors. The performance of such investments depends on unpredictable factors such as natural catastrophes, climate influences, hauling capacities, political unrest, seasonal fluctuations and strong influences of rolling-forward, particularly in futures and indices.

Investors in real estate are exposed to liquidity, foreign currency and other risks, including cyclical risk, rental and local market risk as well as environmental risk, and changes to the legal situation.

Private Equity

Private Equity (hereafter "PE") means private equity capital investment in companies that are not traded publicly (i.e. are not listed on a stock exchange), they are complex, usually illiquid and long-lasting. Investments in a PE fund generally involve a significant degree of financial and/or business risk. Investments in private equity funds are not principal-protected nor guaranteed. Investors will be required to meet capital calls of investments over an extended period of time. Failure to do so may traditionally result in the forfeiture of a portion or the entirety of the capital account, forego any future income or gains on investments made prior to such default and among other things, lose any rights to participate in future investments or forced to sell their investments at a very low price, much lower than secondary market valuations. Companies or funds may be highly leveraged and therefore may be more sensitive to adverse business and/or financial developments or economic factors. Such investments may face intense competition, changing business or economic conditions or other developments that may adversely affect their performance.

Interest rate and credit risks

The retention of value of a bond is dependent on the creditworthiness of the Issuer and/or Guarantor (as applicable), which may change over the term of the bond. In the event of default by the Issuer and/or Guarantor of the bond, the bond or any income derived from it is not guaranteed and you may get back none of, or less than, what was originally invested.

Investment Solutions & Sustainability

Investment Solutions & Sustainability is responsible for multi-asset class strategy formation and subsequent implementation in Credit Suisse's (CS) discretionary and advisory businesses. If shown, Model Portfolios are provided for illustrative purposes only. Your asset allocation, portfolio weightings and performance may look significantly different based on your particular circumstances and risk tolerance. Opinions and views of Investment Solutions & Sustainability may be different from those expressed by other Departments at CS. Investment Solutions & Sustainability views may change at any time without notice and with no obligation to update. CS is under no obligation to ensure that such updates are brought to your attention.

From time to time, Investment Solutions & Sustainability may reference previously published Research articles, including recommendations and rating changes collated in the form of lists. The recommendations contained herein are extracts and/or references to previously published recommendations by CS Research. For equities, this relates to the respective Company Note or Company Summary of the issuer. Recommendations for bonds can be found within the respective Research Alert (bonds) publication or Institutional Research Flash/Alert- Credit Update Switzerland. These items are available on request or via online banking.

Disclosures are available from:
<https://www.credit-suisse.com/disclosure>

Global disclaimer / Important information

The information provided herein constitutes marketing material; it is not investment research. This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject CS to any registration or licensing requirement within such jurisdiction.

References in this report to CS include Credit Suisse AG, the Swiss bank, its subsidiaries and affiliates. For more information on our structure, please use the following link: <https://www.credit-suisse.com>

NO DISTRIBUTION, SOLICITATION, OR ADVICE: This document is provided for information and illustrative purposes and is intended for your use only. It is not a solicitation, offer or recommendation to buy or sell any security or other financial instrument. Any information including facts, opinions or quotations, may be condensed or summarized and is expressed as of the date of writing. The information contained in this document has been provided as a general market commentary only and does not constitute any form of regulated investment research financial advice, legal, tax or other regulated service. It does not take into account the financial objectives, situation or needs of any persons, which are necessary considerations before making any investment decision. You should seek the advice of your independent financial advisor prior to taking any investment decisions based on this document or for

any necessary explanation of its contents. This document is intended only to provide observations and views of CS at the date of writing, regardless of the date on which you receive or access the information. Observations and views contained in this document may be different from those expressed by other Departments at CS and may change at any time without notice and with no obligation to update. CS is under no obligation to ensure that such updates are brought to your attention.

FORECASTS & ESTIMATES:

Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. To the extent that this report contains statements about future performance, such statements are forward looking and subject to a number of risks and uncertainties. Unless indicated to the contrary, all figures are unaudited. All valuations mentioned herein are subject to CS valuation policies and procedures.

