



KOF Bulletin

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ECONOMY AND RESEARCH

- Digitalisation (1/2): Companies Consider Lack of Skills
 Among Staff to be Biggest Obstacle to the Spread of Digitalisation →
- Swiss Companies Set to Invest More ightarrow
- Eurozone Debt (1/3): Government Budgets ightarrow

KOF INDICATORS

- ullet KOF Globalisation Index: Globalisation Down Worldwide in 2015 ightarrow
- KOF Economic Barometer Is Easing ightarrow

 $AGENDA \rightarrow$

EDITORIAL

Dear readers,

An appropriate discussion of the impact of digitalisation on the Swiss working environment requires data on the digitalisation status of Swiss companies. In 2016, researchers at ETH Zurich and FHNW joined forces to collect the required data. In the context of the first representative study on digitalisation in companies, they surveyed enterprises in Switzerland to assess their degree of digitalisation. A key topic of the survey consisted of the required staff competences. Based on a new assessment, the first Bulletin article shows that companies are not satisfied with the situation as many employees lack the sought-after skills. The results of the latest KOF Investment Survey are more positive. Swiss companies intend to invest more this year and engage mostly in expansion investments. This sets a positive sign for the future economic trend. The last article is dedicated to Eurozone debt, a subject that has accompanied Europe for a number of years. Whether or not there will be another sovereign debt crisis depends primarily on the interest rate development.

We have introduced a new feature in this Bulletin. The first and the third article are part of a two- and a three-part series. The next article on digitalisation will focus on the corporate objectives companies pursue with increased digitalisation. The March article in the three-part series on debt will be dedicated to financial sector debt.

We hope you enjoy your read!

David Iselin

ECONOMY AND RESEARCH

Digitalisation (1/2): Companies Consider Lack of Skills Among Staff to be Biggest Obstacle to the Spread of Digitalisation



In the context of the first representative study on digitalisation, which was conducted in 2016, researchers at ETH Zurich and FHNW investigated the level of digitalisation at Swiss companies. Based on a new assessment of the survey, the first of two KOF Bulletin articles investigates which staff skills companies consider most relevant in the context of digitalisation. The researchers found that many employees actually lack the sought-after skills.

A few years ago, Frey and Osborne (2017) published a study on the susceptibility of US jobs to computerisation. The conclusion they arrived at, which came as a shock to many, was that almost half of all occupations could be automated in the near future. They found the highest potential for computerisation in simple manual and processing jobs as well as complex but standardisable occupations. Conversely, in the face of increasing utilisation of new technologies, sought-after skills among employees are primarily of a creative and socio-emotional nature. In a survey conducted by KOF in collaboration with the Chair of Labour and Organisational Psychology at ETH Zurich, and the University of Applied Sciences Northwestern Switzerland (FHNW), a group of researchers investigated which skills Swiss companies consider necessary to successfully manage the digital transformation. This type of data did not previously exist for Switzerland (SECO, 2017).

35% of the 1,183 participating companies stated that the introduction of digitalisation or more extensive use of computerisation in their company was primarily held back by a lack of available qualifications. All other obstacles, such as unsuitable work processes, costs or technical complexity were quoted with much lower frequency. Hence, a lack of professional skills was identified as the biggest impediment to the spread of digitalisation.

The companies were also asked which skills they considered particularly important. The majority of the respondents mentioned cognitive and organisational skills, such as process know-how (76%), ability to coordinate work processes (71%) and problem-solving and optimisation skills (70%), as very important skills in the context of digitalisation (see table 1). Further key competences included the ability to interact with technology (69%), interdisciplinary planning and implementation (69%), mastering of complex work contents (59%), involvement in innovation processes (57%) and service orientation (57%). The number of companies considering management skills (28%), social & communication skills (46%) and autonomous decisionmaking (48%) as relevant skills is significantly lower.

