



KOF Bulletin

No. 117, April 2018

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EDITORIAL

Dear readers,

The research activities of the KOF Swiss Economic Institute cover a wide spectrum. Not only do the researchers prepare forecasts of Swiss and global economic trends (see articles four and five), they also investigate issues such as the effects of paid sick leave – which they found to be positive in terms of reduced contagion – or draw up extensive literature overviews and analyses of vocational education and training implementation including facilitating factors. Moreover, KOF also prepares expert appraisals, for instance for the Canton of Neuchâtel, which proposes the introduction of an income-based smoothing mechanism and budget rule to improve the canton's responsiveness to volatility in certain types of revenues. All these articles give you an insight into the wide range of research conducted at our institute.

I wish you an interesting and informative read,

David Iselin

ECONOMY AND RESEARCH

Smoothing of Tax Revenue and Modification of the Debt Brake for the Canton of Neuchâtel



The high volatility of certain revenue categories confronted the Canton of Neuchâtel with budgetary policy problems in past years. Unexpected and sometimes significant changes made it difficult to conduct budgetary policy. In particular, unexpected revenue shortfall made it necessary to make adjustments to ensure compliance with the requirements of the debt brake. Therefore, the KOF recommends the implementation of a smoothing mechanism along with a budgetary rule based on the trend revenue.

Volatility within cantonal revenue and forecasting errors

In order to be able to propose a revenue smoothing mechanism, it is necessary first and foremost to identify the categories that pose the greatest problems from this point of view. Tables T1 and T2 quantify volatility along with the forecasting errors for different categories of cantonal revenue. These tables present, in order, the amount of revenue collected in 2016 in millions of Swiss francs, the average for the period, the coefficient of variation, the average absolute forecasting error as a percentage of revenue booked ¹, the equivalent in Swiss francs in 2016 of the average absolute error and finally the number of periods in the series.

T 1: Volatility and Forecasting Errors of Own Revenue (1978–2016)

	Own cantonal revenue					
	2016	Av.	CV	Abs. Err.	Err. CHF	No.
Personal income tax	716.80	444.10	0.44	2.60	18.80	39
Tax withheld at source	35.90	22.40	0.44	12.20	4.40	20
Cross-border workers	11.40	5.10	0.72	12.60	1.40	30
Corporate tax	150.40	81.90	0.63	13.00	19.60	39
Land tax	9.00	3.90	0.53	13.80	1.20	39
Real estate gains tax	26.30	12.40	0.67	23.70	6.20	39
Real estate transfer tax	33.40	21.00	0.38	15.70	5.20	39
Inheritance tax	22.20	11.10	0.54	15.40	3.40	39
Total local revenue	1005.00	590.00	0.47	3.50	34.70	39

¹ This indicator measures the average over the period of the absolute difference between budgeted and realised revenue in each considered year in percent of the realised revenue. The use of the absolute value means that both positive and negative deviations are considered as positive values. This prevents that positive and negative deviations offsets each other when the average of the deviations is computed over several years.

The coefficient of variation offers a measure of volatility which is comparable for different revenue categories and confirms that revenue collected from corporate tax, the share of federal direct tax (FDT) and revenue from the resource equalisation mechanism is highly volatile. Furthermore, the average absolute forecasting error in Swiss francs in 2016 quantifies the impact on budgetary policy of the difficulty in forecasting this revenue.

With an average absolute error in CHF of between 19.6 and 6.10 million, corporate tax and the share of FDT have been particularly problematic for the conduct of budgetary policy and require a smoothing mechanism to be put in place.²

T 2: Volatility and Forecasting Errors of Other Revenue (1978–2016)

	Other cantonal revenue					
	2016	Av.	CV	Abs. Err.	Err. CHF	No.
Share of FDT	72.30	66.00	0.50	8.40	6.10	39
Advances	11.80	13.50	0.40	21.80	2.60	33
SNB	14.40	21.50	1.00	195.40	28.10	33
NFE Resources	44.40	24.80	0.90	3.90	1.70	9
NFE Geo-topographical	23.10	23.00	0.00	0.00	0.00	9
NFE Socio-demographic	14.70	14.30	0.10	0.00	0.00	9
NFE Hardship	100.80	105.50	0.00	0.00	0.00	9
Total other revenue	281.50	134.30	0.70	6.30	17.70	39

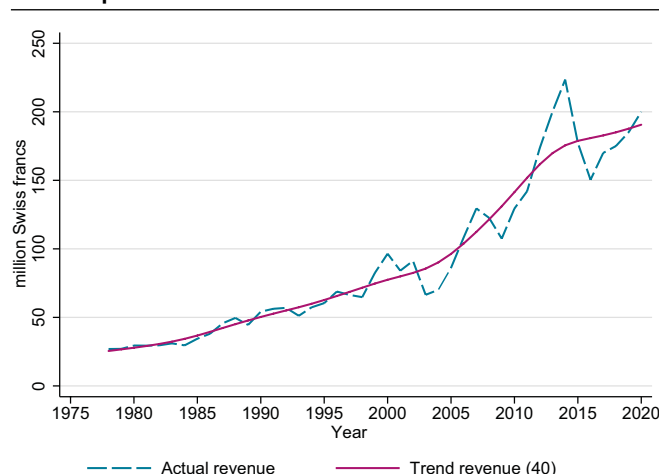
NFE = national fiscal equalization

Revenue smoothing mechanism

The smoothing mechanism recommended is based essentially on three elements, specifically the creation of a smoothing reserve in the balance sheet, the definition of a rule governing payments into/out of the reserve, and the calculation of a trend revenue level. In this contribution, we use corporation tax as an example in order to illustrate the smoothing mechanism called for. The trend revenue level has been calculated with the assistance of a Hodrick-Prescott filter (Hodrick and Prescott, 1997)³. The degree of smoothness imposed by the filter on the revenue data set is dependent upon a lambda parameter, which we have set at 40 according to the procedure recommended by Pollock (2004)⁴. Graph G 1 illustrates in blue the actual corporation tax revenue and in red the trend level calculated with the assistance of the HP filter.

