



KOF Bulletin

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EDITORIAL

Dear readers,

At first glance, it seems obvious that there is a correlation between economic cycles, represented by the GDP trend, and unemployment or innovation activities. However, the exact nature of this correlation is not that obvious. According to the first article of this month's KOF Bulletin, in Switzerland unemployment goes down when GDP growth reaches 2%. The second article focuses on the important momentum economic growth receives from innovative companies and shows how these companies increase the resilience of a country's economy. Furthermore, we are completing our three-part series on Eurozone debt with an article on private households and non-financial companies: The debt ratio of the non-financial private sector in the Eurozone has stabilised since its peak in 2009 and has even declined slightly of late.

As ever, we wish you an interesting read!

David Iselin

ECONOMY AND RESEARCH

Unemployment Goes Down When GDP Grows by 2%

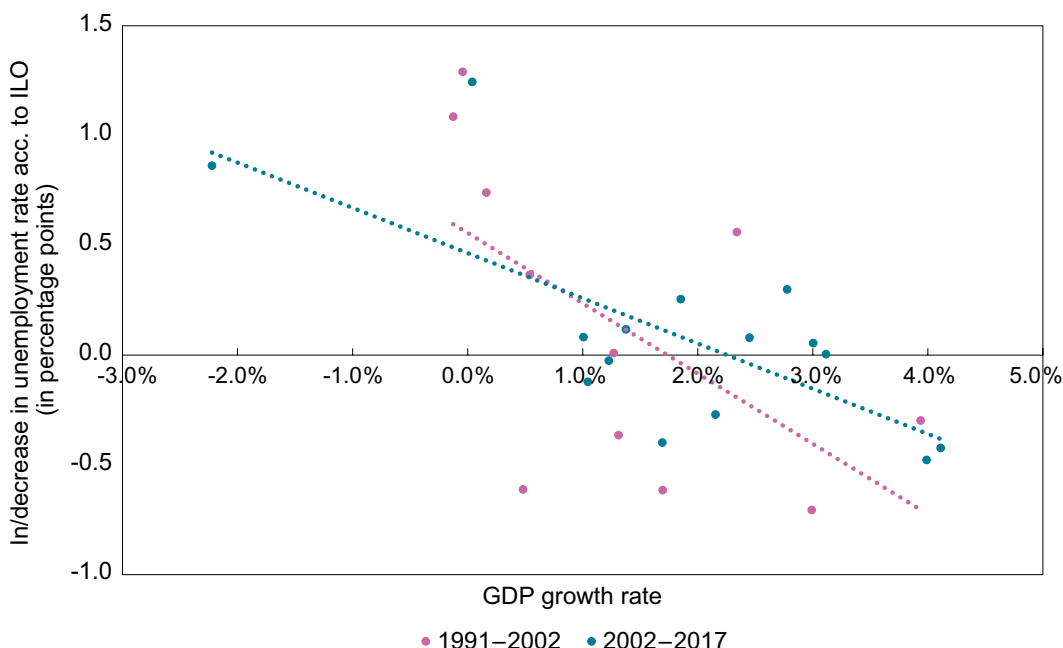


In Switzerland, unemployment begins to decline when GDP growth reaches around 2%. However, the correlation between unemployment and GDP is less pronounced in Switzerland than in other countries. Among the main reasons is the fact that Swiss companies frequently hire foreign employees to meet their staff requirements.

When GDP growth goes up, unemployment goes down. This correlation is also referred to as Okun's law, after the US economist Arthur M. Okun, who conducted the first in-depth research into the negative correlation between GDP growth and changes in the unemployment rate in 1962. The underlying mechanism is simple: When the economy is booming and demand for products and services is high, companies have a higher need for staff. Since they also hire unemployed individuals, the unemployment rate declines. The opposite happens during a recession.

Graph 1 illustrates Okun's law on the basis of annual data for Switzerland in the period 1991–2017. The x-axis shows the GDP growth rate compared to the previous year. The y-axis shows the year-on-year change in the unemployment rate according to the definition of the International Labour Organisation (ILO). We distinguish between the periods 1991–2002 and 2002–2017. The negative correlation between GDP growth and the change in the unemployment rate is obvious in both periods. The trend lines in the graph suggest that GDP growth of 4% reduces the unemployment rate by around 0.5 percentage points in the same year. However, if GDP contracts by –2%, as it did in the recession of 2009, the unemployment rate rises by close to 1 percentage point.

