Investment Solutions & Products
Swiss Economics

CREDIT SUISSE

Interest rates remain negative for the time being

Monitor Switzerland | Fourth quarter 2019

Impressum

Publisher, Credit Suisse AG, Investment Solutions & Products

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

Oliver Adler
Chief Economist Switzerland
+41 44 333 09 61
oliver.adler@credit-suisse.com

Authors

Oliver Adler

Maxime Botteron

Sara Carnazzi Weber

Emilie Gachet

Tiziana Hunziker

Alexander Lohse

Claude Maurer

Thomas Rieder

Fabian Waltert

Orders

Direct from your client advisor or from any Credit Suisse branch.

Contribution

Vojo Gunevski

Ewelina Krankowska-Kedziora

Editorial deadline

5 December 2019

Copyright

Editorial

Dear Reader

On January 15, 2015 – or almost exactly five years ago – the Swiss National Bank (SNB) announced that it would be cutting its key interest rate to well below zero. If someone had been bold enough to predict five years earlier that interest rates in Switzerland would ever reach such a low level, he or she would probably have been dismissed as being rather light in the head. Yet today the yields on Swiss government bonds are in negative territory up to terms of well beyond 30 years, while interest rates are also negative in numerous other European countries.

The focus article of this edition of Monitor Switzerland takes a detailed look at the causes and repercussions of negative interest rates, not least because this issue continues to be hotly debated in the press and public domain generally. The SNB's influence – i.e. its room for maneuver when determining the level of interest rates – is much more limited than is often assumed. First, the trend of declining interest rates is a global phenomenon that has persisted for decades and also encompasses the Swiss market. This trend is attributable on the one hand to the decline in inflation – and in this sense to a restrictive central bank policy that focuses on monetary stability – and on the other to the decline in real interest rates. The latter are a consequence of (among other things) demographic aging, lower productivity growth, a high savings rate (partly for cyclical reasons), and a fairly low level of investment demand. Even the "big" central banks such as the Federal Reserve and the European Central Bank can only influence this real component of interest rates in a temporary way.

Second, the SNB is confronted with the so-called monetary policy "trilemma": It essentially has a choice between managing key interest rates and managing the exchange rate – unless it chooses the third option of interfering with capital flows between Switzerland and the outside world. However, this latter measure would do enormous damage to the Swiss economy and financial center. As things stand, it seems premature to assume that the SNB will simply let the exchange rate "do its thing.". Given the still fragile global and European economy, the risk of such a laissez-faire approach to a significant proportion of our export sector would be too great. Furthermore, even in such a scenario it is unlikely that long-term interest rates would rise and thus (for example) improve the investment income outlook for Swiss pension funds.

This makes it all the more important to tackle, swiftly and consistently, the structural problems – particularly in the Swiss pension system – that have been exacerbated by low interest rates. This is an area in which the SNB is powerless to help.

We thank you for your interest, look forward to your feedback, and wish you all the best for the New Year.

Michael Strobaek
Global Chief Investment Officer

Oliver Adler
Chief Economist Switzerland

Contents Page

Global environment

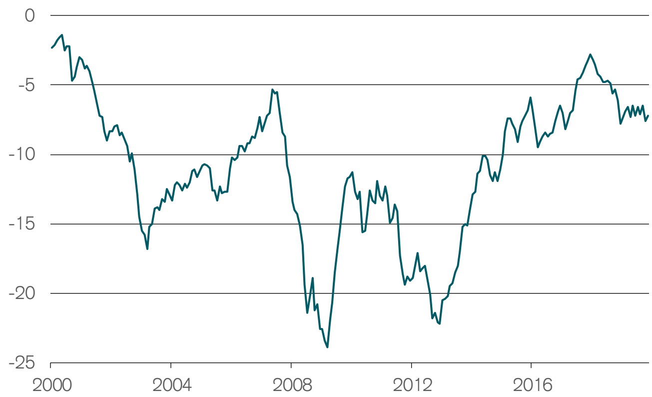
Europe

Europe has suffered disproportionately from the recent weakness in global manufacturing, with home-made crises – such as the problems of the automotive industry and the repercussions of Brexit – weighing additionally on economic growth. The improvement that we expect to see should therefore have a clear positive effect. Furthermore, the outlook for consumer spending remains good, as European households are in a buying mood thanks to low unemployment and rising real incomes. Furthermore, the expansionary monetary policy of the European Central Bank (ECB) is having a supportive effect, and even countries like Germany are considering an increase in government spending.

claude.maurer@credit-suisse.com

European households exhibit optimism

EK consumer confidence indicator



Source: Datastream, Credit Suisse

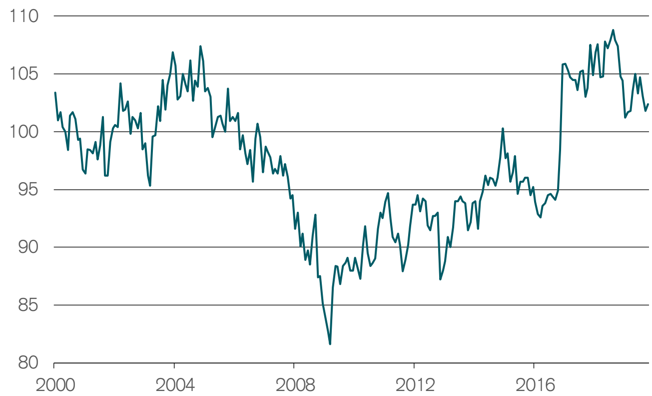
USA

It is clear that the Sino-US trade dispute is weighing on global trade, as the sharpest declines in global industrial production have been recorded in the direct aftermath of tariff increases being implemented. However, this conflict does not appear to be having any real negative impact on the sentiment of US companies, as the US small business optimism index remains well above its long-term average. The US economy's relatively strong resilience is buoyed by the more expansionary monetary policy being pursued by the Federal Reserve. That said, the Fed is now likely to pause for a while after having cut key interest rates three times in 2019.

claude.maurer@credit-suisse.com

Small US companies remain optimistic

US NFIB small business optimism index



Source: Datastream, Credit Suisse

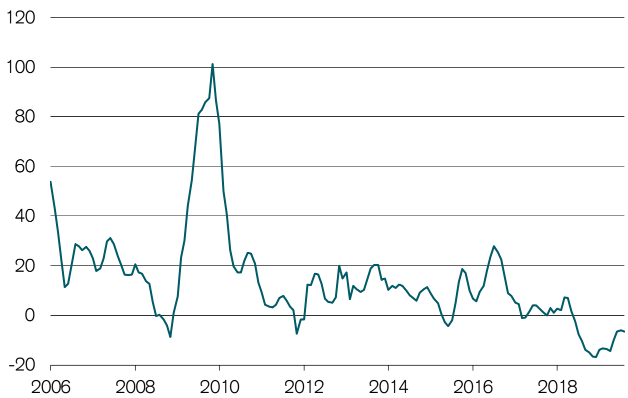
China

China's economic growth is likely to weaken slightly again in 2020. However, the slowdown is likely to be attributable to more than just the trade dispute with the US – consumer spending in China itself is also weakening. For example, car sales in China have been declining for the last 12 months or so. To prevent the economy from weakening too severely, the central bank and the government are likely to adopt counteractive measures in the form of credit stimuli and quantitative easing.

claude.maurer@credit-suisse.com

Fewer car sales in China

Year-on-year change in automotive sales in China, moving three-month average, in %



Source: Datastream, Credit Suisse

GDP growth only moderate in 2020 too

Although economic output is likely to be higher in 2020 (1.4%) than in 2019 (0.9%), this acceleration will be exaggerated by various major sporting events. Nonetheless, the manufacturing sector should stabilize.

Growth in the third quarter thanks to two sectors

Swiss economic growth recorded a quarter-on-quarter rise of 0.4% in the third quarter of 2019, a surprisingly strong increase. However, this growth relates almost exclusively to the booming pharma industry and record-high electricity exports, the latter being attributable to full reservoirs following a winter characterized by heavy snowfall. Excluding these two areas, the Swiss economy recorded only weak growth, while the capital goods industry actually recorded a decline. Against this backdrop, we are reducing our forecast for growth in gross domestic product (GDP) in 2019 to 0.9% (from 1.1%).

Manufacturing set to stabilize in 2020; consumer spending to remain supportive

For 2020 we are forecasting GDP growth of 1.4%. The situation in the capital goods industry should stabilize. The purchasing managers index (PMI) that we produce for the Swiss manufacturing sector together with procure.ch is only just below the growth threshold, and there are signs of a stabilization of foreign demand (cf. page 5). At the same time, Swiss economic growth will continue to be buoyed by consumer spending. Households remain in a spending mood, particularly as fears over job security have barely increased – and rightly so, as the labor market situation remains comparatively robust (see Fig.). Construction investment is likely to enjoy an acceleration in growth in 2020 following a brief phase of weakness in the construction economy this year.

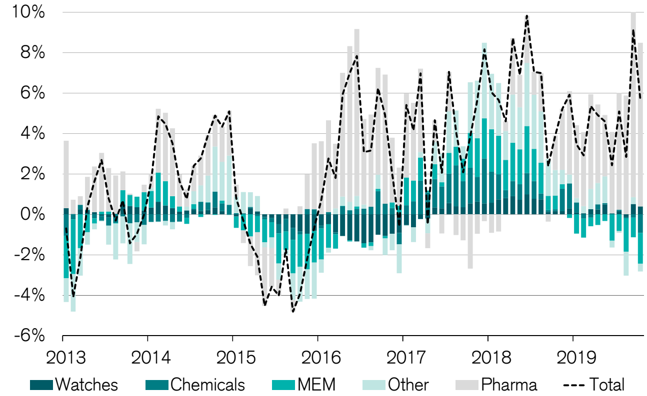
Acceleration in growth statistically exaggerated

However, the rise in underlying economic growth is likely to be weaker than our higher forecast would suggest. This is because the (summer) Olympic Games and the European Football Championship are set to boost Swiss GDP by a good 0.3 percentage points in 2020 compared to 2019, a year in which there were no comparable major sporting events. This growth effect is due to the fact that the corresponding international sporting associations (IOC and UEFA) are headquartered in Switzerland and their income is assigned to Swiss GDP, even though the relevant activities actually take place outside of Switzerland.