The difference between these two curves determines the amount of revenue that is to be credited to/drawn down from the reserve. For reasons of transparency and in order to facilitate the assessment of the mechanism, we

G 1: Corporate Tax Revenue



recommend that a reserve be created for each revenue category. In the specific case of corporation tax, we recommend an initial allocation to the reserve of between CHF 3 and 55 million, depending upon the revenue dynamic at the time of its creation.

Modification of the debt brake

The volatility of the different revenue categories complicates the conduct of budgetary policy since, due to the variations in revenue, significant adjustments need to be made on the expenditure side over the very short term. In order to avoid such adjustments and to smooth out the variation in expenditure over time, we recommend a modification of the debt brake mechanism. In particular, the reference to a maximum spending overshoot of 1% should be removed and replaced by a budgetary rule known as 'trend revenue', namely a rule that sets the level of spending at the level of trend revenue. Such a fiscal rule requires the fiscal balance before payments into/out of the smoothing reserve to fluctuate according to business cycles, whereas expenditures should be kept at the level of trend revenue irrespective of the phase of the business cycle. With specific regard to the stabilisation of public spending, the superiority of a budgetary rule of this type over other alternative mechanisms, including in particular those based on moving averages or on a model identical to the Federation's debt brake, has recently been demonstrated.⁵

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KOF Study

Glättung der Steuereinnahmen und Änderungen bei der Schuldenbremse im Kanton Neuenburg www.kof.ethz.ch →

² The significant forecasting errors for the share in the profits of the SNB are essentially due to the years 2013 and 2014, when the SNB failed to pay a dividend in 2013 and then paid double the amount in 2014.

³ Hodrick, R. and E. Prescott (1997): Postwar U.S. Business Cycles: An Empirical Investigation. *Journal of Money, Credit and Banking*, 29(1), 1–16.

⁴ Pollock, D.S.G. (2000): Trend estimation and de-trending via rational square-wave filters. *Journal of Econometrics*, Volume 99, Issue 2, 317–334.

⁵ Landon, S. and C. Smith (2017): Does the design of a fiscal rule matter for welfare? *Economic Modelling*, Volume 63, 2017, 226–237.

Paid Sick Leave – A Trade-Off Between Contagion and Work Avoidance

The current step-by-step introduction of paid sick leave in the USA is accompanied by a significant decline in the influenza rate. This article illustrates the correlation between paid sick leave and contagion, and suggests that sick pay schemes can be used to avoid contagion.

In Germany, paid sick leave regulations applicable to all companies have been enshrined in the law since 1994. The USA is lagging behind in this field. Although 65% of employees may stay at home when they're sick, at 20%, paid sick leave is more of an exception than a rule, especially in the low-wage sector (Susser & Ziebarth 2016). However, things have developed since 2006 and paid sick leave is now being introduced on a gradual basis in various states and individual cities.

So what are the actual effects of sick pay schemes? In Germany, experts have suspected for some time that paid sick leave may, to some degree, result in increased work avoidance and absenteeism. This is, not least, due to the fact that attending doctors are free to determine the duration of the absence. By contrast, in the USA there is a maximum of seven days a year, which should significantly restrict the level of absenteeism.



Another key aspect is contagion. Employees who are paid to stay home when they are sick do not bring viruses to the workplace and hence do not infect colleagues or customers.

In their paper, Stefan Pichler and his co-author Nicolas R. Ziebarth analyse the effect of the introduction of paid sick leave in the USA and the impact of the amended sick pay regulations in Germany on various diseases. In specific, they have developed a model which allows them to quantify the negative externalities resulting from contagion. Their paper thus provides a basis that facilitates the identification of contagion in various framework conditions. Their results also show that paid sick leave is a suitable measure to counteract these negative externalities.

Sick pay reduces the number of influenza cases

The paper, which has recently been published in the *Journal of Public Economics*, demonstrates that the introduction of paid sick leave in the USA has reduced the number of flu cases by at least 5%. Given the fact that this introduction is really an extension of paid sick leave (from previously approx. 65% of employees receiving sick pay to 100%), companies newly adopting a sick pay scheme may expect much greater effects.

By contrast, the reverse trend applied in Germany in 1998. Here, sick pay was reduced from 100% of the wages to 80%, leading to less absenteeism in general. Only contagious diseases were unaffected since cases of fresh contagion and fewer absences balanced each other out.

Impact on employment and wages?

