



KOF Bulletin

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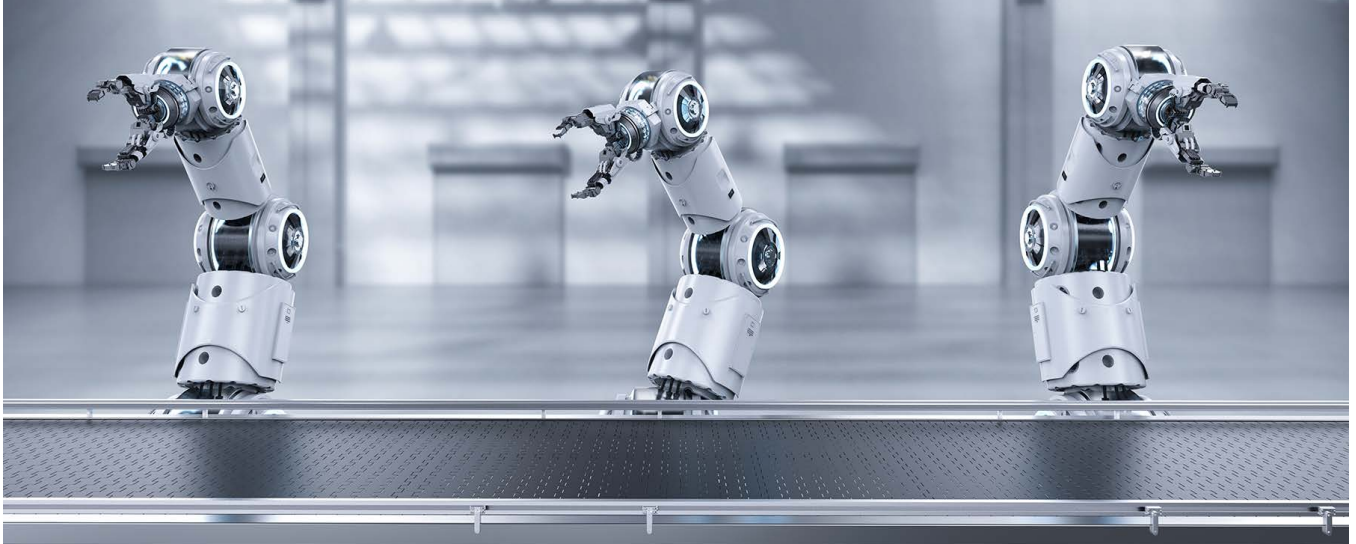
The last issue of the KOF Bulletin for this year shows once again the breadth of the research topics covered by our colleagues. They investigate the outlook for Switzerland as a location for innovation at regular intervals. Compared with other countries, Switzerland is still one of the most innovative countries in the world; however, the riders to this have become more apparent in recent years. You can read more about this topic in our first article. Our second article also concerns an international comparison. It focuses on the situation of young people on the labour market. The KOF Youth Labour Market Index presents the labour market situation for young persons in 178 countries according to a multi-dimensional approach. In the most recent investigation, researchers have focused in particular on the issue of skills mismatches, i.e. the question as to whether the supply of young jobseekers on the labour market 'matches' up with the demand of employers for staff. Although several countries have high levels of skills mismatch, each country must consider the precise reasons for this in order to identify an appropriate solution. The last article of this Bulletin is dedicated to an issue that may be more topical for many people during the winter flu season than at other times: healthcare, or rather specifically future trends in healthcare spending. This forecast is published twice each year, and you can read the most recent results [here](#).

We would like to thank you for your loyalty and wish you a peaceful and reflective end to the year, followed by a fantastic start to 2019!

Anne Stücker and Solenn Le Goff

ECONOMY AND RESEARCH

Is Switzerland Still at the ‘Spearhead of Innovation’?



KOF has investigated investment activities in the Swiss economy in the period from 2014 to 2016 on behalf of the Swiss State Secretariat for Education, Research and Innovation (SERI). The survey was conducted among private companies in the industrial, construction and service sectors. It appears that innovation activities have become more difficult and costly for Swiss companies.

Switzerland is still among the most innovative countries in the world, however...

For many years now, Switzerland has held one of the top places, if not the top spot, in international innovation rankings¹. However, with a number of signs pointing towards a regressive trend, this picture is deceptive. Some of the relevant indicators have declined in the last few years, not least in comparison with other countries.