claude.maurer@credit-suisse.com

Exports of the engineering, electrical, and metal industry decline

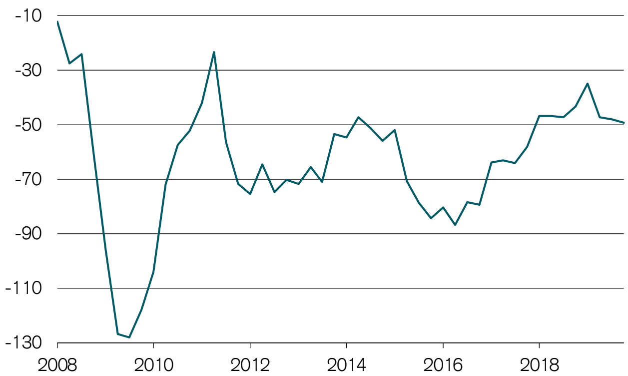
Growth YoY, moving three-month average



Source: Swiss Federal Customs Administration, Credit Suisse

Labor market expectations remain quite optimistic

Appraisal of surveyed consumers on security of own job



Source: State Secretariat for Economic Affairs (SECO), Credit Suisse

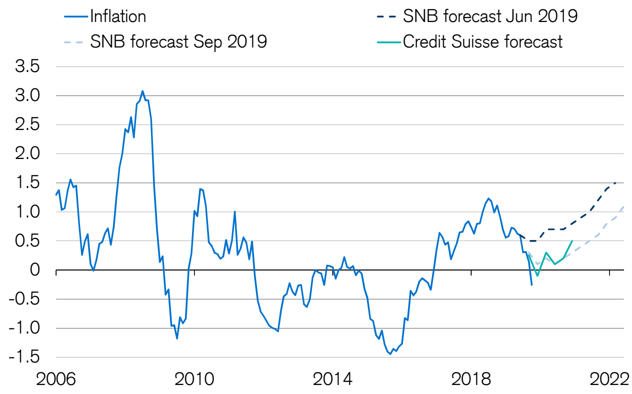
Inflation

For structural reasons, we are anticipating declining prices in both healthcare and communication for the foreseeable future. In view of the increase in the rental apartment vacancy rate, rents can also hardly be expected to rise further. However, there is evidence of (moderate) upward price pressure in the areas of household management, transport, leisure and culture, and education/teaching. Overall we are revising our forecast for 2020 downward slightly, and are now expecting an average inflation rate of 0.3% (previously: 0.5%). For 2019 inflation should amount to 0.4% (original estimate: 0.5%).

maxime.botteron@credit-suisse.com

Inflation rate still just in positive territory

Actual rate of inflation and forecasts of Credit Suisse and the Swiss National Bank (SNB), in %



Source: Datastream, Swiss National Bank (SNB), Credit Suisse

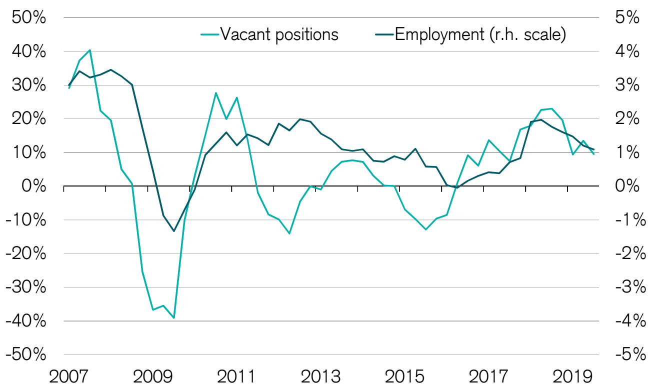
Labor market

The Swiss labor market remains in rude health. In the third quarter of 2019, employment was 1.1% above the prior-year level, which is higher than it has ever been. At the same time, more than 79,000 vacant positions were registered, just under 10% more than a year before. However, this increase is almost exclusively attributable to the services sector. Although employment in manufacturing has developed robustly so far this year despite weak demand in the export sector (Q3 2019: +1.2% compared to previous year), the outlook is more modest, with the various surveys giving off mixed signals.

emilie.gachet@credit-suisse.com

Employment growth weakens only slightly

Employment in full-time equivalents and number of vacant positions, YoY change in %



Source: Swiss Federal Statistical Office, Credit Suisse

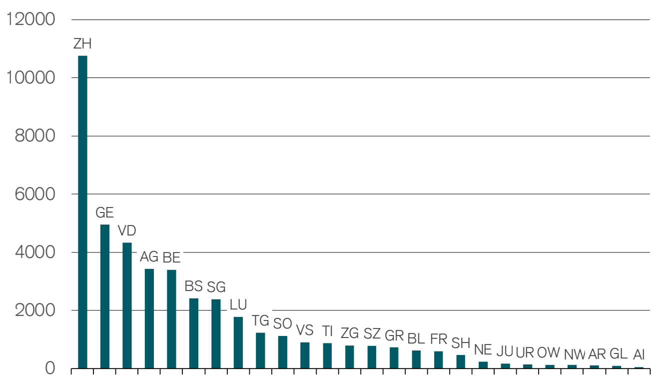
Immigration

Immigration into Switzerland is not evenly distributed between the various regions. Almost a half of net immigration relates to the cantons of Zurich, Geneva, and Vaud. Canton Zurich alone is the region of choice for around a quarter of all net immigration. Some way behind come the cantons of Aargau (8%), Bern (8%), and Basel-City (6%). This spread is hardly surprising given that the lion's share of immigrants move to Switzerland for employment reasons. Immigrants therefore make the larger labor markets of Switzerland's major cities their point of focus.

sara.carnazzi@credit-suisse.com

A quarter of all immigrants opt for Zurich

Net immigration into Switzerland, number of persons, permanent residential population (Swiss and foreigners), 2018



Source: Swiss Federal Statistical Office, Credit Suisse

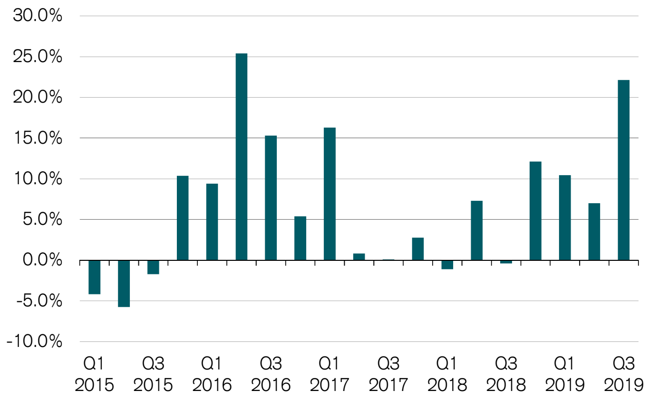
Pharmaceutical industry

In the summer of 2019, the pharma industry managed to increase its exports by more than 22% compared to the prior-year quarter. This positive result is above all attributable to increased exports to the markets of Germany and the US. Overall, the pharma industry was responsible for some 40% of all Swiss exports in the third quarter. The various effected and planned acquisitions in the area of pioneering gene therapy, in addition to highly promising new medications set to come onto the market over the next two years, should keep the Swiss pharma industry on its upward trajectory.

tiziana.hunziker.2@credit-suisse.com

Strong growth in Q3 2019

Exports, growth compared to previous year



Source: Swiss Federal Customs Administration, Credit Suisse

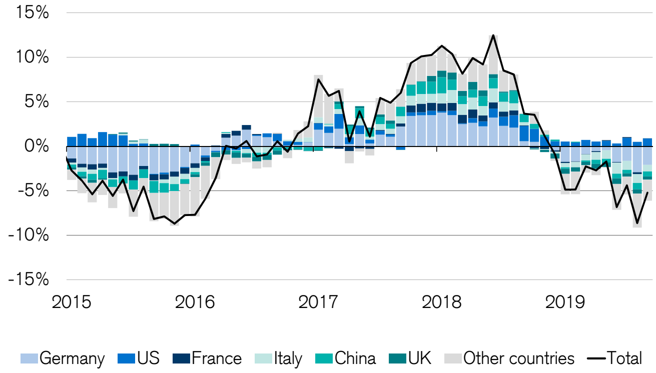
Engineering, electrical and metal industry (MEM)

MEM exports have been showing signs of weakness ever since the start of the year, and the situation intensified further in the third quarter of 2019. Sentiment in the German manufacturing sector, which is so important to the Swiss MEM industry, fell to recessionary levels. At the same time, exports to China, Italy, and the UK also declined. We are anticipating only a gradual recovery in global and German industrial production. The situation for the MEM industry is therefore set to remain challenging.

tiziana.hunziker.2@credit-suisse.com

Weakness in German manufacturing hits MEM exports

Exports: growth contribution by region, moving 3-month average



Source: Swiss Federal Customs Administration, Credit Suisse

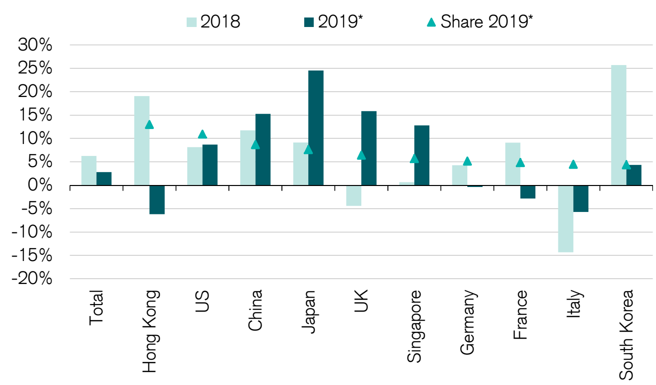
Watch industry

Swiss watch exports to Hong Kong have collapsed as a result of local unrest. However, the industry has managed to offset this decline by increasing its exports to mainland China and Singapore. This would suggest that the Chinese are managing to procure their Swiss watches either on the mainland or on trips to Singapore. Nonetheless, the Swiss watch industry has been unable to repeat the strong growth rates recorded in 2018, particularly as it has been confronted by a decline in exports to key European markets such as Germany, France and Italy.

tiziana.hunziker.2@credit-suisse.com

Sector manages to offset Hong Kong decline

Exports: change compared to previous year and share of total exports 2019



Source: Swiss Federal Customs Administration, Credit Suisse
*January to September 2019

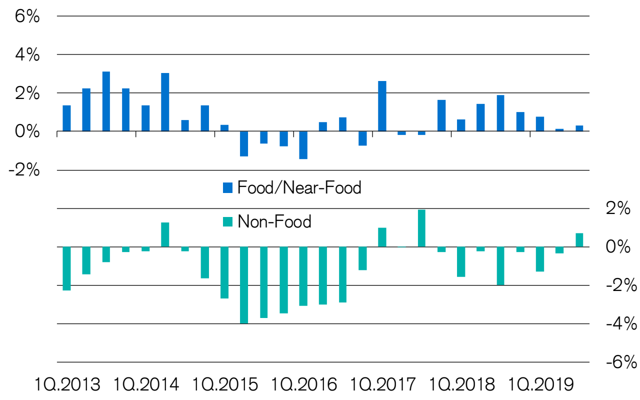
Retail

In the third quarter of 2019, the non-food retail sector recorded a nominal sales increase (+0.7%) for the first time since the beginning of 2017. However, this was also attributable to favorable weather conditions. Developments on the currency front and as a result of shopping tourism and online trading will pose challenges to retailers once again in 2020. On the other hand, positive population growth in Switzerland as well as an increase in purchasing power – assisted by the modest rise in health insurance premiums (0.2% on average) – are likely to give the retail sector a boost.