G 1: Okun's Law in Switzerland (1991–2017)



The ‘employment threshold’ lies at 2% GDP growth

The value at which the trend line meets the x-axis is another central indicator. This point, which is also referred to as ‘employment threshold’, shows which level of GDP is normally required to result in a decline in the unemployment rate in Switzerland. According to our graph, the employment threshold lies at a GDP growth figure of around 2%. However, this also shows that unemployment in Switzerland rises even if the economy records moderate growth, for instance of 1%. There are two explanations for this. Firstly, the labour force grows every year. In order to absorb the additional manpower and prevent an increase in unemployment, employment and hence the GDP must also grow. Secondly, labour productivity is rising steadily. If the value added per worker increases e.g. by 1% a year, production must expand by 1% in order to maintain employment figures.

Comparison of the two periods depicted in Graph 1 impart the impression that the employment threshold has been slightly higher in the last 15 years than in the preceding

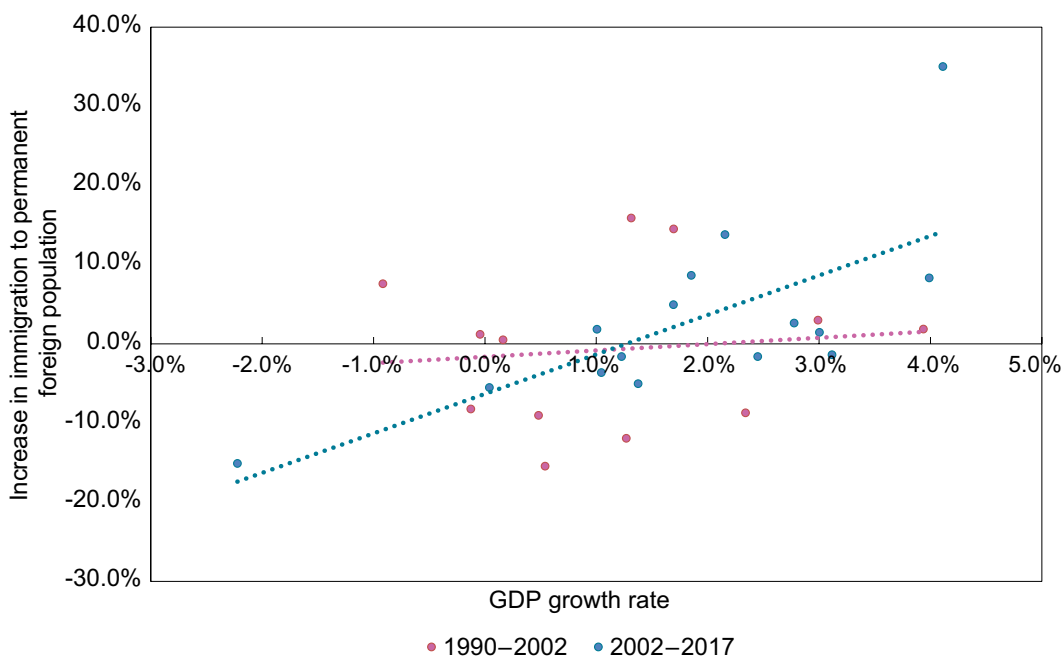
period. The correlation between GDP growth and changes in unemployment also seems to have declined: The angle of the trend line has become less steep. Hence a given GDP increase or decrease has a smaller impact on the unemployment rate than before. Although one should not overstate the importance of this comparison of the two periods since it is based on a very low number of data points, the conclusion is still relevant: In international comparison, Switzerland was already showing a low correlation between GDP growth and unemployment in the 1990s. In a study conducted by the International Monetary Fund (Ball et al., 2013), among 20 developed economies, Switzerland has the third-lowest correlation between GDP growth and changes in the unemployment rate. According to Graph 1, this low correlation has, if anything, become even lower.