Increasingly, Swiss companies are finding it harder to innovate than in the past. The number of companies allocating funds to innovation activities is on the decline (see G 1). Two indicators confirm this trend. The largest drop is in the number of businesses conducting their R&D activities in

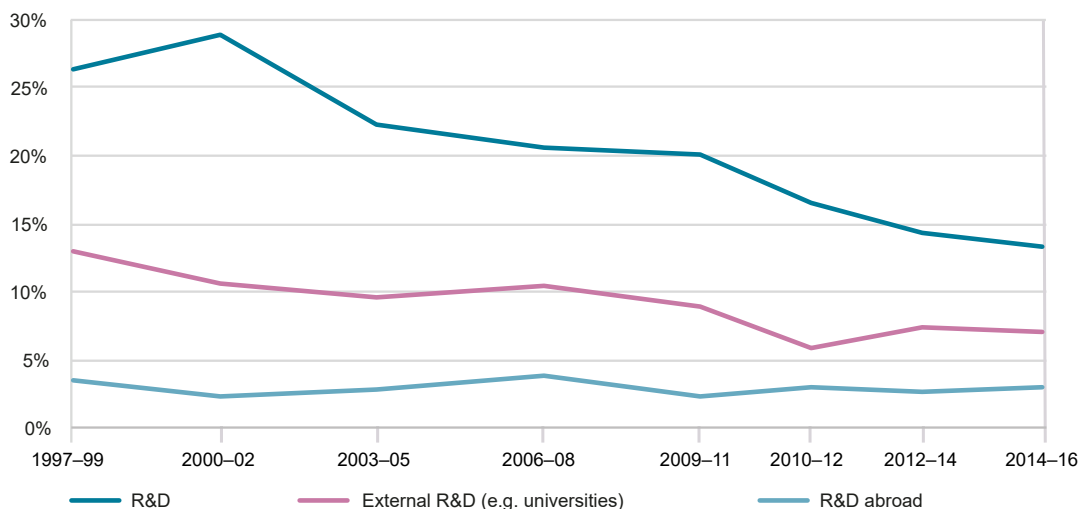
Switzerland. By contrast, the percentage of Swiss companies conducting their R&D activities abroad has remained stable and external research contracts (universities and other research centres) have been back on the rise since 2012, after a long decline.

Irrespective of company size and sector, the main obstacle to innovation is the associated cost. The surveyed enterprises also often quote long payback periods as a substantial barrier to innovation. Lacking equity capital and opportunities to tap into external sources of funding, problems for SMEs primarily consist of the high cost of innovation and the associated financing.

¹ Global Innovation Index 2018 and the European Innovation Scoreboard 2018.

G 1: Downward Trend in Innovation Spending

Trend in share of companies with R&D investments from 1998 to 2016; overall economy



Public innovation funding often goes to enterprises with more than 50 employees

In Switzerland, public innovation funding rarely involves direct financial support for companies. Instead, the government funds a university’s share in joint enterprise-university research projects, for instance.

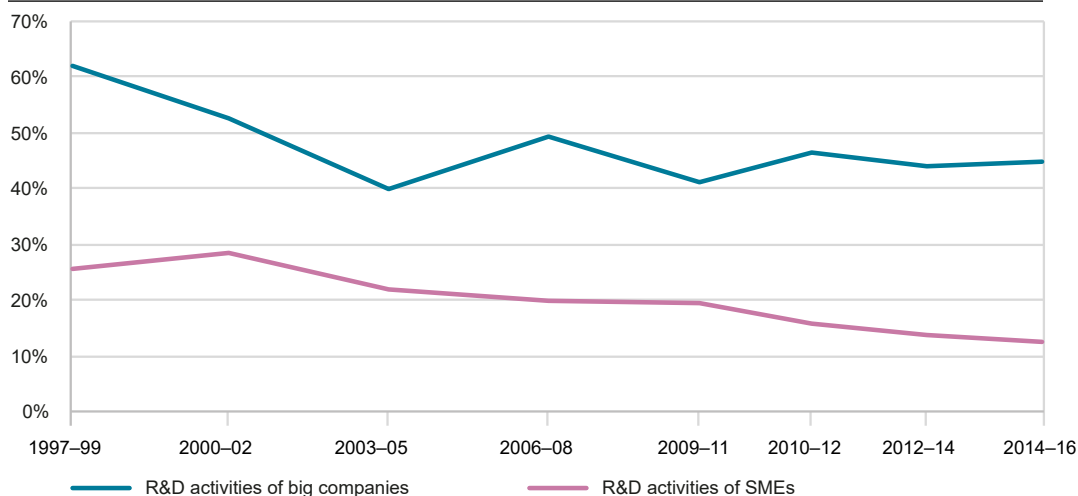
Despite the recent decline, the number of companies benefiting from public funding is now higher than 20 years ago. It is predominantly national programmes (e.g. by Innosuisse [formerly KTI]), cantonal support programmes and further national authorities which have increased their funding activities in the period from 2010 to 2014.