CONFLICTS:

CS reserves the right to remedy any errors that may be present in this report. CS, its affiliates and/or their employees may have a position or holding, or other material interest or effect transactions in any securities mentioned or options thereon, or other investments related thereto and from time to time may add to or dispose of such investments. CS may be providing, or have provided within the previous 12 months, significant advice or investment services in relation to the investments listed in this report or a related investment to any company or issuer mentioned. Some investments referred to in this report will be offered by a single entity or an associate of CS or CS may be the only market maker in such investments. CS is involved in many businesses that relate to companies mentioned in this report. These businesses include specialized trading, risk arbitrage, market making, and other proprietary trading. TAX: Nothing in this report constitutes investment, legal, accounting or tax advice. CS does not advise on the tax consequences of investments and you are advised to contact an independent tax advisor. The levels and basis of taxation are dependent on individual circumstances and are subject to change.

SOURCES:

Information and opinions presented in this report have been obtained or derived from sources which in the opinion of CS are reliable, but CS makes no representation as to their accuracy or completeness. CS accepts no liability for a loss arising from the use of this report.

WEBSITES:

This report may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the report refers to website material of CS, CS has not reviewed the linked site and takes no responsibility for the content contained therein. Such address or hyperlink (including addresses or hyperlinks to CS's own website material) is provided solely for your convenience and information and the content of the linked site does not in any way form part of this report. Accessing such a website or following such a link through this report or CS's website shall be at your own risk.

DATA PRIVACY:

Your Personal Data will be processed in accordance with the Credit Suisse privacy statement accessible at your domicile through the official Credit Suisse website:

<https://www.credit-suisse.com/>

In order to provide you with marketing materials concerning our products and services, Credit Suisse Group AG and its subsidiaries may process your basic Personal Data (i.e. contact details such as name, e-mail address) until you notify us that you no longer wish to receive them. You can opt out from receiving these materials at any time by informing your Relationship Manager.

Distributing entities

Except otherwise specified herein, this report is distributed by Credit Suisse AG, a Swiss bank, authorized and regulated by the Swiss Financial Market Supervisory Authority Bahrain: This report is distributed by Credit Suisse AG, Bahrain Branch, a branch of Credit Suisse AG, Zurich/Switzerland, duly authorized and regulated by the Central Bank of Bahrain (CBB) as an Investment Business Firm Category 2. Related financial services or products are only made available to Accredited Investors, as defined by the CBB, and are not intended for any other persons. The Central Bank of Bahrain has not reviewed, nor has it approved, this document or the marketing of any investment vehicle referred to herein in the Kingdom of Bahrain and is not responsible for the performance of any such investment vehicle. Credit Suisse AG, Bahrain Branch is located at Level 21, East Tower, Bahrain World Trade Centre, Manama, Kingdom of Bahrain. Brazil: This report is distributed in Brazil by Credit Suisse (Brasil) S.A. Corretora de Títulos e Valores Mobiliários or its affiliates. Chile: This report is distributed by Credit Suisse Agencia de Valores (Chile) Limitada, a branch of Credit Suisse AG (incorporated in the Canton of Zurich), regulated by the Chilean Financial Market Commission. Neither the issuer nor the securities have been registered with the Financial Market Commission of Chile (Comisión para el Mercado Financiero) pursuant