So what is the reason for the fact that the correlation between GDP and unemployment is lower in Switzerland than in other countries? The IMF authors provide a plausible explanation: When expanding their workforce, Swiss companies also hire foreign workers aside from the unemployed. Vice versa, it is traditionally the foreign workers

who are particularly prone to losing their job in a recession. If they emigrate again, the decline in employment does not appear in the Swiss unemployment statistics. GDP and unemployment are thus not very closely correlated in Switzerland since the unemployed represent only one of two pools of potential workers when the economy is doing well. By contrast, GDP and employment do indeed correlate in Switzerland – and rather strongly in international comparison.

between immigration and GDP growth has been more pronounced since 2002 than in the previous period – hence in the period before the introduction of the free movement of people. This shows that not only is immigration into Switzerland sensitive to business cycles despite the free movement of people, it is even more sensitive now than it was in previous years.

G 2: GDP Growth and Immigration (1990–2017)



Graph 2 shows the significant correlation between the real GDP growth rate and the growth rate of immigration into Switzerland, or to be exact, the year-on-year growth rate of gross immigration to the permanent foreign population in Switzerland. According to Graph 2, GDP growth goes hand in hand with an increase in immigration into Switzerland. Vice versa, immigration declines in times of economic difficulty. The graph also suggests that the positive correlation

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Literature

Ball, L., Leigh, D., and Loungani, P. (2013): Okun's Law: Fit at 50? IMF Working Paper 13/10.

Schumpeter Got It Right

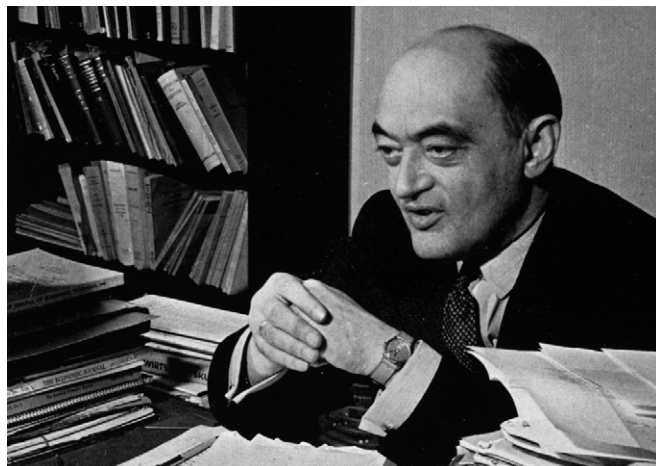
‘Without innovation, there is no business cycle movement’ is a famous statement made by Joseph Schumpeter. In a new paper based on Swiss data, Andrin Spescha and Martin Wörter confirm this claim that there is a relationship between innovation and business cycle movements.

In his 1939 book *Business Cycles*, Joseph Schumpeter argued that the business cycle is mainly driven by technological innovation, in other words that innovation fuels economic growth. Without innovative actions by firms, the economy would continue to reproduce itself, in the so-called ‘stationary flow’ of economic activity. Hence, it would not experience any sort of change at all without innovation. Only the wave-like introduction of large numbers of firm innovations can move the ‘stationary flow’ of economic activity sufficiently out of balance to create the ups and downs of the business cycle. Today, the notion that innovation is an important driver behind economic growth has found widespread acceptance among most theoretical economists.¹ In a new paper, Andrin Spescha and Martin Wörter investigate if Schumpeter’s hypotheses can be depicted empirically in the Swiss business cycle movement.

Findings for Switzerland

Based on a representative panel data-set of Swiss firms covering the period 1996–2014, Spescha and Wörter analyse how the empirical relation between innovation and firm growth changes over the different stages of the macroeconomic business cycle. They find that innovative firms exhibit significantly higher sales growth rates than non-innovative firms, confirming the Schumpeterian premise that innovation leads to higher firm growth. This finding extends to both firms that introduce innovations based on R&D activities and firms that introduce innovations based on other, non-R&D innovation activities.

However, the authors also show that the higher sales growth of firms relying on R&D activities stems from different stages of the business cycle. Whereas firms that introduce innovations based on R&D activities outgrow non-innovative firms in periods dominated by economic recessions, they show similar sales growth rates as non-innovative firms in periods of economic booms. In contrast, firms that introduce innovations based on other, non-R&D innovation activities show the exact opposite pattern; they display similar sales growth rates as non-innovative firms in periods dominated by economic recessions, but tend to outgrow non-innovative firms in periods of economic booms. Hence, while firms with R&D-based innovations are more resilient to business cycle fluctuations than



Joseph Schumpeter in his office

Source: <https://media.snh.no>

¹ See: Spescha and Wörter (2018) for a literature overview.

non-innovative firms, firms with innovations based on other, non-R&D innovations activities are more sensitive to business cycle fluctuations than non-innovative firms.