tiziana.hunziker.2@credit-suisse.com

Healthy third quarter for non-food retailers

Nominal retail sales, year-on-year growth



Source: GfK, Credit Suisse

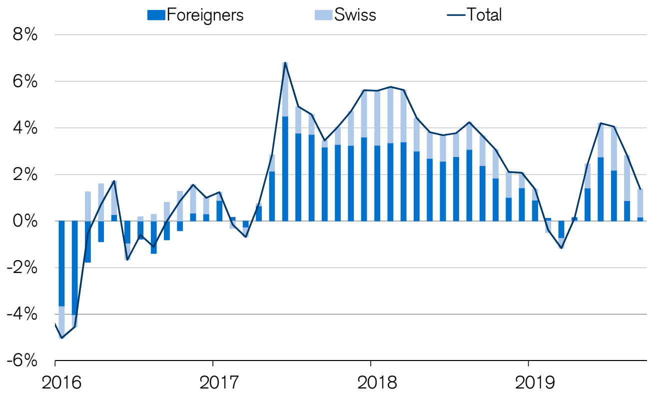
Tourism

Following a sharp rise in overnight stays over the summer months, particularly thanks to foreign guests, growth then weakened again in the fall. The development of overnight stays on the part of Swiss guests remained positive. In our view, this positive domestic trend in overnight stays can be expected to continue given the ongoing optimism of consumer sentiment in Switzerland (particularly in respect of workplace security and household budgets). We consider the risk of the weakness in manufacturing spreading to the services sector to be low.

tiziana.hunziker.2@credit-suisse.com

Trend of increasing number of foreign guests weakens

Overnight stays by guest origin: growth contribution, moving 3-month average



Source: Swiss Federal Statistical Office, Credit Suisse

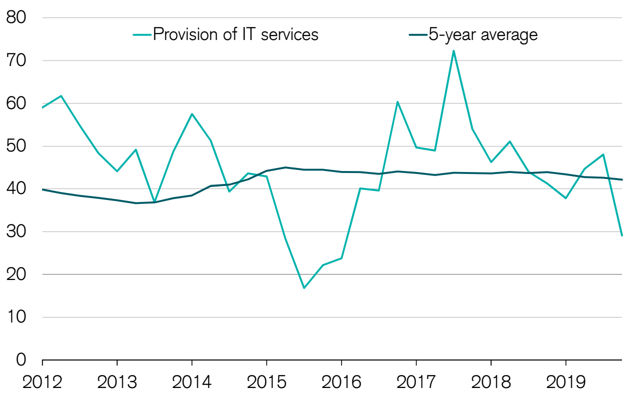
Information technology (IT)

Although the business situation in the IT sector continues to be viewed as "good" or at least "satisfactory" by a majority of the IT service providers surveyed by the Economic research unit of the ETH Zurich (KOF), the proportion of optimistic survey respondents has fallen to a multi-year low. The weakness in the manufacturing sector has no doubt played a key part in this deterioration in sentiment. In the absence of any recovery in this key end market, IT service providers are likely to continue to express a certain amount of skepticism over the future development of business.

tiziana.hunziker.2@credit-suisse.com

Sharp fall in number of optimistic IT providers

Business conditions; share of surveyed IT service providers, balance in percentage points; quarterly



Source: Economic research unit of the ETH Zurich (KOF), Credit Suisse

Interest rates remain negative for the time being

Negative interest rates in Switzerland are a consequence of global developments. There are no clear signs to suggest that the monetary policy of the Swiss National Bank (SNB) is too expansionary. The SNB is very likely to continue to seek to prevent a stronger appreciation of the Swiss franc with negative interest rates and sporadic currency market interventions as long as the economy of Switzerland's most important trading partners does not improve materially.

Trend of declining rates attributable to global factors

Both long-term and short-term interest rates have been on a downward trajectory worldwide since the early 1990s. Swiss interest rates have replicated this development almost exactly (Fig. 1). The decline of long-term interest rates was on the one hand the consequence of the successful fight against inflation, which had risen strongly between the mid-1960s and the late 1970s. Another contributory factor was the intense global competition in the markets for goods, services, and labor. The inflationary expectations of market participants now appear to be "anchored" at a low level, thereby reducing the inflation premium inherent in prevailing interest rates.

Both inflation premium and real interest component have declined

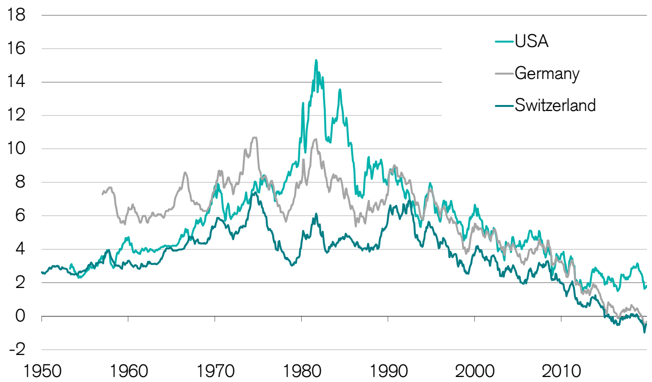
However, the real interest component has also declined sharply, particularly since the financial crisis. The key reasons cited for this development are the waning of global growth momentum – which is itself partially a consequence of demographic aging and lower productivity growth [1] – along with a (partly for cyclical reasons) high savings rate ("savings glut") and fairly low investment demand. In addition, the strong demand for secure investments, particularly government bonds, is also likely to have put downward pressure on real interest rates, even though the supply of such securities has risen dramatically as a result of high government deficits.

Even the "big" central banks only exert a temporary influence on real interest rates

Short-term interest rates, which are determined by central banks, typically behave in the same way as capital market rates, albeit with significant deviations over the course of the economic cycle (Fig. 2). In addition, the massive quantitative easing measures taken by the US central bank (Fed) and the European Central Bank (ECB) as a response to the global financial and euro crises appear to have furthered the decline of interest rates at the long end. By contrast, the interest rate hikes pushed through by the Fed since 2017 have contributed to at least a temporary rise in long-term US rates.

Fig. 1: Interest rates have been declining for decades

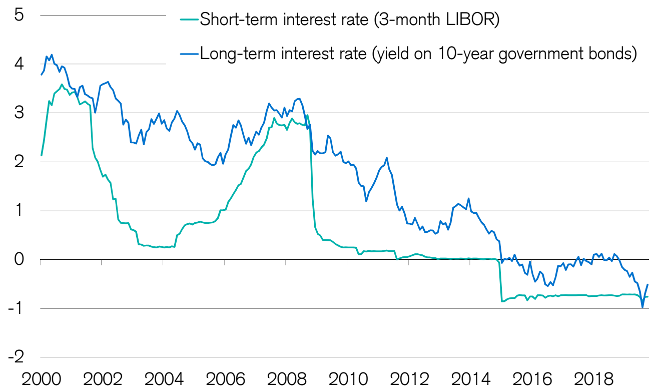
Yield on 10-year government bonds, in %



Source: Datastream, Credit Suisse

Fig. 2: Short-term rates as driver of long-term rates?

in %



Source: SNB, Credit Suisse

[1] See Monitor Switzerland of December 2015

Over the long term, however, even these major central banks only have an impact on inflation – and therefore the inflation premium inherent in interest rates – rather than on real interest rates (monetary policy "neutrality"). According to our analyses, the influence of the SNB on long-term interest rates in Switzerland is generally low due to the dominance of global markets.

Recent surge in criticism of monetary policy

It is almost unanimously agreed that the enormous quantitative easing measures taken by central banks in the aftermath of the financial and euro crises were both necessary and successful. More recently, however, there has been an increase in criticism of central bank policy, above all in northern Europe, whereas a similar level of criticism in the US is difficult to discern. By contrast, fears have been expressed in both continents that monetary policy has lost some of its impact on the economy and inflation. And indeed, the major central banks have failed to meet their inflation targets, in some cases for years. In Japan first and foremost, but in the Eurozone too, inflation is below (or in the case of the ECB, "below, but close to") the target rate of 2%. Although inflation is more or less in the desired target range over in the US, the Fed is currently leaning toward an increase in its inflation target. It appears to be striving for a "symmetrical" inflation target by not just tolerating inflation overshooting the 2% target but actually welcoming it. The idea behind this strategy is to make the economy overheat temporarily. This in turn would allow the Fed to raise key rates more sharply (albeit progressively), which would then give it more freedom of maneuver to cut rates in the event of a downturn.

Rate cuts more likely than rate hikes

Given this background, we believe it is unlikely that interest rates will be raised in the world's key currency areas for the foreseeable future. As we are expecting a slight improvement in global economic momentum, however, our forecast for 2020 at least envisages no further rate cuts on the part of the Fed and the ECB. However, the downside risks are the most prevalent in this forecast.

Is the SNB's monetary policy too expansionary?

In Switzerland too, a heated debate is taking place over whether monetary policy is currently too loose. Although the restrictiveness of monetary policy cannot be precisely determined, a number of indicators can be drawn on in this regard (see table on next page). The SNB does not pursue an inflation target of precisely 2%, but seeks to keep inflation within a bandwidth of 0% to 2% in the medium term. Although the official rate of inflation stood at –0.1% in November, somewhat below this bandwidth, consensus forecasts point to a slight rise over the coming months.

CHF overvalued against EUR

Another measure of the restrictiveness of monetary policy is the valuation of the exchange rate compared to a theoretically balanced or "fair" value. In fact, the SNB no longer describes the franc as "overvalued", but does consider it "highly valued". According to our own estimates, however, CHF remains around 10% overvalued against EUR, with the Credit Suisse fair value for the EUR/CHF currency pair currently standing at 1.22. Relative to the US dollar we perceive no overvaluation. Obviously, any estimate of fair value involves some degree of uncertainty. In addition, the fair value of currencies changes over time, as we illustrated in one of our recent editions of Monitor Switzerland[2]. However, our analyses at that point also showed that the fair value of CHF differs greatly from sector to sector. Sectors such as the pharma industry can live with the exchange rate at its current level, whereas the "fair" EUR/CHF exchange rate for many other export sectors is significantly higher.

Estimate of interest rate equilibrium points to neutral monetary policy, ...

A third measure of the restrictiveness of monetary policy is the level of short-term real interest rates compared to an equilibrium value, which must also be determined via a model. These estimates too are inevitably subject to uncertainties. Our model puts the current equilibrium value for the short-term real interest rate in Switzerland at –0.6%. The real 3-month CHF LIBOR rate is currently around –0.5%. In other words, this indicator suggests that the SNB has adopted an essentially neutral monetary policy stance. By contrast, the Monetary Conditions Index (Fig. 3), which summarizes exchange rate and interest rate deviations from their fair and equilibrium values respectively in a single ratio, currently suggests that SNB monetary policy is restrictive.