to Law no. 18.045, the Ley de Mercado de Valores, and regulations thereunder, so they may not be offered or sold publicly in Chile. This document does not constitute an offer of, or an invitation to subscribe for or purchase, the securities in the Republic of Chile, other than to individually identified investors pursuant to a private offering within the meaning of article 4 of the Ley de Mercado de Valores (an offer that is not "addressed to the public in general or to a certain sector or specific group of the public"). DIFC: This information is being distributed by Credit Suisse AG (DIFC Branch). Credit Suisse AG (DIFC Branch) is licensed and regulated by the Dubai Financial Services Authority ("DFSA"). Related financial services or products are only made available to Professional Clients or Market Counterparties, as defined by the DFSA and are not intended for any other persons. Credit Suisse AG (DIFC Branch) is located on Level 9 East, The Gate Building, DIFC, Dubai, United Arab Emirates. France: This report is distributed by Credit Suisse (Luxembourg) S.A. Succursale en France (the "France branch"), which is a branch of Credit Suisse (Luxembourg) S.A., a duly authorized credit institution in the Grand Duchy of Luxembourg with registered address 5, rue Jean Monnet, L-2180 Luxembourg. The France branch is subject to the prudential supervision of the Luxembourg supervisory authority, the Commission de Surveillance du Secteur Financier (CSSF), and of the French supervisory authorities, the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and the Autorité des Marchés Financiers (AMF). Germany: This report is distributed by Credit Suisse (Deutschland) Aktiengesellschaft regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht ("BaFin"). Guernsey: This report is distributed by Credit Suisse AG Guernsey Branch, a branch of Credit Suisse AG (incorporated in the Canton of Zurich), with its place of business at Helvetia Court, Les Echelons, South Esplanade, St Peter Port, Guernsey. Credit Suisse AG Guernsey Branch is wholly owned by Credit Suisse AG and regulated by the Guernsey Financial Services Commission. Copies of the latest audited accounts of Credit Suisse AG are available on request. India: This report is distributed by Credit Suisse Securities (India) Private Limited (CIN no. U67120MH1996PTC104392), regulated by the Securities and Exchange Board of India as Research Analyst (registration no. INH00001030), as Portfolio Manager (registration no. INPO00002478) and as Stock Broker (registration no. INZ000248233), having registered address at 9th Floor, Ceejay House, Dr. Annie Besant Road, Worli, Mumbai – 400 018, India, T- +91-22 6777 3777. Israel: If distributed by Credit Suisse Financial Services (Israel) Ltd. in Israel: This document is distributed by Credit Suisse Financial Services (Israel) Ltd. Credit Suisse AG, including the services offered in Israel, is not supervised by the Supervisor of Banks at the Bank of Israel, but by the competent banking supervision authority in Switzerland. Credit Suisse Financial Services (Israel) Ltd. is a licensed investment marketer in Israel and thus, its investment marketing activities are supervised by the Israel Securities Authority. Italy: This report is distributed in Italy by Credit Suisse (Italy) S.p.A., a bank incorporated and registered under Italian law subject to the supervision and control of Banca d'Italia and CONSOB. Lebanon: This report is distributed by Credit Suisse (Lebanon) Finance SAL ("CSLF"), a financial institution incorporated in Lebanon and regulated by the Central Bank of Lebanon ("CBL") and having a financial institution license number 42. Credit Suisse (Lebanon) Finance SAL is subject to the CBL's laws and circulars as well as the laws and regulations of the Capital Markets Authority of Lebanon ("CMA"). CSLF is a subsidiary of Credit Suisse AG and part of the Credit Suisse Group (CS). The CMA does not accept any responsibility for the content of the information included in this report, including the accuracy or completeness of such information. The liability for the content of this report lies with the issuer, its directors and other persons, such as experts, whose opinions are included in the report with their consent. The CMA has also not assessed the suitability of the investment for any particular investor or type of investor. It is hereby expressly understood and acknowledged that investments in financial markets may involve a high degree of complexity and risk of loss in value and may not be suitable to all investors. The suitability assessment performed by CSLF with respect to this investment will be undertaken based on information that the investor would have provided to CSLF as at the date of such assessment and in accordance with Credit Suisse internal policies and processes. It is understood that the English language will be used in all communication and documentation provided by CS and/or CSLF. By accepting to invest in the product, the investor expressly and irrevocably confirms that he fully understands, and has no objection to the use of the English language. Luxembourg: This report is distributed by Credit Suisse (Luxembourg) S.A., a duly authorized credit institution in the Grand Duchy of Luxembourg with registered address 5, rue Jean Monnet, L-2180 Luxembourg. Credit Suisse (Luxembourg) S.A. is subject to the prudential supervision of the Luxembourg supervisory authority, the Commission de Surveillance du Secteur Financier (CSSF). Mexico: This document represents the view of the person who provides his/her services to C. Suisse Asesoría México, S.A. de C.V. ("C. Suisse Asesoría") and/or Banco Credit Suisse (México), S.A., Institución de Banca Múltiple, Grupo Financiero Credit Suisse (México) ("Banco CS") so that both C. Suisse Asesoría and Banco