The observation that, in periods dominated by recessions, innovative firms achieve higher growth rates than non-innovative firms is in line with Schumpeter's business cycle theory, where economic recessions bring about a renewal of the aggregate production of the economy. The most outdated, non-innovative products and services are eliminated from the economy and a relative shift of market shares towards superior innovative products and services takes place. Once the economy has reached bottom, a new cycle begins and new innovations enter the scene. Thus, looking only at the aggregate growth rates of an economy hides the aspect that the business cycle movement is actually also about replacing the old with the new.

Innovation increases resilience of the economy

The obtained results suggest that high-quality innovations may greatly contribute to the resilience of an economy in the face of periods dominated by economic recessions. Potential policy measures to strengthen the innovation capacities of firms usually target an increase in economic well-being. However, our results suggest that, as a secondary effect, such measures may also increase the resilience

of firms against internationally triggered economic crises. An economy populated by firms always producing the most innovative products and services will be better protected from the pressure induced by a fall of aggregate demand in international markets. Importantly, the innovation capacity of an economy has to be strengthened well before an economic crisis hits. Policy interventions during a crisis will not achieve the same results anymore.

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Literature

Andrin Spescha and Martin Wörter (2018): Innovation and firm growth over the business cycle, Industry and Innovation, London: Taylor & Francis, 2018.

Eurozone Debt (3/3): Private Households and Non-Financial Companies

The debt ratio in the non-financial private sector of the Eurozone has stabilised since its peak in 2009 and has recently even declined. In contrast to the strong economic performance before the crisis years, the current upswing is therefore not driven by debt. However, in historic comparison, the debt level is still high and the trends in the various countries are heterogeneous.

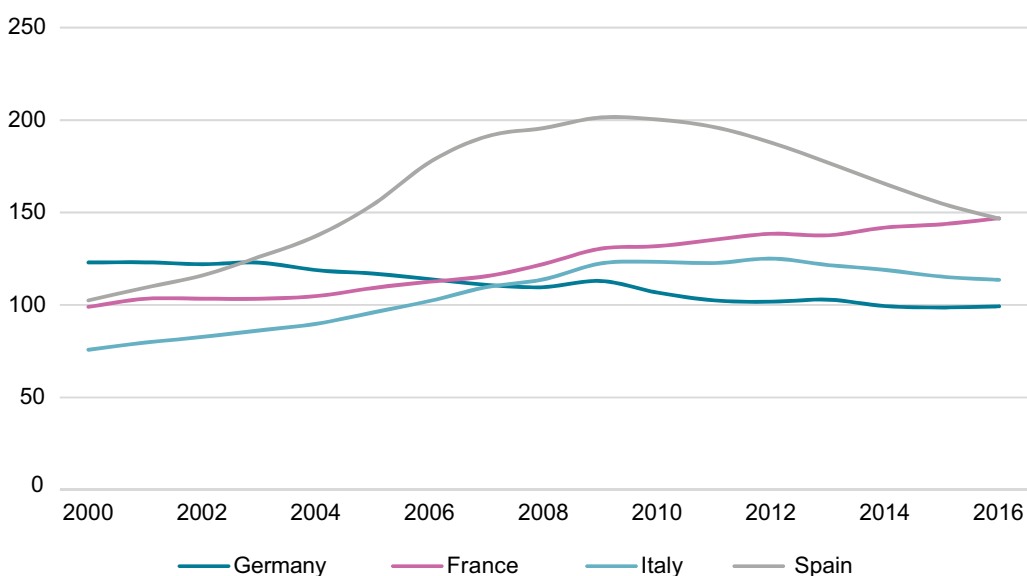
Research studies have shown that high debt in the non-financial private sector may have a negative impact on future economic growth. Moderate debt helps smooth out private consumption over several periods and thus results in a more stable growth path. However, when debt levels are high, households are forced to raise their savings quota to cover their debt commitments, which in turn lowers their consumption. When corporate borrowing is high, companies have fewer funds for investment at their disposal. At the same time, high private debt levels have a

negative impact on bank lending since the latter often goes hand in hand with a higher share of loans at risk of default (see part 2 of our series).¹