However, as is often the case with statutory regulations, the question arises whether mandatory measures are required or whether companies should take their own decisions in the matter. At first glance, the fact that paid sick leave in the USA resulted in a decline of the flu rate supports the argument in favour of mandatory sick pay. However, this positive impact could be cancelled out by negative effects on wages or employment. In a related article (Pichler & Ziebarth 2016), the authors show that this is not the case, at least in the USA. The statutory introduction of paid sick leave did not affect either employment figures or wages.

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Literature

Pichler, S. and N. R. Ziebarth (2017): The pros and cons of sick pay schemes: Testing for contagious presenteeism and noncontagious absenteeism behavior. *Journal of Public Economics* 156, 14-33.

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Pichler, S. and N. R. Ziebarth (2016): Labor Market Effects of US Sick Pay Mandates. IZA Discussion Papers.

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Susser, P. and N. R. Ziebarth (2016): Profiling the sick leave landscape: Presenteeism among females. *Health Services Research* 51(6), 2305-2317.

www.kof.ethz.ch →

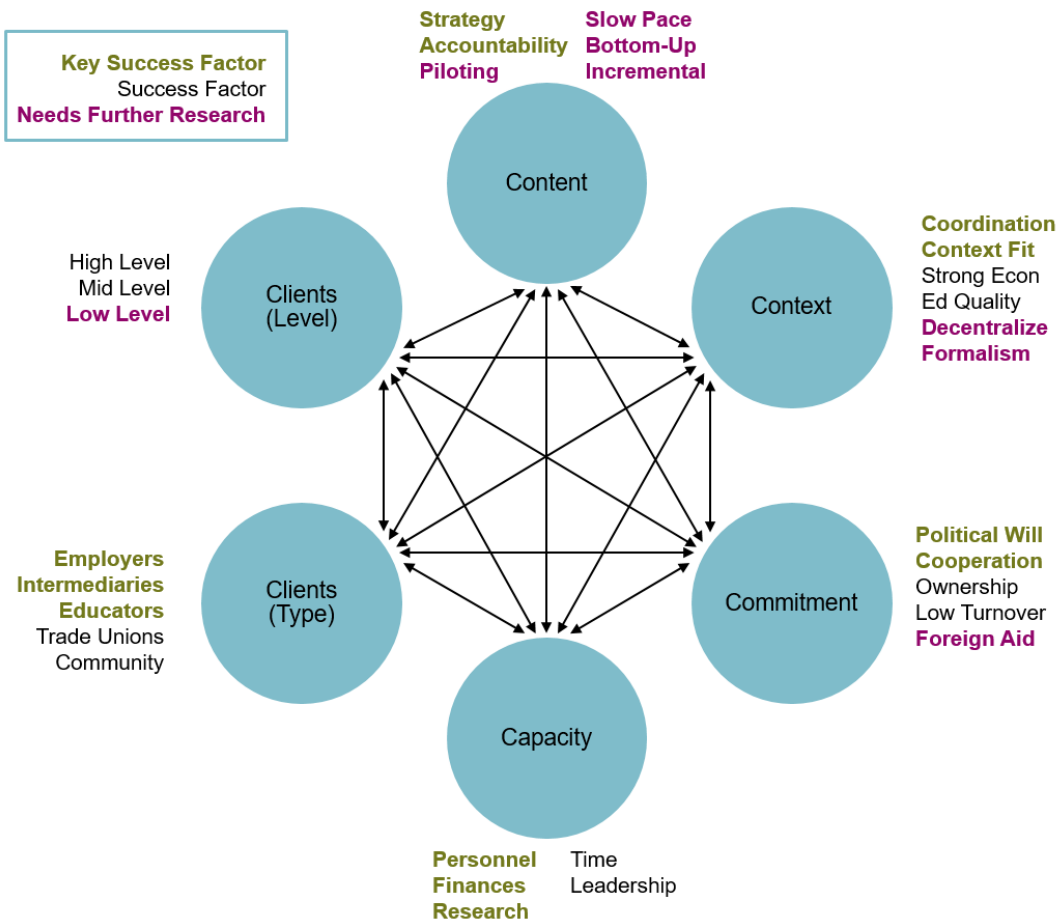
What Does It Take to Improve a VET System?

As research has shown that good Vocational Education and Training (VET) systems lead to better results, and there is already a good understanding of what a good VET system is, it is important to know what it takes to improve a system. KOF's Education Systems Research Division has just finished the first version of a literature review on the implementation of VET reforms.

The authors, Katherine Caves and Severin Baumann, reviewed 1,845 literary sources, including scholarly peer-reviewed sources and 'grey' sources such as policy reports and documents from international organisations like the OECD, UNESCO, World Bank, and ILO. They searched major research databases for vocational education (including apprenticeship/VET/TVET) reform (including change/innovation) implementation and cut the pool down to 177 fully relevant sources, based on the abstracts.

In order to develop a framework of key items that should influence successful implementation, Caves and Baumann used the existing theory and empirical results from the literature on policy implementation, implementing general-education reforms, and even from the few sources that deal with VET reform specifically. The overall categories used were taken from Nilsen's (2015) '5C' framework on implementation. Caves and Baumann added theory about apprenticeship and VET and then iteratively coded sets of 20 test papers, all of which provided the final coding framework (see G 2).