CS reserve the right to change their mind at any time not assuming any liability in this regard. This document is distributed for informational purposes only and does not imply a personal recommendation or suggestion, nor the invitation to celebrate any operation and does not replace the communication you have with your executive in relation to C. Suisse Asesoría and/or Banco CS prior to taking any investment decision. C. Suisse Asesoría and/or Banco CS does not assume any responsibility for investment decisions based on information contained in the document sent, as the same may not take into account the context of the investment strategy and objectives of particular clients. Prospectus, brochures, investment regimes of investment funds, annual reports or periodic financial information contain all additional useful information for investors. These documents can be obtained free of charge directly from issuers, operators of investment funds, in the Internet page of the stock exchange in which they are listed or through its executive in C. Suisse Asesoría and/or Banco CS. Past performance and the various scenarios of existing markets do not guarantee present or future yields. In the event that the information contained in this document is incomplete, incorrect or unclear, please contact your Executive of C. Suisse Asesoría and/or Banco CS as soon as possible. It is possible that this document may suffer modifications without any responsibility for C. Suisse Asesoría and/or Banco CS. This document is distributed for informational purposes only and is not a substitute for the Operations Reports and/or Account Statements you receive from C. Suisse Asesoría and/or Banco CS in terms of the General Provisions Applicable to Financial Institutions and other Legal Entities that Provide Investment Services issued by the Mexican Banking and Securities Commission ("CNBV"). Given the nature of this document, C. Suisse Asesoría and/or Banco CS does not assume any responsibility derived from the information contained therein. Without prejudice to the fact that the information was obtained from or based on sources believed to be reliable by C. Suisse Asesoría and/or Banco CS, there is no guarantee that the information is either accurate or complete. Banco CS and/or C. Suisse Asesoría does not accept any liability arising from any loss arising from the use of the information contained in the document sent to you. It is recommended that the investor make sure that the information provided is in accordance to his/her personal circumstances and investment profile, in relation to any particular legal, regulatory or fiscal situation, or to obtain independent professional advice. C. Suisse Asesoría México, S.A. de C.V. is an investment adviser created in accordance with the Mexican Securities Market Law ("LMV"), registered with the CNBV under the folio number 30070. C. Suisse Asesoría México, S.A. de C.V. is not part of Grupo Financiero Credit Suisse (México), S.A. de C.V., or any other financial group in Mexico. C. Suisse Asesoría México, S.A. de C.V. is not an independent investment adviser as provided by LMV and other applicable regulations due to its direct relationship with Credit Suisse AG, a foreign financial institution, and its indirect relationship with the entities that make up Grupo Financiero Credit Suisse (México), S.A. de C.V. Netherlands: This report is distributed by Credit Suisse (Luxembourg) S.A., Netherlands Branch (the "Netherlands branch"), which is a branch of Credit Suisse (Luxembourg) S.A., a duly authorized credit institution in the Grand Duchy of Luxembourg with registered address 5, rue Jean Monnet, L-2180 Luxembourg. The Netherlands branch is subject to the prudential supervision of the Luxembourg supervisory authority, the Commission de Surveillance du Secteur Financier (CSSF), and of the Dutch supervisory authority, De Nederlandsche Bank (DNB), and of the Dutch market supervisor, the Autoriteit Financiële Markten (AFM). Portugal: This report is distributed by Credit Suisse (Luxembourg) S.A., Sucursal em Portugal (the "Portugal branch"), which is a branch of Credit Suisse (Luxembourg) S.A., a duly authorized credit institution in the Grand Duchy of Luxembourg with registered address 5, rue Jean Monnet, L-2180 Luxembourg. The Portugal branch is subject to the prudential supervision of the Luxembourg supervisory authority, the Commission de Surveillance du Secteur Financier (CSSF), and of the Portuguese supervisory authorities, the Banco de Portugal (BdP) and the Comissão do Mercado dos Valores Mobiliários (CMVM). Qatar: This information has been distributed by Credit Suisse (Qatar) L.L.C., which is duly authorized and regulated by the Qatar Financial Centre Regulatory Authority (QFCRA) under QFC License No. 00005. All related financial products or services will only be available to Eligible Counterparties (as defined by the QFCRA) or Business Customers (as defined by the QFCRA), including individuals, who have opted to be classified as a Business Customer, with net assets in excess of QR 4 million, and who have sufficient financial knowledge, experience and understanding to participate in such products and/or services. Therefore, this information must not be delivered to, or relied on by, any other type of individual. Saudi Arabia: This document is distributed by Credit Suisse Saudi Arabia (CR Number 1010228645), duly licensed and regulated by the Saudi Arabian Capital Market Authority pursuant to License Number 08104-37 dated 23/03/1429H corresponding to 21/03/2008AD. Credit Suisse Saudi Arabia's principal place of business is at King Fahad Road, Hay Al Mhamadiya, 12361- 6858 Riyadh, Saudi Arabia. Website: <https://www.credit-suisse.com/sa>.