The debt ratio of the non-financial private sector in the Eurozone had been rising steadily until the debt crisis. At its peak in 2009, it amounted to around 145% of GDP. Since then, however, it has dropped to 139%. In Germany, private borrowing has been on the decline for years and currently makes up around 100% of GDP (see graph G 3). The figures

G 3: Private Eurozone Debt

(Households and non-financial companies, consolidated, as a percentage of GDP)

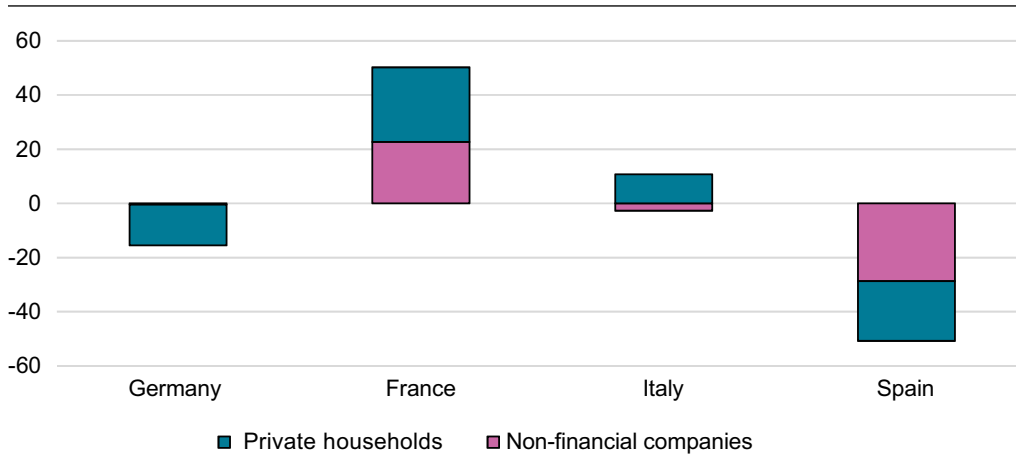


Source: Eurostat

¹ See: Myers, S. C., 'Determinants of Corporate Borrowing', *Journal of Financial Economics*, Vol. 5, Issue 2, 1977, pp. 145–75 or Mian, A. R., A. Sufi and E. Verner, 'Household debt and business cycles worldwide', National Bureau of Economic Research Working Papers No 21581, issued September 2015.

G 4: In/Decrease in Borrowing, 2007–2017

(not consolidated, as a percentage of GDP)



Source: European Central Bank, internal calculations

in Italy, Malta, Greece and the Eastern European Eurozone members are also below the average. At just under 60%, Lithuania has the lowest debt ratio. By contrast, figures are high in Cyprus, Ireland and the Benelux countries. While private borrowing in Spain and France is roughly at the Eurozone average, dynamics vary in the different countries. In Spain, high levels of private debt relief and the rapid economic expansion have resulted in a significant drop in the debt ratio. In France, however, the ratio has been rising steadily for years. Greece also saw a substantial debt write-off in the private sector. Due to the significant decline in macroeconomic production, debt did not decline substantially in relation to GDP.

Companies account for little more than half of the borrowing in the non-financial private sector of the Eurozone, households make up the rest. Germany, where private household debt is higher than non-financial companies, is an exception. In Ireland, Cyprus and Luxembourg, corporate borrowing is particularly high, which is however due to specific internal corporate loans. The decline in the Eurozone debt ratio is primarily due to deleveraging in the non-financial sector. However the individual countries are following different trends (see graph G 4). While debt reduction has advanced further in Germany, borrowing has increased in France among both households and

companies. In Spain and Portugal, the overall debt ratio of the non-financial private sector went down significantly, which represents a backlash against the pre-crisis years and contributed to the substantial decline in GDP (deleveraging) at the time.