… but the steepness of the yield curve suggests a rather more restrictive stance

A fourth measure of restrictiveness, likewise derived from the financial markets, is the steepness of the yield curve, i.e. the difference between long-term and short-term interest rates. An inverted yield curve indicates restrictive monetary policy, as the interest rate markets imply an impending reduction in key rates in such a scenario. (Inversion also points to the likelihood of economic weakening, which would likewise strengthen the case for a cut in interest rates). By contrast, a steep yield curve indicates expansionary monetary policy. The phenomenon of an inverted yield

[2] See Monitor Switzerland of June 2019.

curve was seen in many markets in the first semester of 2019, including Switzerland, thereby suggesting fairly restrictive monetary policy. However, yield curves have now "righted" themselves to some extent. But in a historical comparison they remain rather flat, and therefore hardly suggest expansionary monetary policy.[3]

Credit growth indicative of overly loose monetary policy

Finally, the growth of bank credit lending and the health of the economy can also be used as a yardstick for the degree of monetary policy restrictiveness. Lending growth in Switzerland has exceeded economic growth by a considerable margin for several years. According to the Bank for International Settlements (BIS), the so-called credit-to-GDP gap – i.e. the deviation of credit lending from the long-term economic trend, currently amounts to some 10% of gross domestic product (GDP). According to this measure, therefore, Swiss monetary policy has tended to be overly expansionary in recent years. By contrast, the development of the Swiss economy itself does not suggest any overheating. The current purchasing managers index for the manufacturing industry (November: 48.8) is pointing more toward economic slowdown, whereas its counterpart for the services sector (51.7) suggests moderate expansion. At any rate, when all indicators are viewed on an aggregated basis, the SNB's policy currently appears to be neutral.

Degree of restrictiveness of monetary policy

Measure	Current value	Target value/equilibrium value	Degree of monetary policy restrictiveness
Inflation rate	–0.1%	0.0% – 2.0%	Restrictive
Inflation forecast (2020, CS)	0.30%	0.0% – 2.0%	Neutral
Real short-term interest rate	-0.50%	-0.60%	Neutral
Nominal long-term interest rate	-0.60%	-0.50%	Neutral
Yield curve (3M–10Y)	0.25%	1.00%	Neutral/restrictive
Monetary Conditions Index	1.30% – 2.20%	0.00%	Restrictive
Growth	1.10%	0.90%	Neutral
Credit-to-GDP gap, in % of GDP	10.20%	0.00%	Expansionary

Source: Bloomberg, Swiss Federal Statistical Office, Bank for International Settlements, Credit Suisse

Is the current SNB policy having an impact?

Both in Switzerland and elsewhere, the question is not just whether monetary policy is too loose, but whether it is actually having any effect. Indeed, there is a debate about whether negative interest rates could be damaging the economy. (The possible repercussions of negative interest rates are discussed in Part 2 of this Focus on page 15 onward.)

Focus of SNB on exchange rate since financial crisis

Although price stability is the overarching central bank objective in Switzerland, the SNB must additionally take into account economic developments. Particularly in the years since the financial crisis, geopolitical and economic flashpoints have posed a threat to the stability of the Swiss economy. These global factors have impacted on the Swiss economy and the level of prices through significant exchange-rate fluctuations, among other things. For this reason, the SNB has focused primarily on the stabilization of the exchange rate since the financial crisis, employing a number of very different measures to achieve this end. These range from interest rate cuts and "verbal interventions" to the expansion of the money supply, currency market interventions, and – in September 2011 – the introduction of a minimum EUR/CHF exchange rate.

EUR/CHF minimum exchange rate came under pressure from ECB easing

However, when the ECB loosened its own monetary policy further and cut interest rates, the upward pressure on the franc strengthened. As a result of the ECB measures, the difference between interest rates in the EUR and CHF money markets fell to new lows, and the SNB had increasingly been forced to intervene in the foreign exchange market to stabilize the euro against the franc. In a major development, the SNB abandoned its floor for the EUR/CHF currency pair in January 2015, while at the same time cutting money market interest rates into negative territory. And although it has permitted certain fluctuations in EUR/CHF ever since, the SNB has continued to intervene as required to prevent major franc surges. At the same time, the SNB has continued to stress that it will cut interest rates further if need be.

[3] The comprehensive purchases of longer-term bonds by central banks (quantitative easing), which has had the general effect of reducing long-term interest rates, could have distorted the steepness of yield curves as a measure of the restrictiveness of monetary policy.

The relationship between interest rate differential and exchange rate is not stable, ...

A key question is therefore whether the interest rate instrument – respectively the "defense" of the interest rate differential between CHF and EUR money markets – actually stabilizes the exchange rate. According to (covered) interest rate parity theory, this appears dubious, as lower CHF interest rates in the futures market imply franc appreciation. In fact, the available data reveals no clear relationship (Fig. 4). In certain periods a high interest rate differential between EUR and CHF correlates with the depreciation of CHF, whereas at other times no relationship is identifiable, or a higher interest rate differential has even coincided with an appreciation of the franc. For this reason, doubts are often expressed over whether the SNB's current monetary policy, which focuses on the interest rate differential, is effective.

... because other factors, above all global risks, impact heavily on the value of CHF

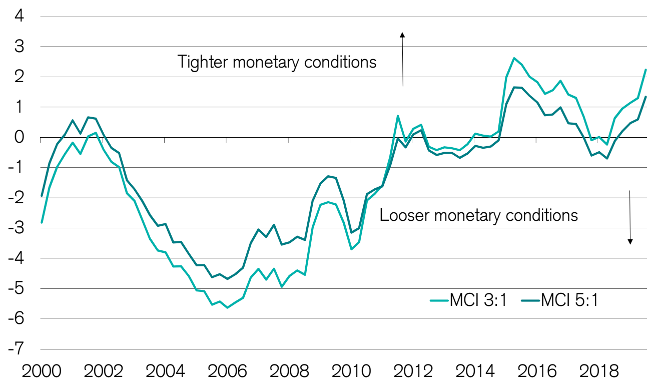
However, this argument/viewpoint fails to convince for two reasons: First, the (uncovered) interest parity theory states that only an unexpected widening of the interest rate differential (e.g. an unexpected rate cut on the part of the SNB) weakens the franc.[4] And second, there are other factors that impact on the value of the franc. In particular, due to its "safe haven" status the franc typically appreciates against a backdrop of increasing international uncertainty – without this having any impact on the interest rate differential. It is even possible that capital flows into the franc at times like this have the effect of reducing interest rates in Switzerland, i.e. widening the interest rate differential. Our econometric tests confirm this theory: When variables for uncertainty in the global and European financial markets are taken into account (as well as variations in the interest rate gap), changes to the interest rate differential have the expected effect.[5] Overall, therefore, the SNB appears to be able to continue to weaken the franc by widening the difference between Swiss and Eurozone interest rates.

The SNB is not expected to abandon its negative interest rate policy for the time being

By contrast, a narrowing of the interest rate differential through an autonomous rate hike on the part of the SNB would trigger a rise in the value of the franc – particularly in a global environment still characterized by uncertainty. Paradoxically, such a step could even reduce inflationary expectations in Switzerland, which could in turn feed through into lower long-term interest rates. Exiting the current monetary policy regime is therefore only likely to happen once interest rates in the international capital markets rise and the Fed or the ECB increases its own key rates. This would probably only occur against the backdrop of a significant pickup in either global growth or inflation – both scenarios looking improbable to us as things stand. A go-it-alone rate hike on the part of the SNB would only be possible if the franc were to depreciate strongly "under its own steam." However, such a scenario is only to be expected against a backdrop of a much more stable global environment.

Fig. 3: Monetary Conditions Index for Switzerland

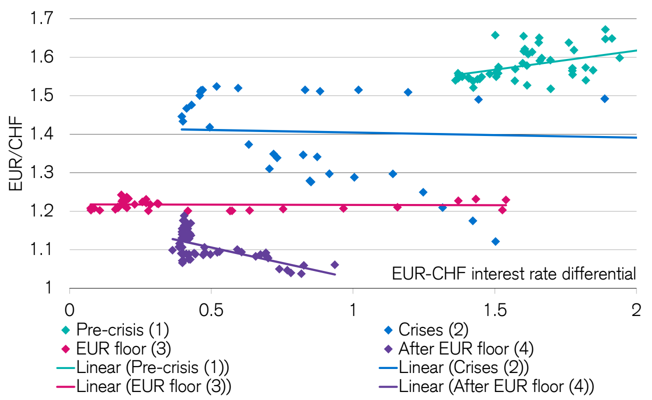
in %



Source: Credit Suisse

Fig. 4: EUR/CHF exchange rate and interest rate differential

EUR/CHF exchange rate; interest rate differential in percentage points



Source: Datastream, Credit Suisse (1) Jan. 2004 – Sept. 2008; (2) Oct. 2008 – Aug. 2011; (3) Sept. 2011 – Dec. 2014; (4) Jan. 2015 – Oct. 2019.

[4] As stated above, according to interest rate parity theory only an unexpected widening of the interest rate gap leads to a depreciation of CHF. However, distinguishing between expected and unexpected interest rate changes is empirically difficult.

[5] As a measure for uncertainty in the financial markets we use the VIX index for volatility in the S&P 500 and the spread between Italian and German government bond yields.

More expansionary fiscal policy would increase likelihood of franc strength

However, the SNB could tolerate a further appreciation of the franc as soon as monetary policy conditions in Switzerland allow, particularly as there is evidence that the overvaluation of the franc is currently subsiding. The challenge here would be to avoid a speculative upward surge. However, the SNB's current flexible exchange-rate regime is less vulnerable than its fixed EUR/CHF minimum exchange rate policy of a few years back. In our view, there are no real alternatives right now to the existing policy of negative exchange rates. Although there is a debate going on in the Eurozone about more expansionary fiscal policy replacing (or supplementing) loose monetary policy, such a strategy does not appear to make much sense in Switzerland's case. Although the federal government does have some freedom of maneuver in the area of fiscal policy, a political decision of this kind appears improbable. Furthermore, due to the dominance of foreign capital market interest rates in Switzerland, more expansionary fiscal policy would only have a very limited impact on Swiss interest rates, and would ultimately probably have the effect of strengthening the franc.

oliver.alder@credit-suisse.com
maxime.botteron@credit-suisse.com

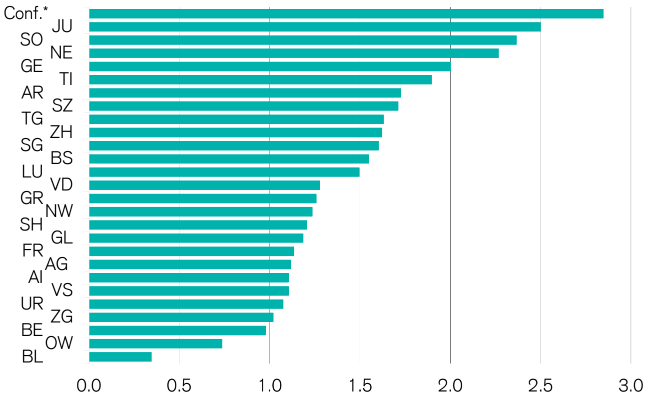
Focus – negative interest rates

Public finances

The state – and by extension the Swiss taxpayer – is the undisputed beneficiary of lower interest rates. We estimate that the Confederation and the cantons saved a total of some CHF 23 billion in interest between 2008 and 2017, with the Confederation alone saving CHF 13 billion. The annual saving amounts to between 0.3% (Canton Basel-Country and its municipalities) and 2.8% (Confederation) of overall expenditure. It is actually likely that these figures underestimate the total saving, as the negative interest rates at which the Confederation and a number of cantons can borrow money are difficult to capture.