G 2: Coding Scheme and Results for VET Implementation



The authors fully coded the 177 sources (two independent coders, disagreements were resolved through discussion) and found 1,538 mentions of the 30 items. Almost all of the mentions are positive, meaning that the item is good for implementation and that it goes in the direction predicted by theory. When something is coded as negative, it means that the opposite of the item is helpful for implementation. For example, employer involvement is essentially always positive, both in sources that say employers helped implementation and sources that say that the lack of employers' involvement had a negative effect on implementation. If employers' involvement were to impair the implementation progress, it would be coded as negative.

Graph G 2 shows item-level results, categorised into 'Key Success Factors,' 'Success Factors,' and 'Needs Further Research.' Key success factors are items that come up frequently and are always or nearly always positive (in green). These are the critical items for implementers. Success factors (in black) are also positive, but they are mentioned less often. Finally, items that need further research (in pink) have more negative, mixed, or conditional mentions in the literature. These are areas in which researchers need to do more work in order to be able to inform implementers about what might be happening.

The second main contribution of the literature is its exploration of trends and patterns in the data. Caves and Baumann look for four major differences: the publication year (before and after 2009), the type of publication (grey or peer-reviewed literature), the development status of the country described by each source (developed or developing), and the continent of the country described in the reform.

Publications from different times are broadly similar, with the only real difference being that newer papers are more likely to mention intermediaries. It is not surprising that there has been little change over time as they are mostly isolated case studies and there are few sources that consistently refer to one another or build ideological frameworks.

The scholarly and grey literature is also relatively similar. Grey sources are more likely to mention actor types, in particular Employers and Intermediaries. There are three major organizations that figure prominently in the grey literature: European Centre for the Development of Vocational (Cedefop), European Training Foundation (ETF), and OECD. While Cedefop and ETF are similar to the rest of the group, OECD is more likely to mention Employers and Intermediaries, and less likely to mention Political Will and Context Fit.

Developed and developing countries are more or less equally represented, which is an encouraging sign that developing countries have not been overlooked by this literature. The two types are generally quite similar, with Coordination mentioned more in developing countries than their developed counterparts. Though the differences are not as dramatic, Personnel, Finances, and Foreign Aid are all more typical in sources on developing countries. If we look at developed and developing countries within Europe, the pattern is very similar.

Finally, the one major gap in the literature is its neglect of non-European countries. European sources make up half of the sample, while the other half is divided between multi-continent studies and Asia, Africa, Oceania, North America and South America in descending order. This could be caused by a number of factors, including our search language being limited to English, a lack of VET systems in the affected countries, or VET generally not being considered a topic for research. However, it is encouraging to see that multi-continent studies are not that different from those including the mainly-European population, although they do tend to emphasize Context Fit.

The review shows that the literature on VET implementation is larger and more consistent than expected. It is also different from general-education reform implementation, in particular due to its emphasis on actor types and the interactions among them. This literature review is as systematic as possible, but there are always moments when subjectivity might pose a potential limitation. As a literature review, it also has all of the limitations of the literature itself, most notably the lack of non-European countries. The Education Systems Research Division will use this review to further its research on the implementation of VET reforms worldwide.

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This article is based on KOF Working Paper, No. 441 'Getting there from here: A literature review of VET reform implementation' by Katherine Caves and Severin Baumann, which will be published soon.

KOF Economic Forecast, Spring 2018: Broad-Based Upswing

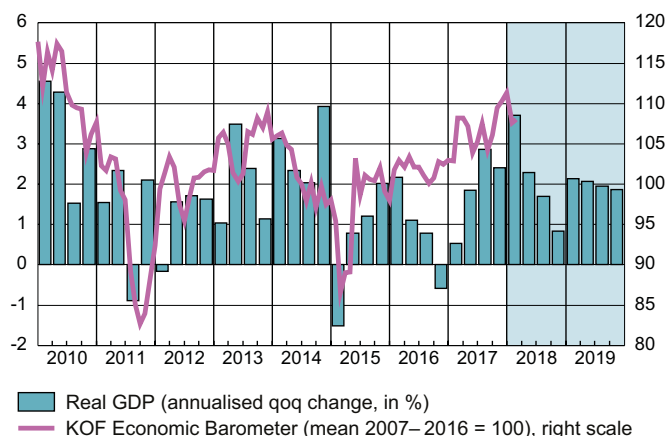
The Swiss economy is booming. KOF expects a comparatively high GDP growth rate of 2.5% this year and a relatively favourable economic trend in 2019 (1.8%). There is good news from the employment market, which should record a slight decline in the unemployment rate. Inflation will slowly move into the positive range.

At present, the Swiss economy is following a very favourable trend (see G 3). Both export- and import-oriented sectors are expanding substantially and news from the corporate sector is almost uniformly positive. The main reason for this excellent development is the improved economic situation in Switzerland's key trading partners, although the Swiss franc's weakening against the euro also contributed. The exchange rate trend predominantly resulted in a further margin recovery among exporting companies.