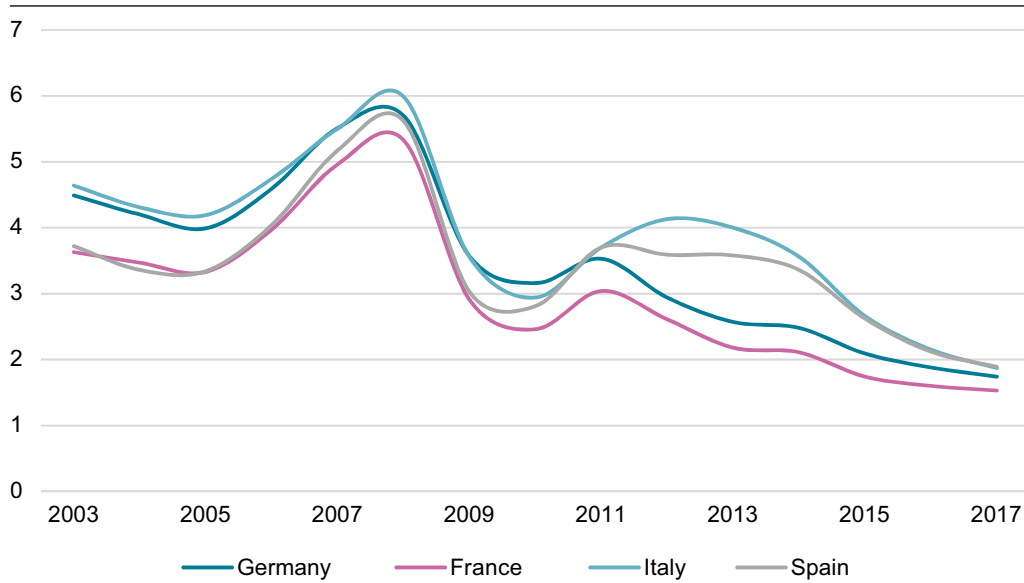
Thanks to the extremely favourable financing environment, interest charges in the private sector have declined substantially in the last few years (see graph G 5)². Since the beginning of the big recession, companies' interest expenses in relation to income dropped by around 50%. Most



² SAAt the same time, interest income has also declined.

G 5: Corporate Cost of Borrowing

(Composite cost of borrowing indicator, as a percentage)



Source: European Central Bank

recently, they amounted to approximately 5% of the gross operating surplus in the big Eurozone economies. The same applies to private households, which have lately spent just around 1% of their disposable income on interest payments. Any monetary tightening would result in higher interest charges in the private sector.

How high the charges will be depends on the share of outstanding loans with variable interest rates. The share of these loans in total loans is unclear; nevertheless, the new lending figures show that it has dropped substantially in many countries since the big recession. In Portugal and Spain, where around 90% of all new mortgage loans had variable interest rates before the big recession, the percentage has decreased to around 60% and 40%, respectively. The relevance of variable interest mortgage loans has declined in the entire Eurozone. All in all, the trend

suggests that a different interest-rate environment will lead to higher charges in the private sector. However, the decline in the share of variable interest loans compared to the years before the onset of the big recession implies that this burden is likely to be less painful than during the last rate hike phase.

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The first two parts of our series can be found on our website.

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German Economy Still Booming – But the Air is Getting Thinner

The global economy is buzzing. Nevertheless, according to the institutes involved in the Joint Economic Forecast for Germany, which also include KOF, growth may slow down in the coming year. The German economy is set to continue its boom phase.

The global economic upswing continues. Production capacity utilisation in the big economies is still rising. However, expansion rates have now passed their peak. On the one hand, capacity limits are taking effect in a growing number of industries and countries, on the other, corporate sentiment has turned down noticeably of late.

As yet, inflation is rather low in the great majority of all countries examined by the joint economic forecast institutes. Nevertheless, in the face of increasing shortages on the labour market, wage inflation may slowly gain momentum in many countries. Pressure on wages and additional demand for consumer goods are likely to result in a gradual rise in inflation rates. Financial policy is providing additional impulses, while expansive monetary policies are expected to gradually ease off.

Global trade still expanding, albeit at a slower pace

The institutes involved in the Joint Economic Forecast anticipate global production to expand by a substantial 3.4% – similar to last year. In the course of the coming year, global dynamics are set to level off. Aside from representing a step towards further growth-inhibiting protectionism, current trade policy disputes between the USA and other countries are also associated with a downward risk in terms of the economic forecast – especially if the conflict spreads.