Public sector saves billions

Estimated annual savings in interest rate payments, in % of total expenditure for 2017



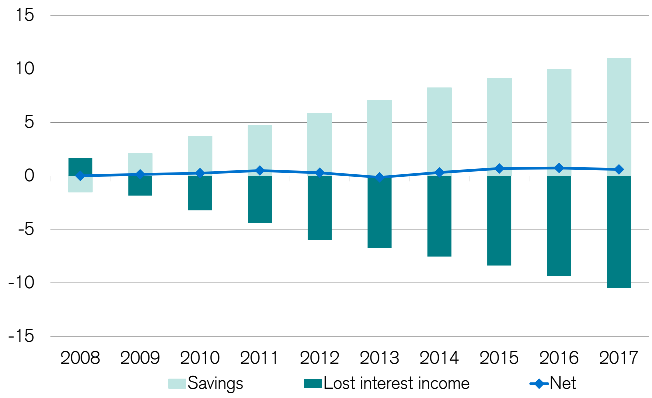
Source: Credit Suisse. *For 2018

Households

The repercussions of declining interest rates for private households are not clear. On the one hand, lower interest rates mean lower debt interest payments (particularly for mortgages). According to our estimate, households saved more than CHF 10 billion in 2017 (compared to 2007) in this manner. On the other hand, Swiss households also receive less income on their savings accounts and bond holdings. We estimate that these two factors more or less neutralize each other at the moment. Households with higher incomes capable of taking on more debt are the greater beneficiaries of low interest rates. In addition, they also have higher risk capacity when it comes to investing.

Neutral impact on the "average" household

Estimated annual impact of lower interest rates on households, in CHF bn



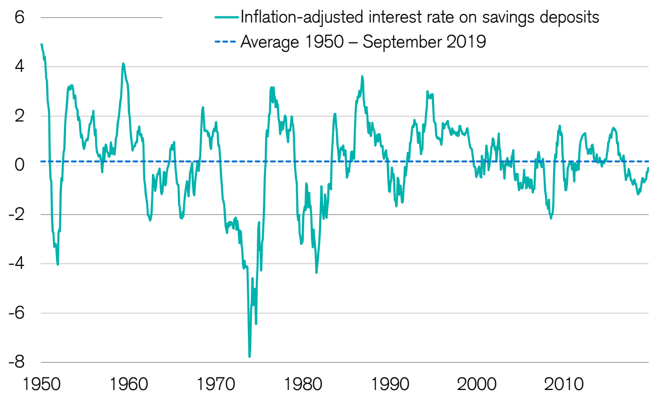
Source: Credit Suisse

Savings deposits

As mentioned above, households have had to take a hit on the amount of income they receive. Although many households could invest at least a proportion of their savings in investments that generate somewhat higher returns, the fact of the matter is that more than a half of all financial assets of Swiss households are held in the form of bank deposits. On an inflation-adjusted basis, however, the interest earned on savings accounts has been virtually zero over the long term, irrespective of the SNB's interest rate policy

Long-term return on bank deposits just in positive territory

in % p.a.



Source: SNB, Credit Suisse

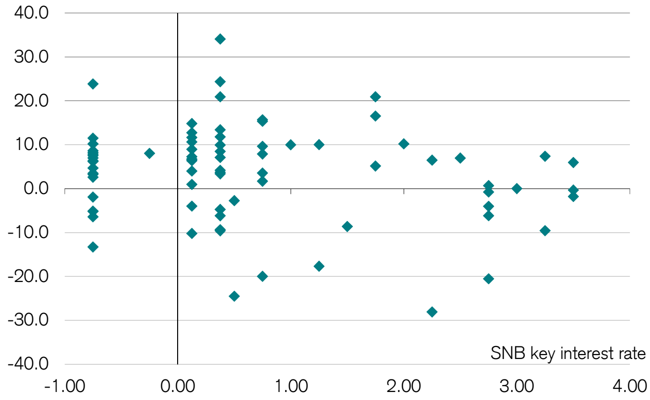
Focus – negative interest rates

Pension funds

The very low yields available on bonds are becoming a major headache for pension funds. As mentioned in the main article, however, the SNB has little influence on these interest rates. The direct repercussions of the negative interest rate policy are restricted to the cash held by pension funds, which currently amounts to some 5% of all pension fund assets. As the graph to the right shows, the returns of pension funds therefore also do not correlate with the SNB's key interest rate. The main problem facing pension funds (excessively high conversion rates and an overly generous (i.e. low) retirement age) is exacerbated by the negative interest rate policy.

SNB key interest rate not decisive for pension fund returns, but for the technical interest rates

Annualized quarterly return of pension fund index relative to key rate, in %



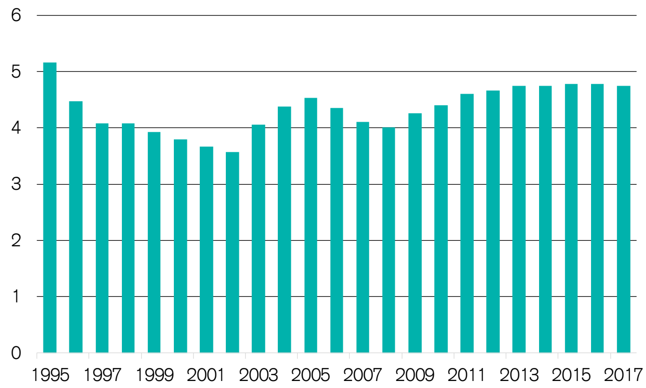
Source: SNB, pension fund index of Credit Suisse

Construction investment

If interest rates remain below their equilibrium level for too long, the risk of a misallocation of capital theoretically rises, i.e. investments could be channeled into less productive rather than more productive projects. One argument being put forward in Switzerland at the moment is that the negative interest rate policy has triggered an excessive amount of investment in residential construction. However, the data shows that such investment has not risen much more than gross domestic product (GDP) since the recession of 2008. Indeed, since 2013 the volume of residential construction investment has actually grown in line with GDP. Yet above all institutional investors are building large numbers of rental apartments, as a result of which vacancies in this segment are on the rise.

Capital misallocation?

Construction investment in residential property, as % of gross domestic product



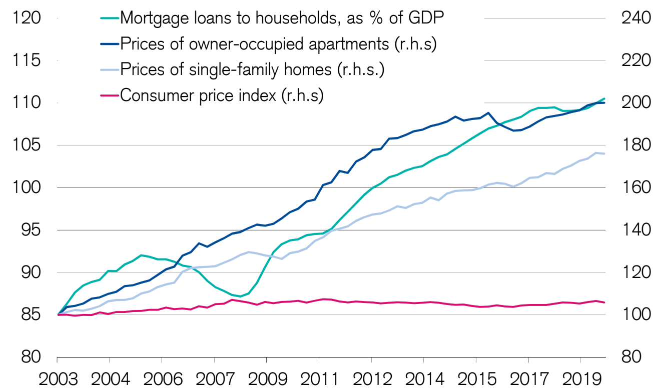
Source: Swiss Federal Statistical Office, Credit Suisse

Household debt and real estate prices

Whereas the volume of construction compared to GDP has not increased excessively (see above), the price of real estate – particularly owner-occupied apartments – has risen much more strongly than the consumer price index since 2008. While the acceleration of population growth has clearly played an important role here, this trend is primarily a consequence of the decline in interest rates. The resulting level of indebtedness of Swiss households, which is very high in an international comparison, poses a risk in the event of interest rates rising unexpectedly sharply and/or property prices declining unexpectedly sharply.

Strong rise in residential property prices and debt

Mortgage loans in % of GDP (left scale) and transaction price index (Q1 2003 = 100, right scale)



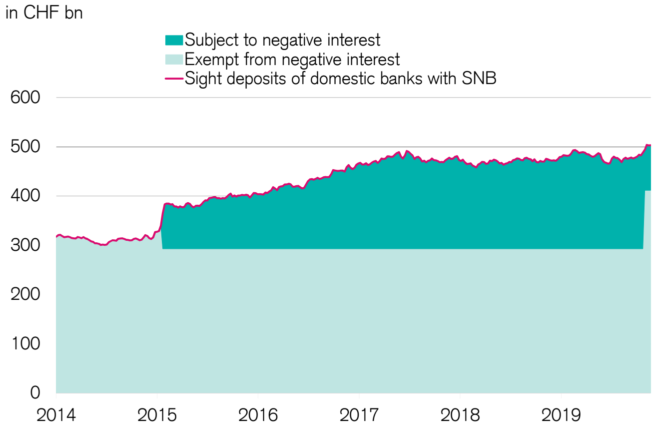
Source: Datastream, SNB, Wüest Partner, Credit Suisse

Focus – negative interest rates

Exemption threshold

Ever since November 1, 2019, a smaller proportion of the sight deposit balances of the commercial banks with the SNB has been subject to a negative rate of interest. The SNB has increased its so-called "exemption threshold", with the result that an additional CHF 119 billion or so of the deposits of domestic banks held with the SNB is now exempt from negative interest. This should have the effect of reducing the negative interest expenditure of domestic banks by around CHF 890 million compared to the expenditure incurred under the previous exemption threshold. Moreover, by raising the exemption threshold, the SNB has created freedom of maneuver to cut interest rates further if necessary.

Sight deposits of domestic banks with the SNB

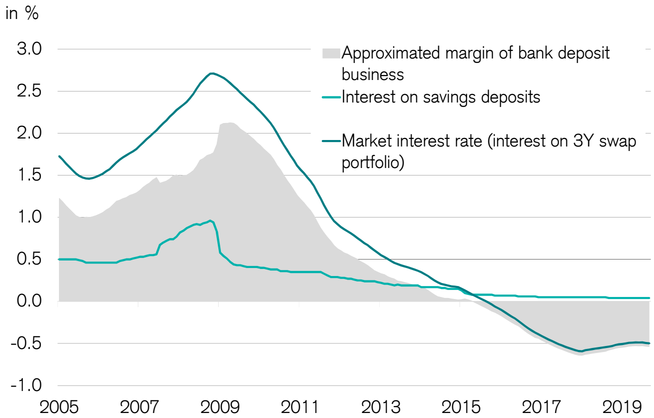


Source: SNB, Credit Suisse

Passing on negative interest rates

The precise level of costs incurred by the banks as a result of the SNB's negative interest policy is difficult to determine. Up until now, the banks have been reticent about passing on negative interest to client deposits and have suffered an erosion of their deposit margin accordingly. We have estimated the impact of a key interest rate reduction of 25 basis points on the key balance sheet positions of domestically focused banks. According to our estimate, such a step would reduce the interest margins of the banks by between 1 and 4.5 basis points. The impact on the profitability of the banks of a decline in capital market interest rates (flattening of the yield curve) can be expected to be stronger generally.