Under the Rules on the Offer of Securities and Continuing Obligations, this document may not be distributed in the Kingdom except to such persons as are permitted under the Rules on the Offer of Securities and Continuing Obligations issued by the Capital Market Authority. The Capital Market Authority does not make any representation as to the accuracy or completeness of this document, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this document. Prospective purchasers of the securities offered hereby should conduct their own due diligence on the accuracy of the information relating to the securities. If you do not understand the contents of this document, you should consult an authorized financial advisor. Under the Investment Fund Regulations, this document may not be distributed in the Kingdom except to such persons as are permitted under the Investment Fund Regulations issued by the Capital Market Authority. The Capital Market Authority does not make any representation as to the accuracy or completeness of this document, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this document. Prospective subscribers of the securities offered hereby should conduct their own due diligence on the accuracy of the information relating to the securities. If you do not understand the contents of this document you should consult an authorized financial adviser. South Africa: This information is being distributed by Credit Suisse AG which is registered as a financial services provider with the Financial Sector Conduct Authority in South Africa with FSP number 9788 and / or by Credit Suisse (UK) Limited, which is registered as a financial services provider with the Financial Sector Conduct Authority in South Africa with FSP number 48779. Spain: This document is a marketing material and is provided by Credit Suisse AG, Sucursal en España, legal entity registered at the Comisión Nacional del Mercado de Valores for information purposes. It is exclusively addressed to the recipient for personal use only and, according to current regulations in force, by no means can it be considered as a security offer, personal investment advice or any general or specific recommendation of products or investment strategies with the aim that you perform any operation. The client shall be deemed responsible, in all cases, for taking whatever decisions on investments or disinvestments, and therefore the client takes all responsibility for the benefits or losses resulting from the operations that the client decides to perform based on the information and opinions included in this document. This document is not the result of a financial analysis or research and therefore, neither it is subject to the current regulations that apply to the production and distribution of financial research, nor its content complies with the legal requirements of independence of financial research. Turkey: The investment information, comments and recommendations contained herein are not within the scope of investment advisory activity. The investment advisory services are provided by the authorized institutions to the persons in a customized manner taking into account the risk and return preferences of the persons. Whereas, the comments and advices included herein are of general nature. Therefore recommendations may not be suitable for your financial status or risk and yield preferences. For this reason, making an investment decision only by relying on the information given herein may not give rise to results that fit your expectations. This report is distributed by Credit Suisse Istanbul Menkul Değerler Anonim Şirketi, regulated by the Capital Markets Board of Turkey, with its registered address at Levazim Mahallesi, Koru Sokak No. 2 Zorlu Center Terasveiler No. 61 34340 Besiktas/Istanbul-Turkey. United Kingdom: This material is distributed by Credit Suisse (UK) Limited. Credit Suisse (UK) Limited, is authorized by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Where this material is distributed into the United Kingdom by an offshore entity not exempted under the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 the following will apply: To the extent communicated in the United Kingdom ("UK") or capable of having an effect in the UK, this document constitutes a financial promotion which has been approved by Credit Suisse (UK) Limited, which is authorized by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority for the conduct of investment business in the UK. The registered address of Credit Suisse (UK) Limited is Five Cabot Square, London, E14 4QR. Please note that the rules under the UK's Financial Services and Markets Act 2000 relating to the protection of retail clients will not be applicable to you and that any potential compensation made available to "eligible claimants" under the UK's Financial Services Compensation Scheme will also not be available to you. Tax treatment depends on the individual circumstances of each client and may be subject to changes in future.