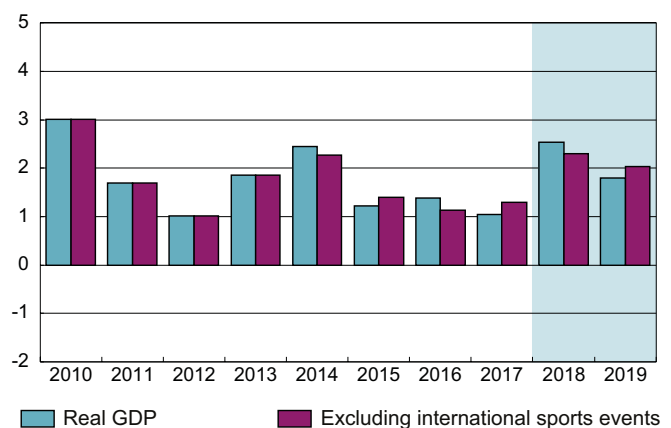
In its spring forecast, KOF has adjusted its projections slightly upward compared to the winter forecast. We now expect the economy to grow by 2.5% this year. However, part of this increase is due to events that relate only indirectly to production activities on Swiss soil. Large portions of the income from big international sport events are included in the Swiss gross national product (GDP) if the organising association is domiciled in Switzerland and appropriates the respective income. In the current year, two such big events have, or will be, taking place – the Olympic Winter Games in South Korea and the Football

World Cup in Russia. The IOC and FIFA, which hold the marketing rights to these events, are both domiciled in Switzerland. We estimate that the associated additional added value accounts for approximately 0.3% of Swiss GDP. In the absence of this effect in the following year, the estimated growth rate for 2019 is 1.8%. However, adjusted by the effects of the sports events, the anticipated growth rate for 2019 is hardly lower than the growth rate for this year (see G 4).

G 3: Real GDP and KOF Economic Barometer
(GDP as of 1st quarter 2018: KOF estimate/forecast)



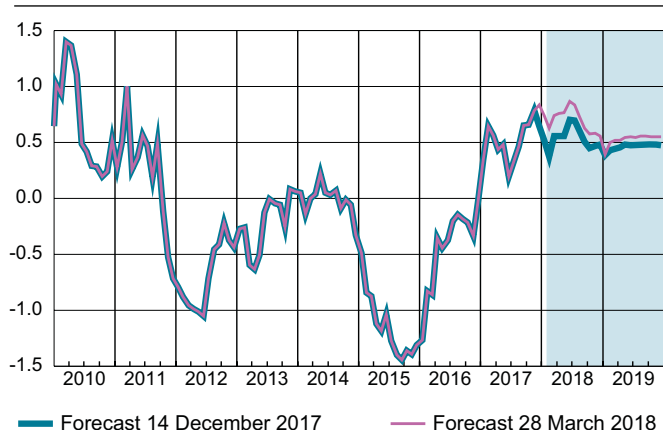
G 4: Effect of Major International Sports Events
(change over previous year, in %)



Due to this special effect, it is not surprising that employment figures are rising insignificantly, unemployment is declining slowly and upward pressure on wages is minor despite robust economic growth – and contrary to a swift glance at the growth rates for 2019. Consequently, domestic production is placing very little upward pressure on prices. Nevertheless, the lower CHF/EUR exchange rate and the slightly higher crude oil price are likely to result in an inflation rate of 0.7% this year. Inflation is likely to

G 5: Consumer Prices and Forecast

(year-on-year change, in %)



remain low and may even decline over the course of the year (see G 5). It is therefore unlikely that a need for more restrictive monetary policies will be derived from rising prices. Given the current situation, we expect the Swiss National Bank (SNB) to remain in line with the European Central Bank's (ECB) interest-rate policy in order to maintain the usual interest spread to euro investments. The ECB is not expected to introduce any interest rate adjustments before 2019. Our forecast also assumes a relatively stable exchange rate between the Swiss franc and the euro, and we do not expect the SNB to come under any pressure to act.

The positive economic trend is currently broad-based (see G 6). In contrast to the last few years, when the pharmaceutical industry was the main growth driver aside from the domestically-oriented education and healthcare sectors, other industries are now also contributing significantly to the upswing. The mechanical engineering and metal sectors, which had a very difficult time in the last few years, are growing again, and the temporary decline in the watch industry should be over now. Even tourism, which has received its only positive momentum from domestic and

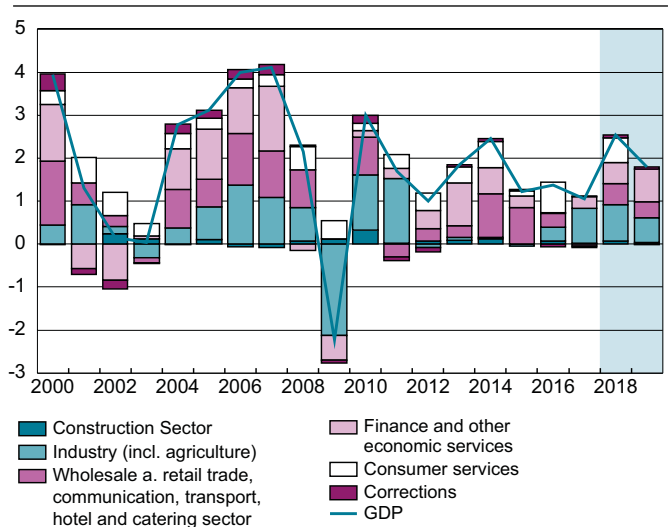
non-European visitors, has been reporting an increase in guests from neighbouring countries. This is particularly important for regions that benefited little from the past increase in Asian visitors.

The situation in the distributive trades has also stabilised. Retail, a domestically-oriented sector that had come under increased pressure from cross-border shopping in the last years, has managed to improve its position due to the weaker Swiss franc. The industry has adopted an optimistic outlook and both turnover and revenue should be on the rise.