Deposit margin of banks under pressure

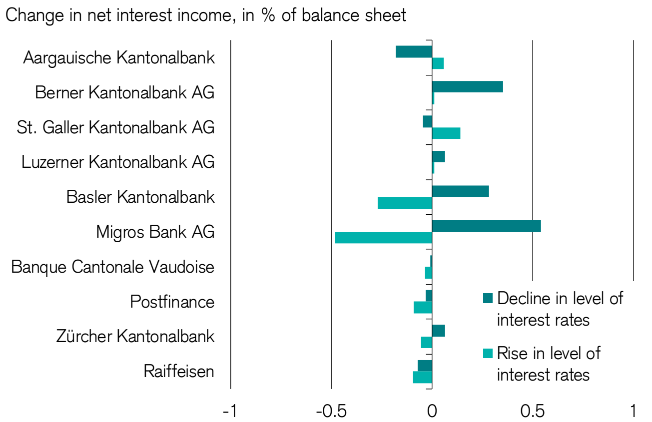


Source: Bloomberg, SNB, Credit Suisse

Overall impact on domestic banks

For regulatory reasons, the banks must publish estimates of the repercussions of a rise (or a decline) of the level of interest rates by 1.5 percentage points for their net interest income. This data (see Fig. right for the ten largest domestically focused banks) supplies three interesting findings. The results differ considerably from bank to bank. For some, net interest income would paradoxically rise if interest rates declined generally. Moreover, a general rise in interest rates would probably have only limited positive repercussions for the selection of banks illustrated here.

Impact of interest rate development on domestically oriented banks



Source: Disclosure reports of banks, Credit Suisse

Larger profit distribution?

We estimate that the foreign currency reserves of the Swiss National Bank (SNB) will yield CHF 18–20 bn per annum (p.a.) over the next 5 years, while the expected loss in a worst-case scenario would reach CHF 75 bn. Nevertheless, an increase of the annual distribution to the cantons and the Confederation could be considered, in our view.

Our forecasted return for SNB's foreign currency reserves has been accurate

Once a year, our investment strategy team updates their 5-year forecasts (so-called Capital Market Assumptions, CMA) for a large range of financial assets. In the past, we already used these forecasts to simulate how the foreign currency reserves of the SNB would likely perform. In an article we published in June 2018 (based on the 2017 CMA), we estimated the expected return of the SNB foreign currency reserves at 3.9% p.a. As shown in the figure on the left-hand side, this forecasted return has been quite accurate, even when taking into account the purchases of foreign currencies by the SNB in 2018 and 2019.

We expect foreign currency reserves to yield 2.5% p.a.

The 2019 update of the CMA has two implications in terms of the projected performance of the SNB foreign currency reserves. First, the expected return is lower at 2.5% p.a. over the next 5 years. Second, the expected risk is also lower, as shown in the narrower confidence interval of the projected development of foreign currency reserves in comparison to the 2017 estimates. Based on the current level of foreign currency reserves, the expected return of 2.5% would yield around CHF 18–20 bn p.a. Our estimated risk metrics indicate that a worst-case scenario would, on average, lead to a loss of 9.6% (conditional value-at-risk, 95% confidence level) or CHF 75 bn.

The SNB could raise its annual distribution to the cantons and the Confederation

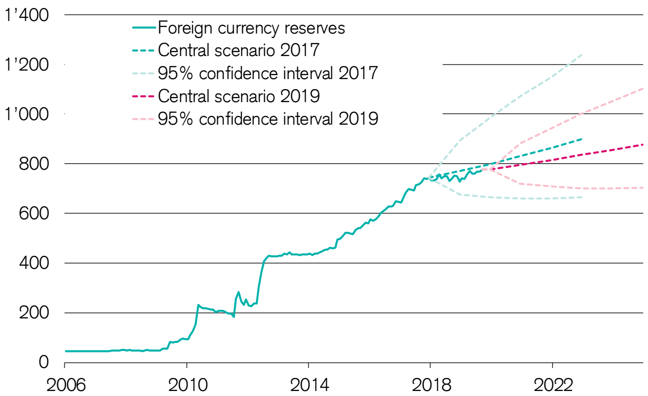
The SNB's equity capital had reached CHF 169.7 bn at the end of Q3 2019, of which CHF 90.6 bn should be available for distribution to the cantons and the Confederation, according to our estimates. Currently, the maximal payout to the cantons and the Confederation is limited to CHF 2 bn p.a., according to an agreement between the SNB and the Federal Department of Finance (FDF) for the period 2016–2020. By the end of next year, the SNB and the FDF will renegotiate the current agreement. Our projection of future income from the foreign currency reserves suggests, even considering the risk of a loss, that there could be an opportunity to raise the annual distribution to the cantons and the Confederation.

maxime.botteron@credit-suisse.com

We would like to thank Vojo Gunevski from the Credit Suisse Investment Management team for providing the simulated returns and risk estimates.

Projected return of SNB's foreign currency reserves

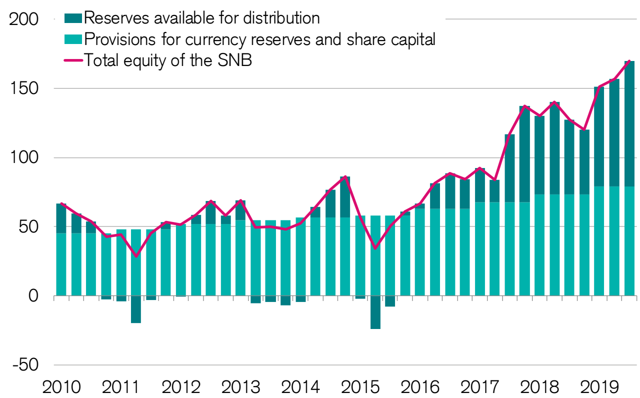
In CHF, billion



Source: Swiss National Bank, Credit Suisse

Ample reserves for future profit distribution

SNB's equity capital, in CHF, billion



Source: Swiss National Bank, Credit Suisse

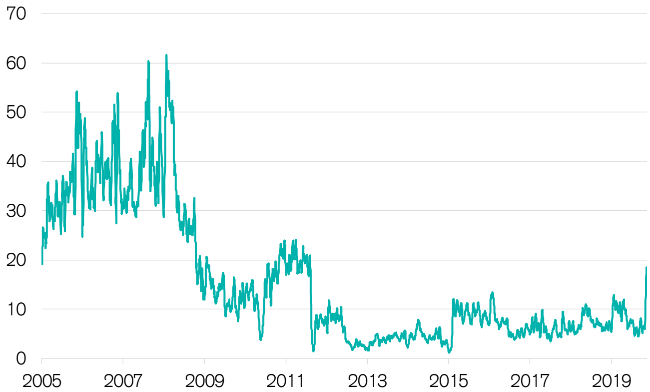
Money market

The decision of the SNB to raise the exemption threshold above which commercial banks' deposits at the SNB are subject to the negative deposit rate of –0.75% has led to an increase in the daily volume of repurchase agreements (so-called repos). Repos are short-term (up to 12 months) secured lending operations among banks. With the implementation of the new threshold at the SNB on 1 November, some banks became fully exempted from the negative interest rate and can therefore borrow at a negative rate from other banks and deposit the proceeds at the SNB at 0%. This rebalancing process explains the rise in repo market volume.

maxime.botteron@credit-suisse.com

Rise in interbank secured lending volume

Daily volume on the CHF repo market (all maturities, 10-day moving average, billion)



Source: SIX Swiss Exchange, Credit Suisse

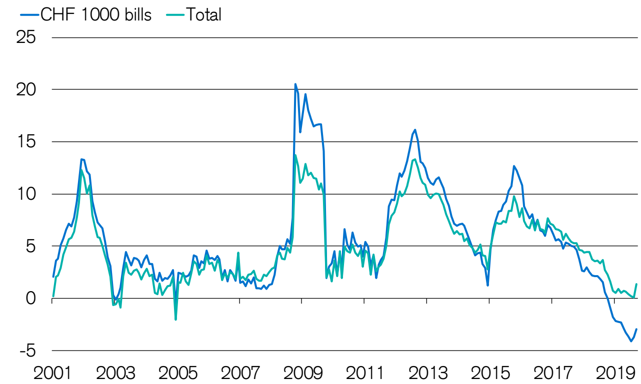
Banknotes

Demand for banknotes has remained particularly weak despite very low interest rates. In particular, the demand for the CHF 1000 bills has declined for almost a year, in what is the sharpest drop since 1990. The demand for banknotes seems more sensitive to changes in the interest rate rather than to the level of interest rate. The weak demand may be explained by the stability of the policy rate. Indeed, since the SNB began to conduct its monetary policy via a target interest rate, it has never held it unchanged for such a long period - the last change occurred in January 2015.

maxime.botteron@credit-suisse.com

Drop in CHF 1000 banknotes

Growth rate of banknotes in circulation, in % YoY



Source: Swiss National Bank, Credit Suisse

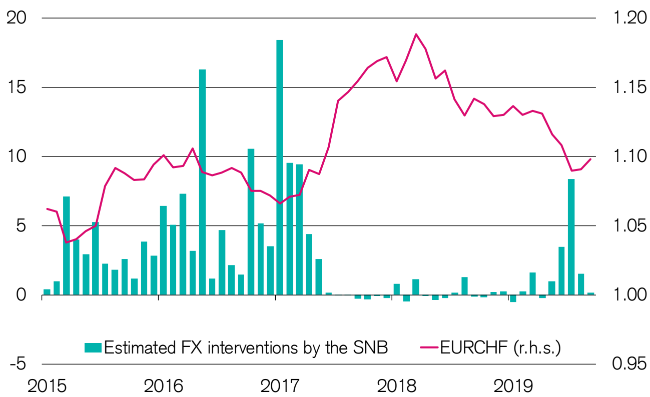
Foreign exchange interventions

After renewed purchases of foreign currencies over the summer, the SNB has halted its interventions in the foreign exchange market since October, according to our analysis. The CHF has appreciated since June against the EUR, as expectations of further monetary policy easing by the European Central Bank (ECB) began to build. The ECB indeed cut its policy rate in September and re-activated its asset purchase program. However, as the ECB did not cut rates as much as financial markets had expected, the appreciation pressure on the CHF diminished somewhat, reducing the need for foreign currency purchases.

maxime.botteron@credit-suisse.com

SNB halts its foreign exchange interventions in October

In CHF, billion and EUR/CHF (r.h.s.)