Enterprises with more than 50 employees are the main beneficiaries of innovation funding (62.1% of all companies which received cantonal, regional or national funding in 2015). The financing problem primarily affects enterprises with less than 50 employees. In 2016, international funding programmes (e.g. by the EU) included no more than 2.1% of the companies. Again, it is mostly larger enterprises which take advantage of these programmes (6.5% compared to 1.8% SMEs).

Hence, it would be expedient if national programmes focussed more strongly on smaller companies which rarely benefit from international programmes.

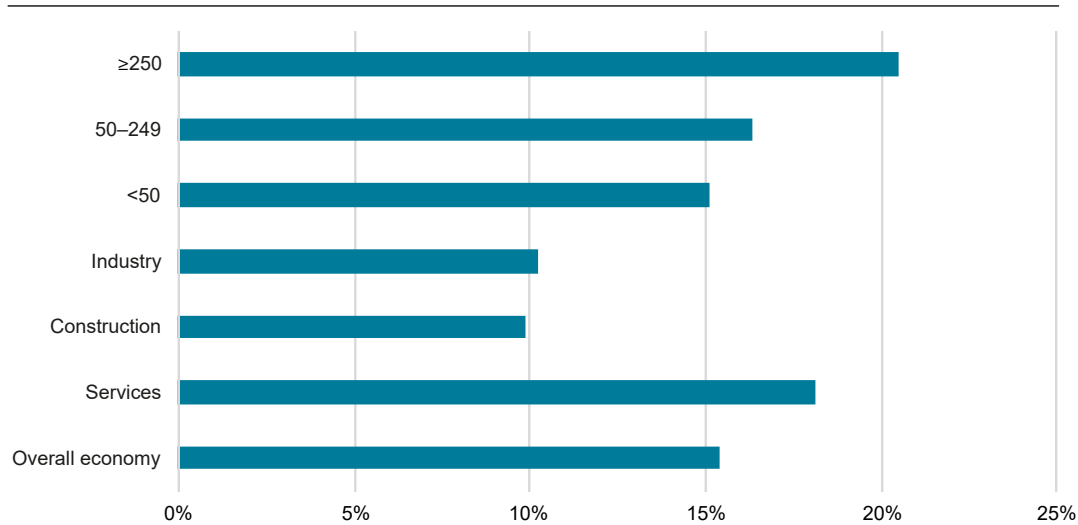
G 2: Steady Decline in Innovation Activities among SMEs

Share of companies with R&D activities by size, across all sectors



G 3: Big Companies Invest More in ICT

Share of ICT investments in total investments, 2014 to 2016



Larger companies can invest more than SMEs

The gap between SMEs and big companies is widening where innovation is concerned. Since 2009, we have seen a slight rise in the percentage of big companies active in the field of R&D, while the share of innovation-active SMEs, which account for 99% of all companies in Switzerland, has been on the decline since 2000 (see G 2).

Furthermore, R&D spending as a percentage of sales is twice as high at big companies: Their average R&D intensity is 4.5%, while the respective figure for the overall economy is 2.2% and for SMEs 2.05%. On top of this, the number of innovative products as a percentage of sales has risen significantly among big companies in the last few years and now exceeds the average level of the other businesses (41% compared to 34.7%).

Link between innovation and digitalisation is getting stronger

Today, innovative companies in Switzerland are more likely to improve their products and adapt them to new developments generated by other innovators (e.g. optimisation of production processes) than to develop market innovations themselves (products or services).

Since digitalisation affects all aspects of enterprises and facilitates new business models, companies' innovations and their degree of digitalisation are often closely linked.

The degree of digitalisation can be assessed through the analysis of investments in information and communication technologies (ICT). In the period from 2014 to 2016, Swiss companies invested close to CHF 300,000 in ICT (hardware and software) on average. Big companies not only invest more in ICT in absolute terms, they also have a higher ICT investment percentage (measured on the basis of gross investments) than other companies (>20% compared to 16% for enterprises with 50–259 employees and 15% for smaller enterprises; see G 3). The same is true for services.

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KOF Youth Labour Market Index: When a Skills Mismatch Isn't the Same as a Skills Mismatch

Is the high level of the skills mismatch in the United Kingdom comparable with the high level in Germany? The special analysis in the new release of the KOF Labour Market Index provides an answer to this. The investigation shows that there can be various causes for an identical Skills Mismatch Rate. In order to identify an appropriate way of dealing with a skills mismatch within given country, it is necessary to consider the individual components of the indicator.