Merchanting has failed to achieve any substantial increase in revenues since 2010. This is due to exchange rate effects since the industry's earnings are almost exclusively generated in foreign currencies. It is difficult to forecast revenues in this sector given their significant dependence on regionally diverging commodity prices that are also subject to considerable fluctuations. Our forecast is based on a technical assumption and anticipates revenues in the same ballpark as in the last few years. The sector's activities,

G 6: Growth Contributions GDP: Production Side

(in pp of GDP)



which have come under increased scrutiny, are likely to be subjected to stricter regulation, which will lead to higher costs but will not necessarily reduce gross revenues.

The balance has shifted in the financial sector. Before the financial crisis, added value in banking was generally twice as high as in insurance. Since then, income in the lending industry has declined while insurance has continued to grow. As a consequence, added value in the insurance sector is now very close to that generated in banking. Our forecast anticipates a return to more significant growth in the financial sector as a whole, not only in the insurance business.

Improved prospects are usually associated with a higher propensity to invest. With construction activities already rather lively, especially in the residential and education/healthcare sectors, no further substantial increase is expected. We even anticipate a slight decline in residential construction since the number of completed apartments already exceeds the expected rise in demand. Given our expectation of a shift in investments in plant and machinery from the transport sector to the other industries, growth is likely to be lower than in the last few years. Although a return to higher investment in the transport sector, which would lead to more investment and higher imports, is not impossible, the short-term effects on added value in Switzerland should be on the modest side.

Forecast risks

As is often the case, the main risks associated with our forecasts relate to the international environment. If the exit from ultra-expansive monetary policies in Switzerland's

main export markets is less successful than anticipated, or if tension in one of the international flashpoints significantly affects economic uncertainty, our assumptions may turn out to be over-optimistic. In addition, the risk of an uncontrolled Brexit in spring 2019, which is currently on the rise, could affect the European economy and hence Switzerland. As a traditional safe-haven currency, the Swiss franc poses a potential risk to the Swiss economy, which could also manifest itself during the forecast period. A further escalation of international trade disputes would also have a dampening effect on the global, and consequently the Swiss, economy.

Possible positive surprises include a European investment cycle that accelerates faster than expected. The current upswing in Europe is already driven by positive investment activities. The internationally-oriented Swiss economy would benefit if investments rose faster than anticipated.

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You can find more information about the KOF Economic Forecast at:
www.kof.ethz.ch →

International Economy Is Booming

The global economy is in excellent condition, with global trade expanding at an above-average rate for the first time in five years. However, KOF anticipates a slight decline in global dynamics in the coming months.

Following a very lively development in the summer months, the global upswing slackened off slightly towards the end of 2017. This gradual slowdown occurred in most economic regions. However, all in all, the global economy had a very successful year. Especially the developed economies moved up a gear in 2017. A significant upswing is buoying up the economies in the USA as well as in the EU and Japan. East and South East Asia also made substantial contributions to global growth, first and foremost China, which extended its boom with the help of fiscal stimuli. In the course of the year, Latin America and Russia delivered the first positive impulses in some time. Although India's cash system and VAT reform significantly affected production for some time, activities picked up again towards the end of the year.

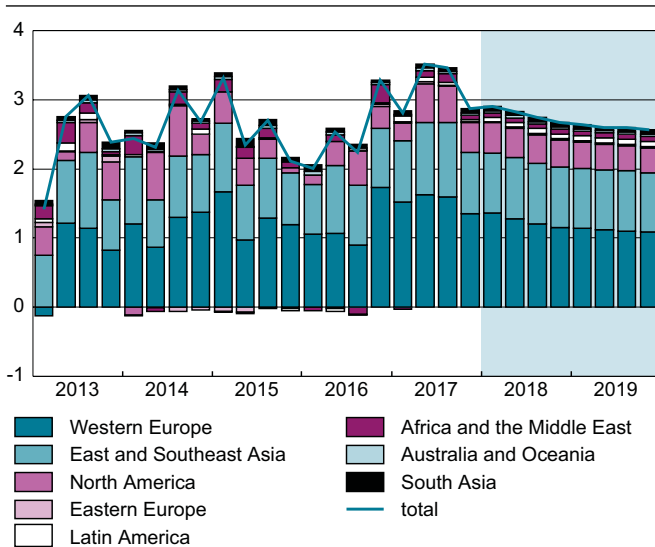
After five weak years with average growth rates of 2%, global trade recovered in line with the substantial upswing of the global economy and expanded by 4.5% last year. Prices of energy sources and other industrial commodities picked up in the course of the year, although this recovery did not have any significant effects on consumer prices. The underlying price pressure, which is measured as core inflation excluding energy and food prices, increased only moderately last year. There are, however, regional differences: While core inflation in the United States is approaching the target rate, it remains far from the target in both the Eurozone and Japan. Inflation in the UK is still dominated by the impact of the GBP devaluation following the Brexit vote in summer 2016, and the underlying price pressure is substantially higher than target inflation. In China, the robust economy had little effect on consumer prices.