Source: Datastream, Swiss National Bank, Credit Suisse

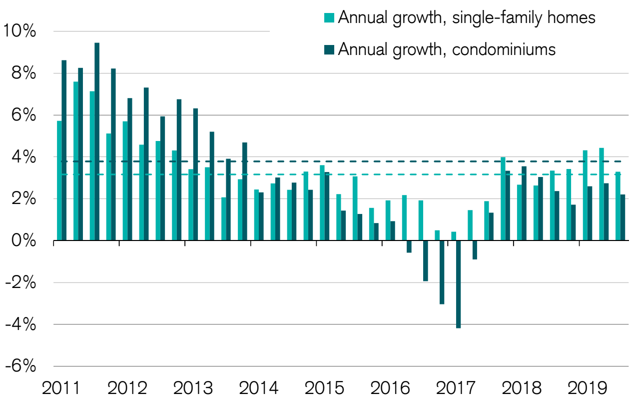
Owner-occupied housing

The rise in the price of owner-occupied residential property has slowed somewhat recently. In the third quarter of 2019, the prices of owner-occupied apartments increased by 2.2%. This rate of growth is significantly below the long-term average of 3.8%. The rise in the prices of single-family homes has likewise slowed, but at 3.3% remains slightly above the long-term average of 3.2%. Thanks to intact demand and a decline in newbuild activity, we are expecting prices to rise over the next few quarters too. However, these are likely to continue to be kept in check by the regulatory guidelines that apply to credit lending.

thomas.rieder@credit-suisse.com

Price growth has recently slowed

Annual growth rates; dotted lines: average 2000 – 2018



Source: Wüest Partner, Credit Suisse; last data point: Q3 2019

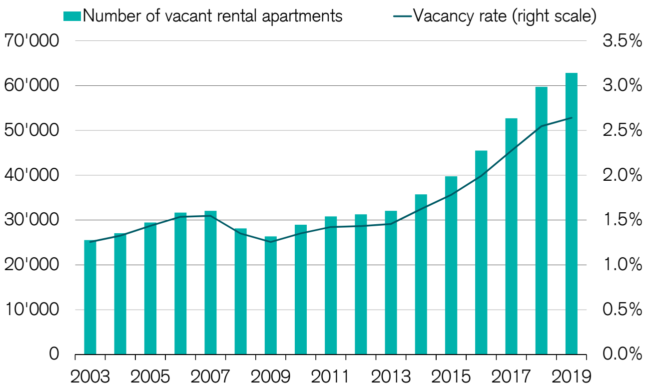
Rental apartments

As per June 1, 2019, more than 60,000 rental apartments (2.64% of the total stock) were vacant in Switzerland for the first time ever. However, the latest rise was much less pronounced than in the previous five years, and has predominantly affected regions outside of the major conurbations. The demand side of the Swiss rental market benefited from a stabilization in net immigration and a robust labor market. At the same time, the trend of persistent recovery in construction activity has paused for the time being. That said, a combination of the economic slowdown and the unbroken demand for real estate as an asset class could see a renewed rise in vacancies as early as 2020.

fabian.waltert@credit-suisse.com

Slowdown in increase in rental apartment vacancies

Rental apartment vacancy rate, in % of existing stock, as per June 1, 2019



Source: Swiss Federal Statistical Office, Credit Suisse; last data point: 1.6.2019

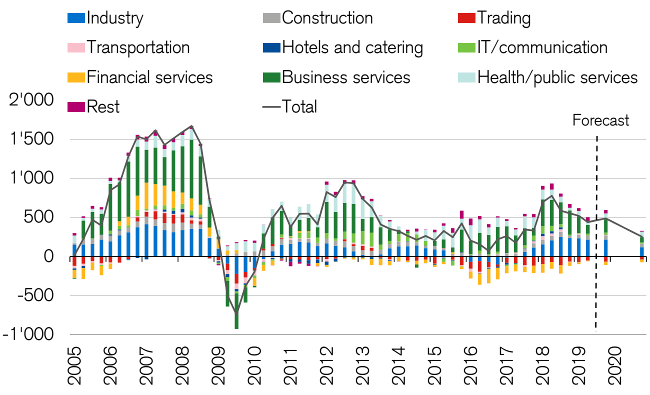
Office property

The strong surge in office employment has led to a temporary situation of high demand for office space. However, this is now receding in keeping with the decline in employment growth. We are forecasting surplus demand of 486,000 m² for 2019 and 253,000 m² for 2020. In a number of cantons, positive economic developments have led to an improvement in the vacancy situation for office property. The current slowdown on the demand side is unlikely to alter this situation, as any imbalances are likely to be warded off by the very modest expansion expected on the supply side.

alexander.lohse@credit-suisse.com

Decline in surplus demand for office space

Estimated surplus demand compared to prior-year quarter in 1,000 m²; forecasts for Q4 2019 and 2020



Source: Credit Suisse, Swiss Federal Statistical Office; last data point: Q2 2019

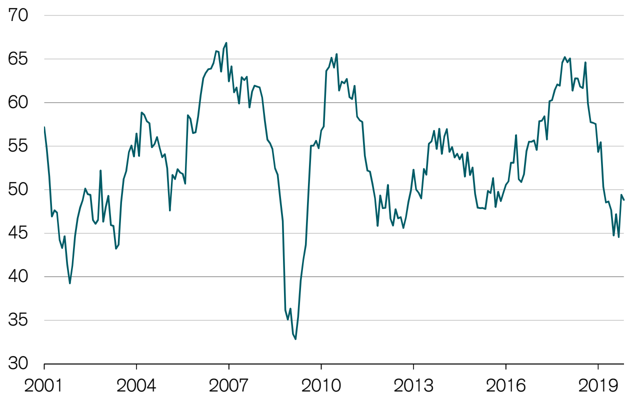
Credit Suisse Leading Indicators

Purchasing Managers' Index (PMI)

Purchasing managers stand at the beginning of the production process. The PMI uses this forward-looking feature to forecast the level of economic activity. The index is based on a monthly survey conducted by procure.ch, the industry body for purchasing and supply management. Purchasing managers respond to eight questions on output, backlog of orders, purchasing volumes, purchase price, delivery times, stocks of purchases, stocks of finished goods, and employment. They indicate whether activity levels are higher, the same, or lower than in the preceding month. The percentage share of responses stating "higher" and "no change" are used to calculate the sub-indices, though only half of the "no change" share of responses is included. The PMI lies between 0 and 100, with a figure of more than 50 indicating an expansion of activity compared with the previous month.

Industrial Activity

PMI index > 50 = growth



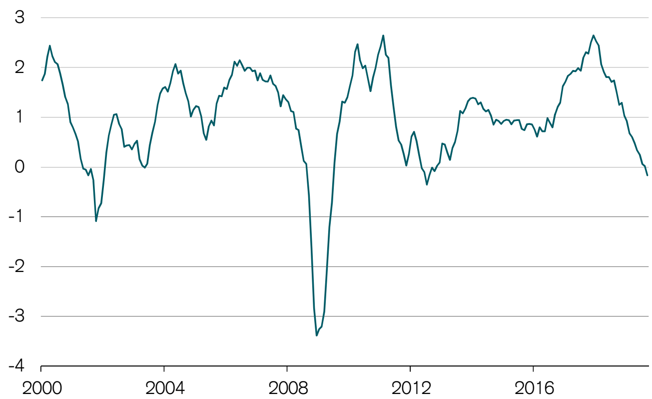
Source: procure.ch, Credit Suisse

Credit Suisse Export Barometer

The Credit Suisse Export Barometer takes as its basis the dependence of Swiss exports on foreign export markets. In constructing the export barometer, we have drawn together important leading industry indicators in Switzerland's 28 most important export markets. The values of these leading indicators are weighted on the basis of the share of exports that goes to each country. The export barometer consolidates this information to produce a single indicator. Since the values in question are standardized, the export barometer is calibrated in standard deviations. The zero line corresponds to the growth threshold. The long-term average growth of Swiss exports of approximately 5% is at 1.

Exports

In standard deviation, values > 0 = growth



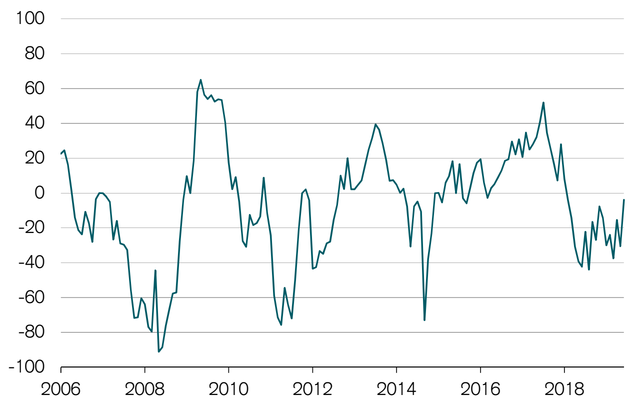
Source: PMIPremium, Credit Suisse

CS CFA Society Switzerland Index

Financial analysts have their finger on the pulse of the economy. Since 2017, we have been conducting a monthly survey of financial analysts jointly with CFA Society Switzerland under the heading Financial Market Test Switzerland[1]. Analysts are questioned not only about their assessment of the current and future economic situation as well as the rate of inflation but also about financial market issues such as equity market performance and interest rate forecasts. The CS CFA Society Switzerland Index represents the balance of expectations regarding the development of Swiss economic activity over the coming six months.

Economic Activity

Balance of expectations, values > 0 = growth



Source: CFA Society Switzerland, Credit Suisse

[1] Published as the Credit Suisse ZEW Index from 2006 until 2016

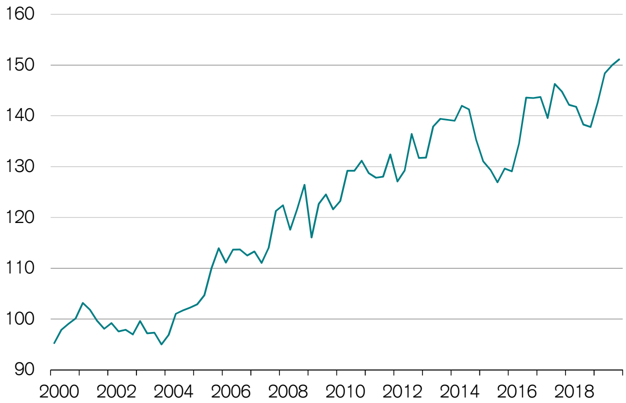
Credit Suisse Leading Indicators

Swiss Construction Index

The Swiss Construction Index is published once a quarter jointly by Credit Suisse and the Swiss Contractors' Association (SCA). It serves as a leading indicator for the state of Switzerland's construction sector by forecasting the volume of work in the core construction business in the coming quarter. The indicator is calculated by Credit Suisse and is based mainly on a quarterly survey conducted by the SCA among its members. Additional data is provided by the Swiss Federal Statistical Office and Baublatt. The Construction Index was launched in the first quarter of 1996.