The KOF Youth Labour Market Index (KOF YLMI)¹ presents the labour market situation for young people according to a multi-dimensional approach. It takes account of twelve indicators, spread over the four dimensions Activity State, Working Conditions, Education and Transition Smoothness, which are aggregated into an index. The fifth release of the KOF YLMI incorporates data for the year 2016. The new data confirm the leading position of Switzerland, which occupies second place in the international ranking.

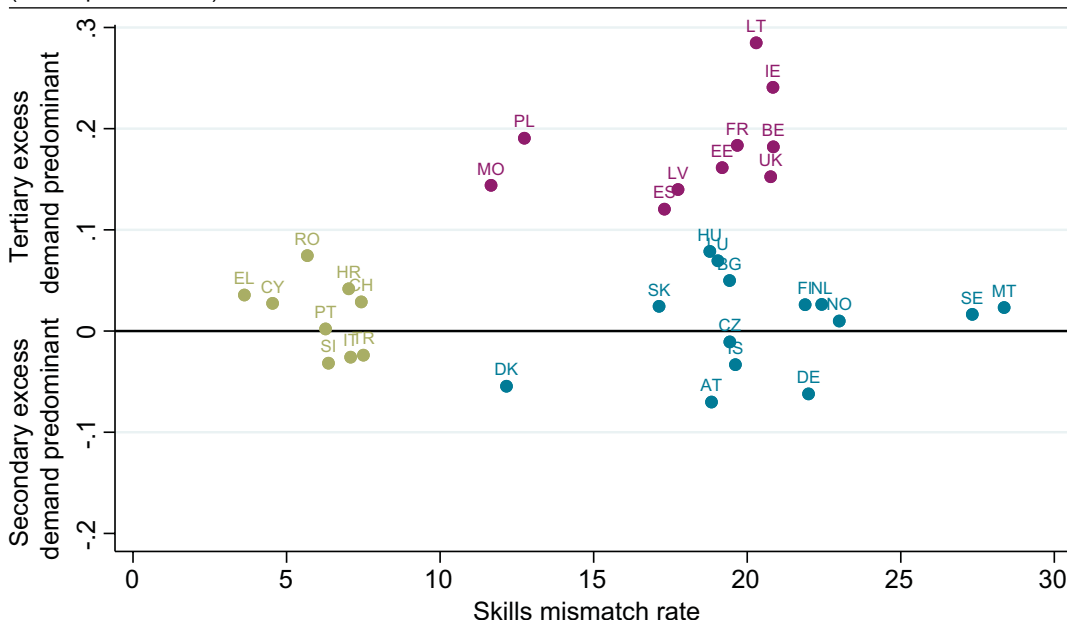
The components of skills mismatch

The special analysis in the new release of the KOF YLMI focuses on the Skills Mismatch Rate, which falls under the Education dimension. A skills mismatch exists if the demand for staff does not match up with the supply of

workers. In order to gain a feeling for the various manifestations of this indicator, the Skills Mismatch Rate has been broken down into its components. The definition of the Skills Mismatch Rate used in the KOF YLMI is based on a so-called index of inequality. This is calculated as the difference between the proportions of workers with a qualification at primary, secondary and tertiary level, and the proportions of unemployed persons at the same three levels. For example, if the proportion of unemployed persons with a primary level qualification is significantly higher than the proportion of workers with the same qualification, there will be deemed to be an oversupply of young persons holding a primary qualification. On the other hand, there is considered to be overdemand if the proportion of unemployed persons holding a primary

G 4: Taxonomy of Skills Mismatch

(own representation)



- Balanced
- Similar imbalance at secondary and tertiary level
- Greater imbalance at secondary than at tertiary level

¹ KOF Youth Labour Market Index



qualification is significantly lower than the proportion of workers with the same qualification. The same terminology is also used for young persons holding a secondary or tertiary qualification.

A taxonomy of skills mismatch

The analyses indicate that the driving forces behind the Skills Mismatch Rate differ significantly from country to country. The greatest differences between patterns can be found in particular at secondary and tertiary level. On the other hand, all countries – other than Turkey as the sole exception – have an oversupply at primary level. Graph G 4 presents a possible taxonomy (classification) in order to better classify the various patterns. The x-axis indicates the level of the Skills Mismatch Rate, which may fall between 1 and 100. The y-axis shows in the upper area that the overdemand for young persons with tertiary education is greater than the overdemand for young persons with secondary education ($y > 0$). In the lower area, the overdemand for young persons with a secondary level qualification is greater than the overdemand for young persons with a tertiary level qualification ($y < 0$).

Overall, it is possible to form three groups. The first group (green) is characterised by a relatively low level of the Skills Mismatch Rate. In countries such as Greece, Cyprus, Romania, Croatia and Switzerland the overdemand at tertiary level is slightly higher than the overdemand at secondary level. On the other hand, the opposite is the case for Slovenia, Italy and Turkey. In Portugal the overdemand at secondary level is practically the same as it is at tertiary level.