German economy loses momentum at high speed

The German economy is set to continue its boom phase, although the outlook is slightly more restrained. Available macroeconomic capacities are dwindling and the economy will lose momentum. The tempo will nevertheless remain

T 1: Forecast for Germany: Key Economic Indicators

	2016	2017	2018	2019
Real gross domestic product				
(percentage change over previous year)	1.9	2.2	2.2	2.0
Domestic employment 1000 persons	43 638	44 291	44 876	45 298
Unemployment in 1000 persons	2 691	2 533	2 324	2 172
Unemployment rate ¹ (in % of labor force)	6.1	5.7	5.2	4.8
Consumer price index ²				
(percentage change over previous year)	0.5	1.8	1.7	1.9
Unit labor costs ³				
(percentage change over previous year)	1.6	1.6	1.9	2.1
General government balance ⁴				
in billions of euros	25.7	36.6	37.8	34.7
in % of nominal GDP	0.8	1.1	1.1	1.0
Current account balance				
in billions of euros	268.8	262.6	277.0	284.5
in % of nominal GDP	8.5	8.0	8.2	8.0

¹Federal Employment Agency (BA) concept. ²2010 = 100. ³Hourly compensation of employees relative to real GDP per hour worked.
⁴According to national accounts definition (ESA 2010).

Source: Federal Statistical Office; Federal Employment Agency, Deutsche Bundesbank; 2018 and 2019: forecast.

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set to expand by 2.2% (annual average) this year and 2.0% in the coming year (see T 1). Compared with their autumn 2017 forecast, the institutes have raised their GDP growth projection by 0.2 percentage points for both years. Employment should continue to expand noticeably, although employment growth will level off due to shortages on the labour market. At the same time, gross wages are likely to increase noticeably. The inflation rate will go up gradually, from 1.7% this year to 1.9% in the coming year.

Joint Economic Forecast

The semi-annual Joint Economic Forecast for Germany is prepared by the German Institute for Economic Research (DIW) in Berlin in collaboration with the Austrian Institute of Economic Research, the ifo Institute in Munich in cooperation with the KOF Swiss Economic Institute at ETH Zurich, the Kiel Institute for the World Economy (IfW), the Halle Institute for Economic Research (IWH) and the Leibniz-Institute for Economic Research (RWI) in Essen in cooperation with the Institute for Advanced Studies in Vienna. Since 2007, KOF has been taking part in the Joint Economic Forecast as junior partner of the ifo Institute. KOF primarily represents the consortium in the field of international and European economic development.

Further information on the Joint Economic Forecast and the current 2018 Spring Forecast are available at: www.kof.ethz.ch →

high as the global economic upswing will continue to stimulate exports and the domestic economy remains lively given the extraordinarily favourable labour market situation.

On top of this, the new German government is likely to implement the fiscal measures established under the coalition agreement to stimulate demand. Economic output is

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KOF Employment Indicator: Firms Planning to Create Jobs

Companies in Switzerland are performing well, and this situation is feeding through into their plans to hire more workers (see G 6). The KOF Employment Indicator remains in positive territory, with only the retail and hospitality sectors lagging behind.

The KOF Employment Indicator for the second quarter of 2018 stands at 3.6 points, which is virtually unchanged on where it was three months ago (3.4 points, revised upwards from 2.8). For over half a year now there have been more firms in Switzerland that are considering increasing their headcount – or have definite plans to do so – than companies that are looking to reduce their staffing levels. These optimistic employment expectations on the part of firms are a result of the latest KOF Business Tendency Surveys.

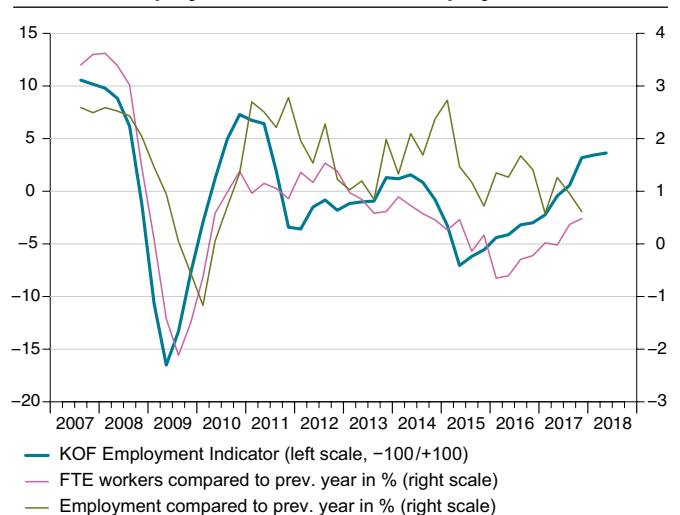
Service sectors planning to create more jobs