Important regional disclosure information

Pursuant to CVM Resolution No. 20/2021, of February 25, 2021, the author(s) of the report hereby certify(ies) that the views expressed in this report solely and exclusively reflect the personal opinions of the author(s) and have been prepared independently, including with respect to Credit Suisse. Part of

the author(s)'s compensation is based on various factors, including the total revenues of Credit Suisse, but no part of the compensation has been, is, or will be related to the specific recommendations or views expressed in this report. In addition, Credit Suisse declares that: Credit Suisse has provided, and/or may in the future provide investment banking, brokerage, asset management, commercial banking and other financial services to the subject company/companies or its affiliates, for which they have received or may receive customary fees and commissions, and which constituted or may constitute relevant financial or commercial interests in relation to the subject company/companies or the subject securities.

UNITED STATES: NEITHER THIS REPORT NOR ANY COPY THEREOF MAY BE SENT, TAKEN INTO OR DISTRIBUTED IN THE UNITED STATES OR TO ANY US PERSON (within the meaning of Regulation S under the US Securities Act of 1933, as amended).

APAC - IMPORTANT NOTICE

The information provided herein constitutes marketing material; it is not investment research. For all, except accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: This material has been prepared by Credit Suisse AG ("Credit Suisse") as general information only. This material is not and does not purport to provide substantive research or analysis and, accordingly, is not investment research or a research recommendation for regulatory purposes. It does not take into account the financial objectives, situation or needs of any person, which are necessary considerations before making any investment decision. The information provided is not intended to provide a sufficient basis on which to make an investment decision and is not a personal recommendation or investment advice. Credit Suisse makes no representation as to the suitability of the products or services specified in this material for any particular investor. It does not constitute an invitation or an offer to any person to subscribe for or purchase any of the products or services specified in this material or to participate in any other transactions. The only legally binding terms are to be found in the applicable product documentation or specific contracts and confirmations prepared by Credit Suisse. For accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: This material has been prepared by Credit Suisse AG ("Credit Suisse") as general information only. This material is not and does not purport to provide substantive research or analysis and, accordingly, is not investment research for regulatory purposes. It does not take into account the financial objectives, situation or needs of any person, which are necessary considerations before making any investment decision. Credit Suisse makes no representation as to the appropriateness of the products or services specified in this material for any particular investor. It does not constitute an invitation or an offer to any person to subscribe for or purchase any of the products or services specified in this material or to participate in any other transactions. The only legally binding terms are to be found in the applicable product documentation or specific contracts and confirmations prepared by Credit Suisse. For all: In connection with the products specified in this material, Credit Suisse and/or its affiliates may:

- (i) have had a previous role in arranging or providing financing to the subject entities;
- (ii) be a counterparty in any subsequent transaction in connection with the subject entities; or
- (iii) pay, or may have paid, or receive, or may have received, one-time or recurring remuneration from the entities specified in this material, as part of its/their compensation. These payments may be paid to or received from third parties.

Credit Suisse and/or its affiliates (including their respective officers, directors and employees) may be, or may have been, involved in other transactions with the subject entities specified in this material or other parties specified in this material which are not disclosed in this material. Credit Suisse, for itself and on behalf of each of its affiliates, reserves the right to, provide and continue to provide services, and deal and continue to deal with the subject entities of the products specified in this material or other parties in connection with any product specified in this material. Credit Suisse or its affiliates may also hold, or may be holding, trading positions in the share capital of any of the subject entities specified in this material.

For all, except accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: A Credit Suisse affiliate may have acted upon the information and analysis contained in this material before being made available to the recipient. A Credit Suisse affiliate may, to the extent permitted by law, participate or invest in other financing

transactions with the issuer of any securities referred to herein, perform services or solicit business from such issuers, or have a position or effect transactions in the securities or options thereof. To the fullest extent permitted by law, Credit Suisse and its affiliates and each of their respective directors, employees and consultants do not accept any liability arising from an error or omission in this material or for any direct, indirect, incidental, specific or consequential loss and/or damage suffered by the recipient of this material or any other person from the use of or reliance on the information set out in this material. None of Credit Suisse or its affiliates (or their respective directors, officers, employees or advisers) makes any warranty or representation as to the accuracy, reliability and/or completeness of the information set out in this material. The information contained in this material has been provided as a general market commentary only and does not constitute any form of regulated financial advice, legal, tax or other regulated service. Observations and views contained in this material may be different from, or inconsistent with, the observations and views of Credit Suisse's Research analysts, other divisions or the proprietary positions of Credit Suisse. Credit Suisse is under no obligation to update, notify or provide any additional information to any person if Credit Suisse becomes aware of any inaccuracy, incompleteness or change in the information contained in the material. To the extent that this material contains statements about future performance, such statements are forward looking and subject to a number of risks and uncertainties. Past performance is not a reliable indicator of future performance.

For accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: A Credit Suisse affiliate may have acted upon the information and analysis contained in this material before being made available to the recipient. A Credit Suisse affiliate may, to the extent permitted by law, participate or invest in other financing transactions with the issuer of any securities referred to herein, perform services or solicit business from such issuers, or have a position or effect transactions in the securities or options thereof. To the fullest extent permitted by law, Credit Suisse and its affiliates and each of their respective directors, employees and consultants do not accept any liability arising from an error or omission in this material or for any direct, indirect, incidental, specific or consequential loss and/or damage suffered by the recipient of this material or any other person from the use of or reliance on the information set out in this material. None of Credit Suisse or its affiliates (or their respective directors, officers, employees or advisers) makes any warranty or representation as to the accuracy, reliability and/or completeness of the information set out in this material. The information contained in this material has been provided as a general market commentary only and does not constitute any form of legal, tax or other regulated service. Observations and views contained in this material may be different from, or inconsistent with, the observations and views of Credit Suisse's Research analysts, other divisions or the proprietary positions of Credit Suisse. Credit Suisse is under no obligation to update, notify or provide any additional information to any person if Credit Suisse becomes aware of any inaccuracy, incompleteness or change in the information contained in the material. To the extent that this material contains statements about future performance, such statements are forward looking and subject to a number of risks and uncertainties. Past performance is not a reliable indicator of future performance. For all: This material is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of, or is located in, any jurisdiction where such distribution, publication, availability or use would be contrary to applicable law or regulation, or which would subject Credit Suisse and/or its subsidiaries or affiliates to any registration or licensing requirement within such jurisdiction. Materials have been furnished to the recipient and should not be redistributed without the express prior written consent of Credit Suisse. For further information, please contact your Relationship Manager. To the extent that this material contains an appendix comprising research reports, the following additional notice applies to such appendix.

ADDITIONAL IMPORTANT NOTICE FOR APPENDIX

The reports in the Appendix ("Reports") have been authored by members of the Credit Suisse Research department, and the information and opinions expressed therein were as of the date of writing and are subject to change without notice. Views expressed in respect of a particular security in the Reports may be different from, or inconsistent with, the observations and views of the Credit Suisse Research department of the Investment Banking division due to the differences in evaluation criteria. These Reports have been previously published by Credit Suisse Research on the web:

Credit Suisse does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that Credit Suisse

may have a conflict of interest that could affect the objectivity of these Reports.

For all, except accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: Credit Suisse may not have taken any steps to ensure that the securities referred to in these Reports are suitable for any particular investor. Credit Suisse will not treat recipients of the Reports as its customers by virtue of their receiving the Reports. For accounts managed by relationship managers and/or investment consultants of Credit Suisse AG, Hong Kong Branch: Credit Suisse may not have taken any steps to ensure that the securities referred to in these Reports are appropriate for any particular investor. Credit Suisse will not treat recipients of the Reports as its customers by virtue of their receiving the Reports. For all: For a discussion of the risks of investing in the securities mentioned in the Reports, please refer to the following Internet link: <https://investment.credit-suisse.com/re/riskdisclosure/>

For information regarding disclosure information on Credit Suisse Investment Banking rated companies mentioned in this report, please refer to the Investment Banking division disclosure site at: <https://rave.credit-suisse.com/disclosures/>

For further information, including disclosures with respect to any other issuers, please refer to the Credit Suisse Global Research Disclosure site at: <https://www.credit-suisse.com/disclosure/>