If one focuses on the countries with a higher Skills Mismatch Rate, a further group of countries can be observed (blue), which are distributed around the horizontal line. This means that the overdemand for young persons with secondary and tertiary education is practically the same. Five of these countries – Denmark, Austria, Czech Republic, Iceland and Germany – have an overdemand at secondary level that is slightly higher than the overdemand at tertiary level (situated below the line). For the other nine countries – Slovakia, Hungary, Luxembourg, Bulgaria, Finland, the Netherlands, Norway, Sweden and Malta – the overdemand at tertiary level is somewhat greater than the overdemand at secondary level.

The third group (pink) is comprised of all countries in which the overdemand at tertiary level is clearly predominant. This means that the Skills Mismatch Rate in these countries results mainly from the extremely high overdemand for workers with a tertiary education qualification. This group includes Montenegro, Poland, Spain, Latvia, Estonia, France, Belgium, the United Kingdom, Ireland and Lithuania.

To summarise, it may be stated that there is considerable heterogeneity within the pattern of the Skills Mismatch Rate. It is therefore important not only to consider the skills mismatch on an aggregate level but also to consider the causes of the different weightings.

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Further information may be found on our website:
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The KOF Study no. 123 'Disentangling Skills Mismatch. Fifth Release of the KOF Youth Labour Market Index' can be found on our website:
www.kof.ethz.ch →

Healthcare Expenditure Still on the Rise – Albeit at a Slower Pace Relative to GDP

Healthcare spending is set to rise further in the coming years. However, the robust growth in nominal GDP as of 2018 will slow down the relative increase in healthcare expenditure compared to the gross domestic product. According to the KOF Forecast of Swiss Healthcare Expenditures, per capita spending will exceed CHF 10,000 a year. Furthermore, there will be a shift from inpatient to outpatient treatment.

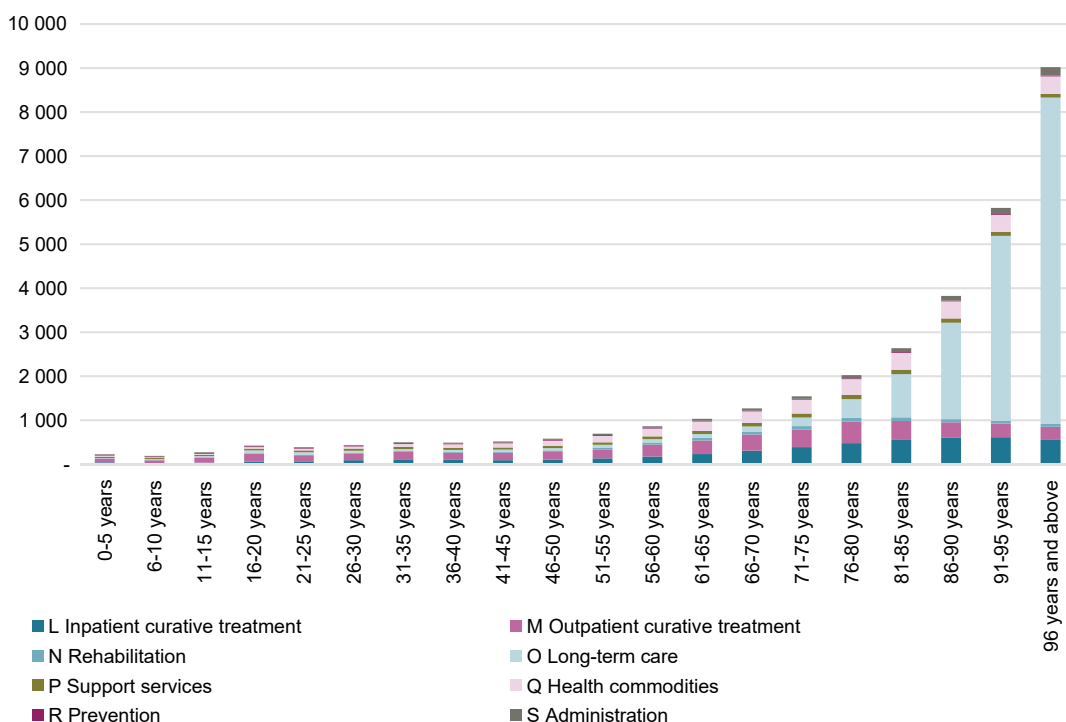
Various factors affect the development of healthcare expenditure. Since healthcare is a very staff-intensive sector, developments in nominal wages are often reflected in the development of healthcare spending. The general economic situation also plays a role: During strong economic phases, demand for healthcare services tends to be higher than during weak phases. On top of this, the population structure and its general trend also play a role: Older population cohorts are particularly important in forecasts of healthcare spending since they consume more healthcare services— especially nursing services— per capita than younger cohorts (see G 5). Healthcare policy measures represent another relevant factor in the development of healthcare spending.