The positive employment outlook is fairly widespread across the various sectors. However, the Employment Indicator for the category of 'other service industries' has performed particularly well. This group includes firms operating in sectors such as transport, information and communication technology, housing and real estate, and healthcare and social services. The Indicator for these sectors has risen steadily in recent quarters after having suffered a setback in the wake of the Swiss franc shock. The Indicator for the 'other service industries' category in the current quarter is the highest it has been for more than six years. The KOF surveys also reveal promising employment prospects – with certain exceptions – in manufacturing, wholesaling and banking. The Employment Indicators for the retail and hospitality sectors, on the other hand, remain in negative territory – albeit not as deeply as before. The KOF surveys therefore suggest that these two sectors are more likely to cut jobs over the next few weeks and months than they are to increase them.

Note

The Employment Indicator was revised slightly in November to incorporate input series that have been adjusted for seasonal effects. This change required the Indicator's weighting to be slightly adjusted as well.

G 6: KOF Employment Indicator and Employment



The KOF Employment Indicator

The quarterly KOF Business Tendency Surveys provide the basis for calculating the Indicator. As part of these surveys, the KOF asks private businesses in Switzerland to assess their current staffing levels and whether they intend to change them over the coming three months. A positive figure for the Indicator means that the number of surveyed firms that are considering cutting jobs during the reference quarter is smaller than the number of businesses that intend to create jobs. It has been shown in the past that these assessments anticipate actual developments in the labour market.

Click here for more information about the Indicator and its methodology:

www.kof.ethz.ch →

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KOF Economic Barometer: Economic Outlook Remains Stable

The KOF Economic Barometer for April points to an almost stable economic development. It has risen minimally, by 0.2 points, to 105.3 points (see G 7). Although the Barometer currently does not reach the positive values seen at the turn of the year 2017/2018, the current value is clearly above long-term average. The Swiss economic outlook remains favourable.

In April, the KOF Economic Barometer rose slightly to 105.3 points from a revised 105.1 in March (in its first publication in March: 106.0). Although the overall brightening of 0.2 points is tiny, it is broadly visible in the economic sectors included. The indicator bundles for manufacturing, hotel and catering activities, banking, construction and consumption all showed slight increases in April. An exception is the indicator set for export prospects; it deteriorated in April.

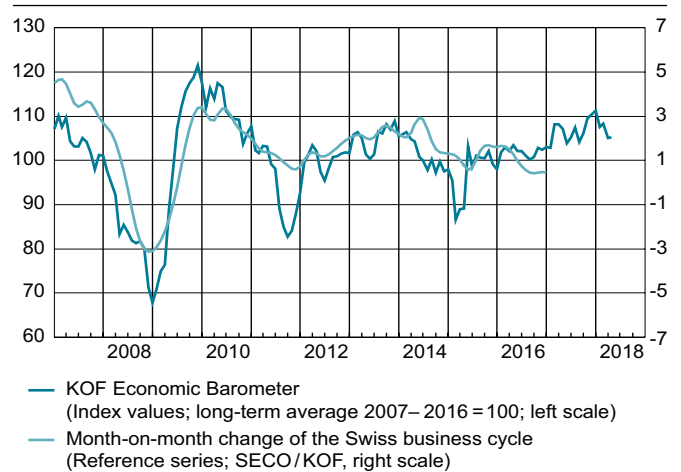
In the goods producing sector (manufacturing and construction), indicators of competitiveness and earnings development have increased. The indicators for employment development and inventories had a particularly dampening effect.

Within the manufacturing sector, prospects improved, especially for the chemical industry. The paper and wood industries should also pick up speed. By contrast, the metal and electrical industries are likely to feel more headwinds.

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 the smoothed continuous growth rate of the Swiss Gross Domestic Product (GDP) according to the new System of National Accounts ESG 2010, released in early September 2017, which takes into account the previous year's annual

G 7: Economic Barometer and Reference Series



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:

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