Slow withdrawal from expansive monetary policies

In the past year, monetary divergence between the main currency regions increased and is set to become even more pronounced this year. On the one side, the FED effected three interest rate hikes and the Bank of England one. This year, the two central banks are likely to raise interest rates to the same degree as last year. On the other side, the Japanese central bank further extended its expansive policy, or at least announced such a move. The European Central Bank (ECB) kept interest rates low last year but initiated a normalisation of its monetary policy in April by reducing the net volume of its bond buying programme from EUR 80 billion a month to EUR 60 billion. In January of this year, the ECB lowered the volume further to EUR 30 billion a month. The first hike in key interest rates in the Eurozone is not expected before 2019.

The global economy's soaring dynamics are likely to decline gradually over the forecast period (see G 7). On the whole, production gaps in the developed economies, the main drivers of the upswing so far, should have closed in the past year. However, companies are expected to increase capacities further in the current positive economic policy climate. Consequently, over-utilisation of production factors should progress slowly, which will result in a gradual weakening of growth rates. Rising production capacities are also the reason why we expect the rise in inflation in the developed economies to be noticeable but not massive. Declining fiscal stimuli and the adoption of a more service-oriented economic model in China will also reduce the country's contribution to global economic growth. The upswing is likely to last longer in other developing countries and

G 7: Growth Contributions of Various Country Aggregates
(in %, weighted with Swiss export share)



emerging markets that are still at an earlier stage of the economic cycle and tend to benefit from rising commodity prices.

US trade policy and tax reform increase forecast uncertainty

At the moment, the trade and fiscal policies of the US government under President Trump are causing forecast insecurity. Given that the USA imports comparatively few crude metals from Europe, the punitive tariffs on steel and aluminium imports are unlikely to have a noticeable effect on the European economies. However, the announcement that America would react with a massive expansion of import restrictions on vehicles and other goods to any retaliation measures taken by the EU – even very selective ones – conjures up the risk of a trade dispute. Cars are the main

export goods for several European countries, and the USA is an important export market. In Germany, 1.7% of all exports would be affected by punitive tariffs, in Italy 0.9% and in the UK even 2.1%. Due to Europe's integrated supplier structure, any decline in exports due to punitive tariffs would lead to further substantial export losses. Since the European economy is largely export-driven at the moment, a trade dispute would have much more serious effects on Europe than on the USA, at least in the short term. Current lively investment dynamics are also likely to be affected by any significant downturn in export prospects. Furthermore, it is difficult to gauge the effects of the recent tax reform in the USA. In the short term, it is likely to fuel both private consumption and investment activities. Due to this additional demand, European companies will benefit temporarily from higher exports (provided the US government does not impose any further import restrictions). Since the USA already has a high capacity utilisation rate, the momentum the tax reform is providing for the real economy is likely to decline progressively in the course of the forecast period. Instead, pressure on consumer and asset prices is likely to rise. However, the reform also makes the USA more attractive as a target for additional foreign direct investment. At the same time, due to the exemption of profits made by foreign subsidiaries in the USA, high-tax countries, such as Germany or France, will become relatively less attractive for US direct investment than low-tax countries such as Ireland. Hence, high-tax countries will suffer losses unless they engage in tax competition with the USA and adjust their tax systems accordingly.

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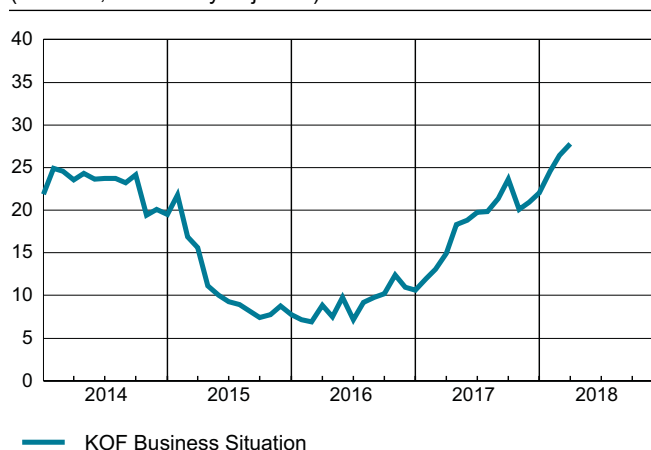
KOF INDICATORS

KOF Business Situation: Indicator Rises Further

In March 2018, the KOF Business Situation Indicator for the Swiss private economy improved once again (see G 8). The indicator has been on a steady upward trajectory since the beginning of the year and has now reached the highest point since summer 2011. The Swiss economy is running smoothly.

In March, the Business Situation Indicator in the surveyed sectors either went up or remained almost unchanged (see T 3). So far, the retail sector has found it most difficult to work its way out of the trough. However, in March, retailers reported a substantial improvement in their business situation compared to the preceding month. The manufacturing industry continues to boom and the indicator went up further. After a slight slowdown in the previous month, the situation in the project engineering sector has picked up again. In the construction industry and the financial and insurance sector, the business situation has changed little. Wholesalers, hotel and catering businesses and the other service providers were last surveyed in January. At the time, all three sectors reported an improvement in their business situation.