Robust trend in the coming years

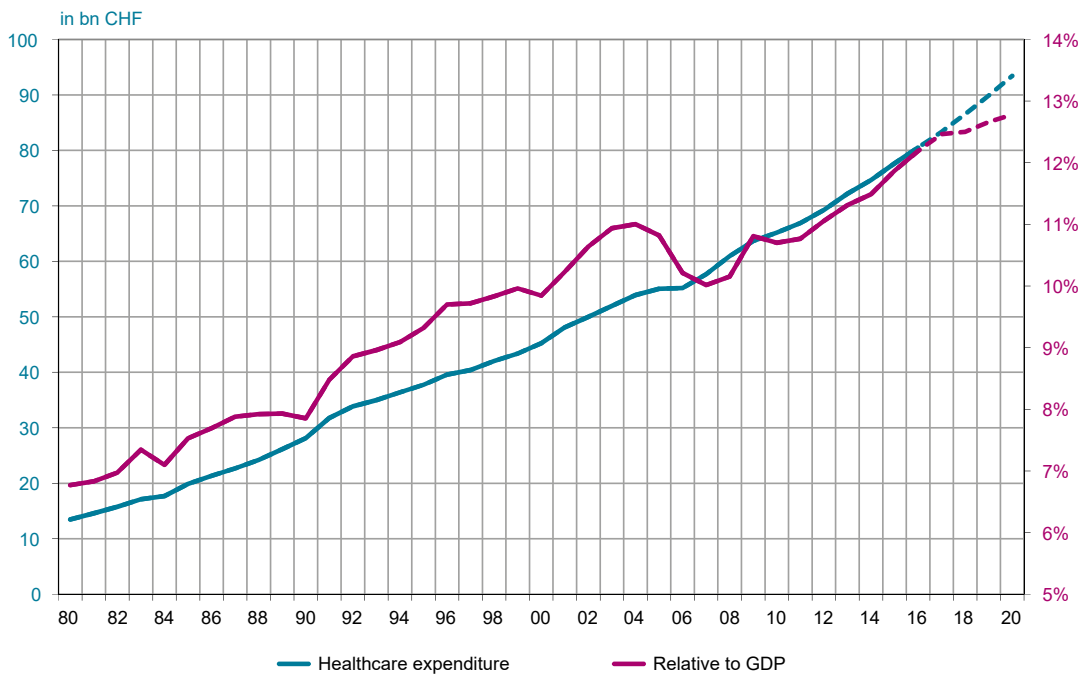
Due to the healthy economic development, nominal wages rose faster this year than in the past few years. Older population cohorts are also expected to increase more substantially than in the preceding year. The amendment of the doctors' fee schedule (TARMED) resolved by the Federal Council in October 2017 is to generate annual savings of CHF 470 million, while the reintroduction of drug price reviews will also keep costs slightly lower. All in all, healthcare expenditure is set to rise by 3.8% this year.

The anticipated 3.9% growth in the coming two years is only marginally higher. In 2019, both wage growth and the number of senior citizens is expected to increase faster

G 5: Costs per Citizen per Month in 2015 (Estimate)



Source: Federal Statistical Office

G 6: Absolute and Relative Trend in Healthcare Expenditure

than in 2018. Savings made through the prioritisation of outpatient over inpatient treatment and drug price reviews should slow down healthcare spending to some degree. In 2020, the rise in nominal wages will continue. However, the demographic trend is not expected to accelerate further in the foreseeable future.

Slower growth relative to GDP

With healthcare spending measured on a nominal basis, relative analysis compared to the nominal economic performance is also relevant. Lively growth of nominal GDP as of 2018 will slow down the rise in healthcare expenditure in relation to GDP. Hence, the healthcare spending quota will rise from 12.2% (2016) to 12.8% in 2020 (see G 6).

Shift from inpatient to outpatient care continues

Healthcare spending can be analysed from three different angles: Which services are offered ('services'), who provides the services ('service providers') and who pays for the services ('funding regimes'). Each of these categories consists of various subcategories.

In terms of individual categories, the 'support services' in the 'services' category are set to grow substantially, albeit at a slightly more moderate pace than in the recent past. Furthermore, we expect 'outpatient curative treatment' to expand faster than 'inpatient curative treatment'. Among the 'service providers', high growth rates are anticipated in the areas of 'other outpatient service providers' and 'support service providers'. In terms of 'financing regimes', the trend is more heterogeneous, although 'mandatory health insurance' and 'self-paying patients' are expected to expand more swiftly than other subcategories.