AUSTRALIA This material is distributed in Australia by Credit Suisse AG, Sydney Branch solely for information purposes only to persons who are "wholesale clients" (as defined by section 761G(7) of the Corporations Act). Credit Suisse AG, Sydney Branch does not guarantee the performance of, nor make any assurances with respect to the performance of any financial product referred herein. In Australia, Credit Suisse Group entities, other than Credit Suisse AG, Sydney Branch, are not authorized deposit-taking institutions for the purposes of the Banking Act 1959 (Cth.) and their obligations do not represent deposits or other liabilities of Credit Suisse AG, Sydney Branch. Credit Suisse AG, Sydney Branch does not guarantee or otherwise provide assurance in respect of the obligations of such Credit Suisse entities or the funds. **HONG KONG:** This material is distributed in Hong Kong by Credit Suisse AG, Hong Kong Branch, an Authorized Institution regulated by the Hong Kong Monetary Authority and a Registered Institution regulated by the Securities and Futures Commission, and was prepared in compliance with section 16 of the "Code of Conduct for Persons Licensed by or Registered with the Securities and Futures Commission." The contents of this material have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to any offer. If you are in any doubt about any of the contents of this material, you should obtain independent professional advice. No one may have issued or had in its possession for the purposes of issue, or issue or have in its possession for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or

material relating to this product, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than where this product is or is intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made thereunder. **SINGAPORE:** This material is distributed in Singapore by Credit Suisse AG, Singapore Branch, which is licensed by the Monetary Authority of Singapore under the Banking Act (Cap. 19) to carry on banking business. This report has been prepared and issued for distribution in Singapore to institutional investors, accredited investors and expert investors (each as defined under the Financial Advisers Regulations ("FAR")) only. Credit Suisse AG, Singapore Branch may distribute reports produced by its foreign entities or affiliates pursuant to an arrangement under Regulation 32C of the FAR. Singapore recipients should contact Credit Suisse AG, Singapore Branch at +65-6212-2000 for matters arising from, or in connection with, this report. By virtue of your status as an institutional investor, accredited investor or expert investor, Credit Suisse AG, Singapore Branch is exempted from complying with certain requirements under the Financial Advisers Act, Chapter 110 of Singapore (the "FAA"), the FAR and the relevant Notices and Guidelines issued thereunder, in respect of any financial advisory service which Credit Suisse AG, Singapore branch may provide to you. These include exemptions from complying with:

- (i) Section 25 of the FAA (pursuant to Regulation 33(1) of the FAR)
- (ii) Section 27 of the FAA (pursuant to Regulation 34(1) of the FAR); and
- (iii) Section 36 of the FAA (pursuant to Regulation 35(1) of the FAR).

Singapore recipients should contact Credit Suisse AG, Singapore Branch for any matters arising from, or in connection with, this material. If you have any queries/objections relating to the receipt of marketing materials from us, please contact our Data Protection Officer at dataprotectionofficer.pb@credit-suisse.com

(for Credit Suisse AG, HK Branch) or PDPO.SGD@credit-suisse.com (for Credit Suisse AG, SG Branch) or csau.privacyofficer@credit-suisse.com (for Credit Suisse AG, Sydney Branch).

The entire contents of this document are protected by copyright law (all rights reserved). This document or any part thereof may not be reproduced, transmitted (electronically or otherwise), altered or used for public or commercial purposes, without the prior written permission of Credit Suisse. © 2023, Credit Suisse Group AG and/or its affiliates. All rights reserved. Credit Suisse AG (Unique Entity Number in Singapore: S73FC2261L) is incorporated in Switzerland with limited liability.

23C014A_IS

Other publications from Credit Suisse

Retail Outlook 2023

The annual study on the Swiss retail sector explores the economic prospects for the sector as well as current challenges.

January 4, 2023

Swiss Construction Index

Q1 2023

The quarterly Swiss Construction Index provides up-to-date information about the economy in the construction industry and contains estimates and background information regarding sales performance in the construction sector.

February 22, 2023

Monitor Switzerland

Q1 2023

The Monitor Switzerland contains analysis and forecasts for the Swiss economy.

March 14, 2023

Swiss Real Estate Monitor

Q2 2023

The Real Estate Monitor provides an update on all market developments related to the real estate sector three times a year, thereby supplementing the fundamental analyses and special topics addressed in the annual Credit Suisse Real Estate Study.

June 6, 2023

**The next Real Estate Market study will be published in March 2024.
Subscribe to our publications directly from your relationship manager.**