G 8: KOF Business Situation Indicator
(Balance, seasonally adjusted)



T 3: KOF Business Situation for Switzerland (seasonally adjusted balances)

	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Jan 18	Feb 18	Mar 18
Private sector (overall)	12.9	15.2	18.3	18.8	19.8	19.9	21.3	23.6	20.2	20.9	22.1	24.5	26.2
Manufacturing	-7.1	-5.0	-1.9	-1.2	3.8	4.0	6.5	9.8	10.7	13.4	13.4	14.6	19.7
Construction	27.3	32.6	31.6	29.4	32.9	32.5	31.8	31.4	31.2	32.3	31.5	33.0	32.9
Project engineering	47.4	48.9	50.1	47.2	46.7	46.5	46.8	47.4	49.4	48.9	49.9	46.1	48.8
Retail trade	-11.2	-7.4	-3.1	-11.3	-0.7	-2.1	-1.3	2.7	1.5	0.6	3.8	1.4	7.3
Wholesale trade	-	-	9.2	-	-	15.6	-	-	20.5	-	-	30.4	-
Financial services	31.8	32.7	31.9	37.7	36.6	29.9	33.6	36.3	30.5	33.4	38.3	41.5	41.3
Hotel and catering	-	-	-14.4	-	-	-2.0	-	-	0.3	-	-	3.7	-
Other services	-	-	32.1	-	-	32.5	-	-	24.3	-	-	25.9	-

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.

From a regional perspective, the economy in the majority of the main FSO (Federal Statistical Office) regions was supported by positive momentum (see G 9). In Eastern Switzerland, the Zurich region, Central Switzerland, Espace Mittelland and Ticino, the business situation improved. By contrast, the indicator changed very little in North-West Switzerland. In the Lake Geneva region, the moderate business situation slowed down further.

Explanation of graphs:

Graph G 8 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.

Graph G 9 presents the business situation in the main regions according to the Federal Statistics 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.

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.

G 9: 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	

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You can find more information about the KOF Business Tendency Surveys on our website:
www.kof.ethz.ch/en/surveys/business-tendency-surveys →

KOF Economic Barometer is Falling

In March 2018, the KOF Economic Barometer fell by 2.4 points to a new reading of 106.0 (see G 10). Notwithstanding this decline, the present position is still on a level clearly above its long-term average. This indicates that in the near future the Swiss economy should continue to grow at rates above average.

In March 2018, the KOF Economic Barometer fell from 108.4 in the previous month (revised up from 108.0) by 2.4 points to a level of 106.0. This drop of the barometer more than corrected its rise in February. From a longer-term perspective, whilst the barometer is quite volatile at the right margin, it has been moving in a range clearly above average since autumn 2016.

The strongest negative contributions to this result come from manufacturing, followed by the indicators from the exporting industry. On the other hand, the indicators from the financial sector, from the hotel and catering industry and those relating to domestic private consumption have remained practically unchanged.

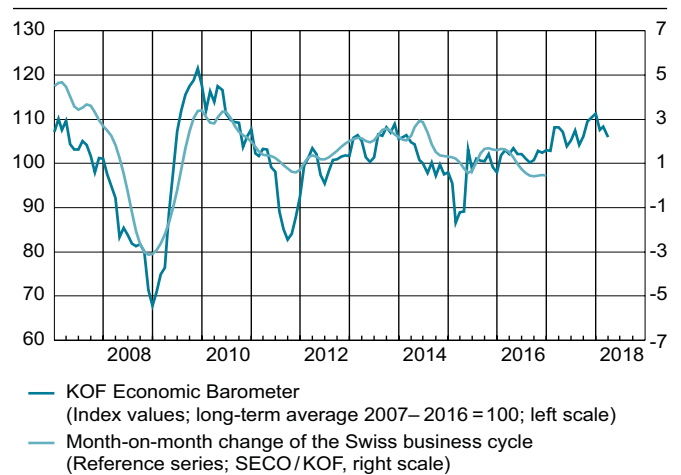
Within the manufacturing industry, the clearly negative total outlook can be attributed to rather different branches. Noticeably negative signals came from the metal industry, followed by the wood, textile and food processing industries. An improving sentiment is only visible in the electrical industry. The remaining industry branches recorded hardly any change.

The overall deterioration of sentiment in the manufacturing industry is mainly driven by more pessimistic assessments of the overall business situation and production. On the other hand, the assessment of firm's inventories slightly improved.

KOF Economic Barometer and reference time series: annual update

In September 2017, the scheduled annual update of the KOF Economic Barometer took place. The annual update involves the following steps: redefinition of the pool of indicators that enter the selection procedure, update of the reference time series, and renewed execution of the variable selection procedure. The updated reference series is

G 10: Economic Barometer and Reference Series



the smoothed continuous growth rate of the Swiss Gross Domestic Product (GDP) according to the new System of National Accounts ESVG 2010, released in early September 2017, which takes into account the previous year's annual GDP data published by the Swiss Federal Statistical Office (FSO). As a result of the indicator variable selection procedure, the updated KOF Economic Barometer is now based on 273 indicators (instead of 272 as in the previous vintage), from a pool of almost 500 potential indicator series. They are combined using statistically determined weights.

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For detailed information on the KOF Economic Barometer, visit our website:
www.kof.ethz.ch →

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Imprint

Publisher	KOF Swiss Economic Institute, ETH Zurich		
Director	Prof. Dr. Jan-Egbert Sturm		
Editor	Dr. David Iselin, Anne Stücker		
Layout	Vera Degonda, Nicole Koch		
Pictures	KOF, Shutterstock		
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Next publication date: 4 May 2018

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