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KOF INDICATORS

KOF Business Situation: Slight Recovery

The KOF Business Situation Indicator for the Swiss Private Economy edged up slightly in November, recording the first gain after a consecutive three-month decline (see G 7). The current business situation among Swiss companies is thus predominantly positive and of a robust nature.

The positive trend in the KOF Business Situation Indicator in November was dominated by a favourable course of business in the manufacturing industry and the retail trade (see T 1). In both sectors, the Business Situation Indicator more than offset its decline of the previous month. The business situation among financial and insurance service providers is largely unchanged. In the construction and project engineering sectors, the business situation slowed down slightly in November. Wholesalers, the hotel and catering companies and the other service providers were last surveyed in July. At the time, all three sectors reported a slight improvement of their business situation.

The business situation has improved in the majority of the major FSO regions. The Situation Indicator rose specifically in Eastern Switzerland, Central Switzerland and Espace Mittelland (see G 8). In North-West Switzerland and the Zurich region, the business situation improved very slightly. The Lake Geneva region and, to a larger extent, Ticino did not follow November's generally positive trend.

Explanation of graphs:

Graph G 7 presents the KOF business situation across all sectors covered by the survey. The business situation in sectors which are surveyed on a quarterly basis is kept constant during the intervening months.

G 7: KOF Business Situation Indicator

(Balance, seasonally adjusted)



T 1: KOF Business Situation for Switzerland (seasonally adjusted balances)

	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18
Private sector (overall)	22.8	23.5	25.8	26.4	26.5	26.3	28.2	27.1	29.0	28.8	28.5	28.2	29.4
Manufacturing	20.3	19.6	20.4	21.8	22.4	21.0	26.7	24.2	27.0	28.5	26.3	22.6	27.2
Construction	29.4	28.3	30.2	30.3	28.0	30.2	29.7	28.7	29.2	27.6	27.7	29.5	28.8
Project engineering	49.7	49.7	45.9	48.8	50.4	48.3	47.1	47.0	45.4	46.5	45.5	45.8	44.3
Retail trade	0.6	3.9	1.8	7.6	5.5	0.2	7.8	7.4	10.2	8.2	9.7	6.9	10.2
Wholesale trade	-	-	27.7	-	-	26.9	-	-	33.0	-	-	34.3	-
Financial services	34.4	39.6	41.1	39.8	41.2	41.7	42.9	39.8	41.3	38.8	40.3	40.9	40.8
Hotel and catering	-	-	3.2	-	-	6.4	-	-	7.8	-	-	9.2	-
Other services	-	-	26.3	-	-	27.3	-	-	27.2	-	-	28.3	-

Answers to the question: We assess our business situation as good/satisfactory/bad. The balance is the percentage of 'good' answers minus the percentage of 'bad' answers.

Graph G 8 presents the business situation in the main regions pursuant to the Federal Statistical Office (FSO). The regions are coloured according to business situation. The arrows in the regions indicate the change in the business situation compared to the previous month. An upward-pointing arrow, for instance, indicates that the situation has improved over the previous month.

G 8: KOF Business Situation in the Private Sector

The angle of the arrows reflects the change in the business situation compared to the previous month

Source: KOF

Net balances

■ 55 to 100	■ 30 to under 55	■ 16.5 to under 30
■ 9 to under 16.5	■ 5 to under 9	■ -5 to under 5
■ -9 to under -5	■ -16.5 to under -9	■ -30 to under -16.5
■ -55 to under -30	■ -100 to under -55	

The KOF business situation is based on over 4,500 reports by Swiss companies. Every month, businesses are surveyed in the following sectors: industry, retail trade, construction and project engineering as well as financial and insurance services. Businesses in the hotel and catering sector, wholesalers and the other service providers are surveyed in the first month of every quarter. Among other questions, the businesses are asked to assess their current business situation. They may rate their situation as 'good', 'satisfactory' or 'bad'. The balance of the current business situation is the percentage difference between the 'good' and 'bad' responses.