Construction Industry Climate

1st quarter 1996 = 100



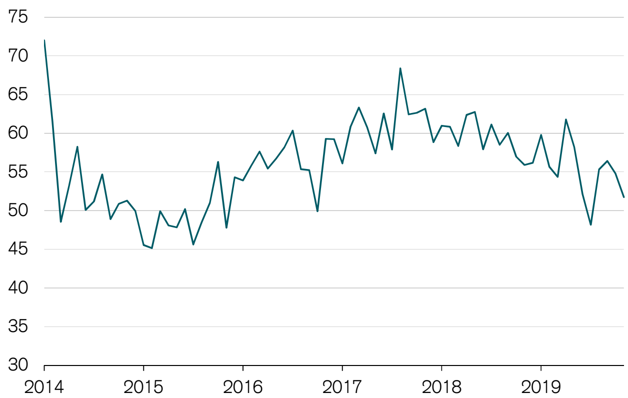
Source: Swiss Contractor's Association, Credit Suisse

PMI Services

Procure.ch, the professional association for purchasing and supply management and Credit Suisse launched a PMI for the services sector in 2014. The Services PMI is structured in exactly the same way as its industry counterpart. Values over 50.0 points mean expansion. It is based on a survey of purchasing managers from Swiss service providers. There are six subcomponents: type of business, new orders, order book, purchasing prices, sales prices and number of employees.

Activity in the services sector

PMI Services index > 50 = growth

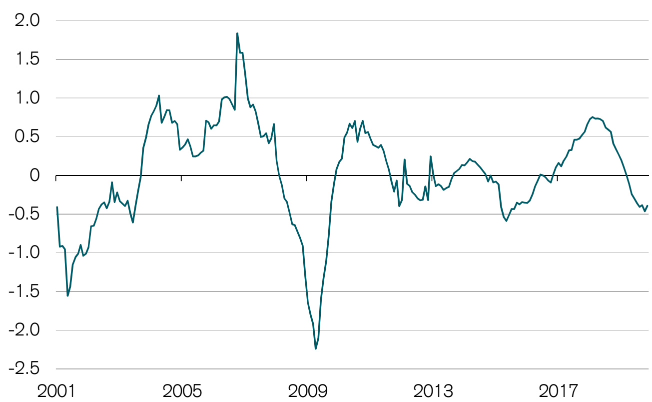


Source: procure.ch, Credit Suisse

Macro Momentum Indicator

The Credit Suisse Macro Momentum Indicator (MMI) condenses the current performance of key Swiss economic data to a single figure. Data from economic surveys, consumption, the labor market, lending and the export economy are used to calculate a standardized momentum that is then weighted with the applicable correlation to GDP development. Values above (below) zero point toward an acceleration (slowdown) of the Swiss economy in the last three months compared with the past six months.

Economic Activity



Source: Datastream, Credit Suisse

Forecasts and Indicators

Forecasts for the Swiss Economy

	2019	2019	2019	2019P	2020P	2020P	2020P	2020P	2019P	2020P
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4		
GDP (YoY, in %)	0.9	0.2	1.1	1.4	1.3	1.4	1.4	1.3	0.9	1.4
Consumer spending	0.6	0.9	1.1	1.2	1.3	1.3	1.3	1.3	1.0	1.3
Government expenditure	0.9	0.9	1.6	1.3	1.0	1.0	1.0	1.0	1.2	1.0
Gross capital investment	-0.5	-1.0	1.2	2.1	1.2	1.1	1.0	1.0	0.5	1.0
Construction investment	1.1	-0.6	0.3	0.8	1.0	1.0	1.0	1.0	0.4	1.0
Investment in plant and equipment	-1.3	-1.2	1.8	2.8	1.0	1.0	1.0	1.0	0.5	1.0
Exports (goods and services)	2.8	2.1	6.4	0.8	2.5	2.5	2.5	2.5	3.0	2.5
Imports (goods and services)	-0.5	-0.9	4.0	3.5	2.0	2.0	2.0	2.0	1.5	2.0
Inflation (in %)	0.6	0.6	0.3	-0.1	0.3	0.1	0.2	0.5	0.4	0.3
Unemployment (in %)	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.3	2.4
Employment growth FTEs (YoY, in %)	1.5	1.2	1.1	0.9	0.7	0.9	0.9	1.0	1.2	0.9
Net immigration (in thousands)									55.0	55.0
Nominal wage growth (YoY, in %)									0.5	0.7
Public debt (in % of GDP)									7.2	7.4

Source: Federal Statistics Office, State Secretariat for Economic Affairs SECO, Credit Suisse

Forecasts for the World Economy

Forecasts	Forecasts: GDP YoY, in % 2019	GDP 2020	Inflation YoY, in % 2019	Inflation 2020	Structure: Population In million 2018	GDP In USD billion 2018	Significance for Switzerland: Share of exports In % 2018	Share of imports In % 2018
World	2.6	2.5	2.7	2.8	7'530	84'740	100	100
US	2.3	1.8	1.8	2.1	327	20'494	16.3	6.2
Euro zone	1.1	1.0	1.2	1.1	341	13'669	44.3	61.7
Germany	0.5	0.4	1.3	1.3	83	4'000	18.8	27.1
France	1.2	1.1	1.3	1.3	65	2'775	6.5	8.0
Italy	0.1	0.7	0.6	0.7	60	2'072	6.2	9.3
UK	1.2	1.3	1.9	2.1	66	2'829	4.0	3.8
Japan	0.8	0.4	0.5	0.1	126	4'972	3.3	1.7
China	6.1	5.9	3.0	3.5	1'395	13'407	5.2	7.1

Source: Datastream, International Monetary Fund, Credit Suisse

Interest Rates and Monetary Policy Data

	Current	3-month	12-month		Current	Prev. mth.	Prev. year
SNB target range (in %)	-0.75	-0.75	-0.75	M0 money supply (CHF bn)	562.7	568.4	548.0
10-year government bond yields (in %)	-0.40	-0.4	-0.3	M1 money supply (%, YoY)	5.1	5.2	6.9
				M2 money supply (%, YoY)	3.6	3.6	3.7
				M3 money supply (%, YoY)	3.5	3.6	3.3
				Foreign currency reserves (CHF bn)	788.0	767.7	787.4

Source: Datastream, Bloomberg, Credit Suisse

Important Information

This report represents the views of the Investment Strategy Department of CS 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 Credit Suisse 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 Strategists contained in this report.

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.

For a discussion of the risks of investing in the securities mentioned in this document, please refer to the following Internet link: https://investment.credit-suisse.com/gr/riskdisclosure/

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 "Special Risks in Securities Trading" 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. Past performance is not a guide to future performance. 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. 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 Strategy Department

Investment Strategists are responsible for multi-asset class strategy formation and subsequent implementation in CS's 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 Strategists may be different from those expressed by other Departments at CS. Investment Strategist 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 Strategists 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 Credit Suisse 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 from https://investment.credit-suisse.com. Disclosures are available from www.credit-suisse.com/disclosure.

Global disclaimer/important information

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 document to CS include Credit Suisse AG, the Swiss bank, its subsidiaries and affiliates. For more information on our structure, please use the following link: http://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 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 document 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 document. 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 document or a related investment to any company or issuer mentioned. Some investments referred to in this document 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 document. These businesses include specialized trading, risk arbitrage, market making, and other proprietary trading. **TAX:** Nothing in this document 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 document 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 document. **WEBSITES:** This document may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the document 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 document. Accessing such website or following such link through this document 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 as otherwise specified herein, this report is distributed by Credit Suisse AG, a Swiss bank, authorized and regulated by the Swiss Financial Market Supervisory Authority. **Austria:** This report is distributed by CREDIT SUISSE (LUXEMBOURG) S.A. Zweigniederlassung Österreich (the "Austria 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 Austria branch is subject to the prudential supervision of the Luxembourg supervisory authority, the Commission de Surveillance du Secteur Financier (CSSF), 283, route d'Arlon, L-2991 Luxembourg, Grand Duchy of Luxembourg, as well as of the Austrian supervisory authority, the Financial Market Authority (FMA), Otto-Wagner Platz 5, A-1090 Vienna, Austria. **Bahrain:** This report is distributed by Credit Suisse AG, Bahrain Branch, 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 professional clients and 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, a branch of Credit Suisse AG, Zurich/Switzerland, is located at Level 21-22, East Tower, Bahrain World Trade Centre, Manama, Kingdom of Bahrain. **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 authority, the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and of the Autorité des Marchés Financiers. **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 is regulated by the Guernsey Financial Services Commission. Copies of the latest audited accounts 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. INH 000001030), as Portfolio Manager (registration no. INP000002478) 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. **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") with a financial institution license number 42. Credit Suisse (Lebanon) Finance SAL is subject to the CBL's laws and regulations as well as the laws and decisions 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. Investments in financial markets may involve a high degree of complexity and risk 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 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 confirms that he 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:** Banco Credit Suisse (México), S.A., Institución de Banca Múltiple, Grupo Financiero Credit Suisse (México) and C. Suisse Asesoría México, S.A. de C.V. ("Credit Suisse Mexico"). This document is elaborated for information purposes only and does not constitute a recommendation, advice or an invitation to execute any operation and does not replace direct communication with your relationship manager at Credit Suisse Mexico before the execution of any investment. The people who elaborated this document do not receive payment or compensation from any entity of the Credit Suisse Group other than the one employing them. The prospectuses, offering documentation, term sheets, investment regimes, annual reports and periodical financial information contained useful information for investors. Such documents can be obtained without any cost, directly from the issuer of securities and investment fund managers or at the securities and stock market web page, as well as from your relationship manager at Credit Suisse Mexico. The information herein does not substitutes the Account Statements, the INFORME DE OPERACIONES or/ and confirmations you receive from Credit Suisse Mexico pursuant to the General Rules applicable to financial institutions and other persons that provide investment services. C. Suisse Asesoría México, S.A. de C.V., is an investment advisor duly incorporated under the Securities Market Law ("LMV") and is registered before the National Banking and Securities Commission ("CNBV") under folio number 30070 and therefore is not a bank, is not authorized to receive deposits nor to custody any securities, is not part of Grupo Financiero Credit Suisse (México), S.A. de C.V.. Under the provisions of the LMV, C. Suisse Asesoría México, S.A. de C.V. is not an independent investment advisor pursuant to its relationship with Credit Suisse AG, a foreign financial institution, and its indirect relationship with Grupo Financiero Credit Suisse (Mexico), S.A. de C.V. The people who produced this document do not receive payment or compensation from any entity of the Credit Suisse Group other than the one employing them. **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 Nederlansche 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 authority, 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 Business Customers or Market Counterparties (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 information is being 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. **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 report is distributed in Spain by Credit Suisse AG, Sucursal en España, legal entity registered at Comisión Nacional del Mercado de Valores. **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 Degerler Anonim Sirketi, regulated by the Capital Markets Board of Turkey, with its registered address at Levazim Mahallesi, Koru Sokak No. 2 Zorlu Center Terasevler 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.

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).

19C013A_IS