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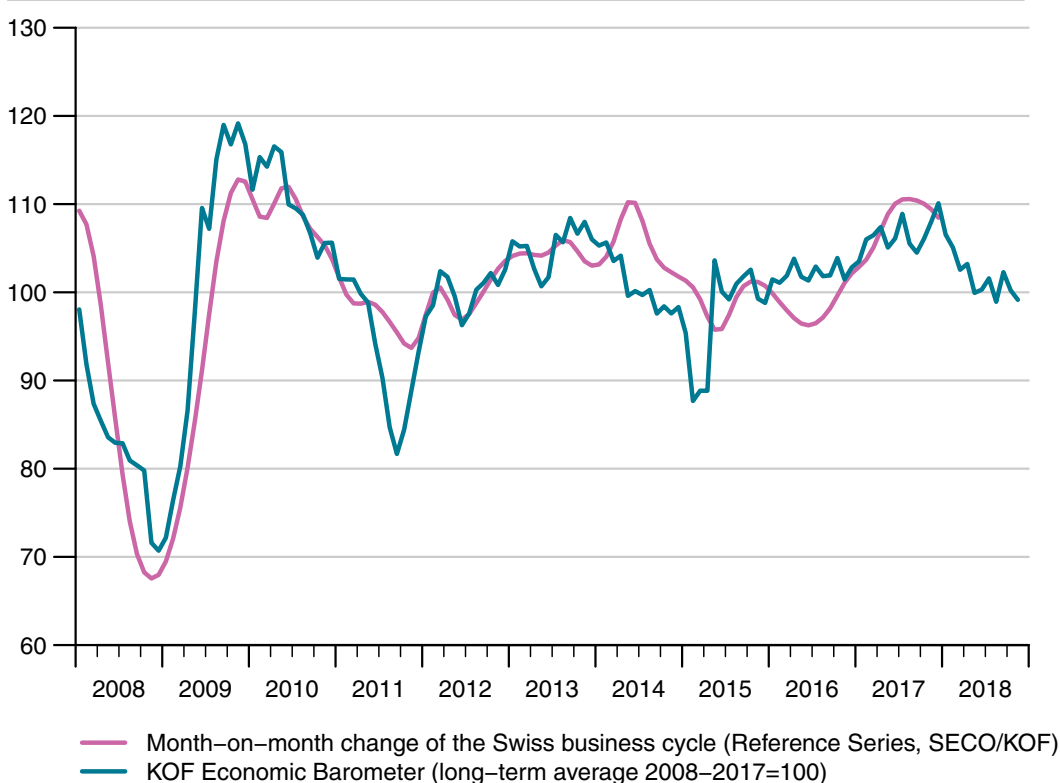
You can find more information about the KOF Business Tendency Surveys on our website:

www.kof.ethz.ch →

KOF Economic Barometer: Economic Outlook Clouds Over

The KOF Economic Barometer falls for the second time in a row in November (see G 9). With a level of 99.1 points, the Barometer is now slightly below its long-term average again. For the Swiss economy, the fairway is becoming slightly more difficult.

G 9: KOF Economic Barometer and Reference Series



The KOF Economic Barometer decreases by 1.1 points in November, from 100.2 points in October (revised from 100.1 points) to 99.1 points. This month's decline was in particular due to less favourable export prospects. The impetus from foreign demand is likely to weaken somewhat in the coming months. The development in the banking and insurance sector may lose some of its momentum. By contrast, slight support for the economy will come from the

construction sector and private consumption. The manufacturing sector in particular is also resisting the downward tendency. The indicators for the manufacturing sector have developed positively overall.

In the goods producing sectors (manufacturing and construction), in particular the indicators for the future development of employment point to a weakening. However, the

negative factors were in November more than offset by the indicators for order backlogs, the competitive position, the general business situation, the development of production and inventory development.

Within the manufacturing sector, prospects have improved for the chemicals, pharmaceuticals, plastics industry, the textile and clothing industry, the paper and printing industry as well as the machinery and vehicle industry. On the other hand, the food and beverages industry as well as the manufacturers of electrical goods are facing a downward tendency.

KOF Economic Barometer and reference time series: annual update

The annual 2018 revision took place in September. These updates always comprise the following steps: a redefinition of the pool of indicators that enter the selection procedure, an update of the reference time series and a renewed execution of the automated variable selection procedure.

The updated pool of indicators now consists of more than 500 economic time series. The updated reference series is the smoothed continuous growth rate of Swiss GDP distributed across the three months of a quarter, based on the official quarterly real GDP statistics, adjusted for the effects of major international sporting events, as released

by the Swiss State Secretariat for Economic Affairs (SECO) in early September 2018. SECO, in turn takes the release of the previous year's annual GDP data published by the SFSO into account. The 2017 vintage of the KOF Barometer (published until August 2018) comprised 273 indicator variables.

The current 2018 vintage, which is now replacing the 2017 vintage, consists of 345 indicator variables, selected from a pool of more than 500 candidate variables. Compared to the previous vintage, 104 indicators are new and 32 dropped out of the set of selected indicators. The Barometer is the rescaled weighted average of the selected indicators, where the weights correspond to the loadings of the first principal component.

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For detailed information on the KOF Economic Barometer, visit our website:
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