High-tech industries and the construction sector showed the largest variation in their assessments. However, given the wide variety of uses of digital technologies in different economic sectors, the overall picture of the relevance of professional skills is surprisingly homogenous (see table 4). It is also noticeable that company size seems to make little difference, with the only noticeable variations being the significantly lower number of large companies than SMEs which consider management skills important, and the higher number of big enterprises than SMEs which believe process know-how is important (see table 2).

The Frey and Osborne study suggests that occupations which require no social skills are more susceptible to automation than those which require a high level of social competence. However, the current ETH Zurich and FHNW survey shows that companies consider social/communications skills among their staff to be less important than cognitive skills. This represents a certain risk for many employees, as their occupations thus seem to belong to areas which are susceptible to computerisation. According to the researchers, the relatively high relevance of cognitive skills quoted by Swiss companies is due to the fact that the more recent versions of digitalisation technologies (e.g. Internet of Things) are still in the early stages in the Swiss economy (cf. Arvanitis et al., 2017) and demand for cognitive skills is therefore higher. Moreover, the preferred forms of work

T 1: Professional Skills that Are Important for Digitalisation – by Economic Sector (proportion of companies in % which stated 4 or 5 points on a five-point Likert scale)

	Industry total	Industry high-tech	Industry Iow-tech	Construction	Services total	Services traditional	Services modern	Total
Process know-how	77%	84%	73%	70%	76%	77%	75%	76%
Coordination of work processes	72%	74%	71%	68%	69%	67%	73%	71%
Problemsolving/ optimisation skills	73%	74%	72%	64%	67%	68%	66%	70%
Interaction with technology	70%	74%	67%	66%	68%	68%	69%	69%
Interdisciplinary planning/implementation	69%	72%	66%	64%	70%	69%	70%	69%
Mastering of complex work contents	61%	67%	56%	52%	58%	59%	56%	59%
Involvement in innovation processes	60%	60%	60%	51%	56%	57%	55%	57%
Service orientation	60%	64%	58%	54%	54%	56%	51%	57%
Autonomous decision- making	51%	55%	48%	44%	44%	44%	42%	48%
Social/communication skills	47%	51%	44%	45%	45%	44%	48%	46%
Management skills	28%	31%	26%	30%	28%	29%	25%	28%

	Small	Medium-sized	Big	Total
Process know-how	73%	77%	80%	76%
Coordination of work processes	70%	71%	71%	71%
Problemsolving/optimisation skills	68%	71%	69%	70%
Interaction with technology	69%	68%	71%	69%
Interdisciplinary planning/implementation	68%	68%	72%	69%
Mastering of complex work contents	60%	58%	61%	59%
Involvement in innovation processes	56%	58%	57%	57%
Service orientation	57%	57%	57%	57%
Autonomous decision-making	46%	49%	44%	48%
Social/communication skills	45%	46%	49%	46%
Management skills	27%	30%	21%	28%

T 2: Professional Skills that Are Important for Digitalisation – by Company Size

(proportion of companies in % which stated 4 or 5 points on a five-point Likert scale)

organisation still follow a more traditional-hierarchical pattern. In the future, it is likely that the latest digitalisation technologies will promote the use of flexible, decentralised work forms and decision-making structures (Arvanitis et al., 2018), and that social skills will thus become more important.

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Note

This is the first of two Bulletin articles on the new assessment of the digitalisation survey. The second article, which focuses on the corporate objectives that companies have achieved or are aiming to achieve through increased digitalisation, will follow in the March Bulletin.

The KOF study entitled 'Digitalisierung in der Schweizer Wirtschaft: Ergebnisse der Umfrage 2016, Teil 2: Ziele, Berufliche Kompetenzen und Arbeitsorganisation' [Digitalisation of the Swiss economy: Results of the 2016 survey, Part 2: Aims, professional skills and work organisation] (2018) by Nadine Bienefeld, Gudela Grote, Irina Stoller, Toni Wäfler, Martin Wörter and Spyros Arvanitis can be downloaded here:

www.kof.ethz.ch >

Literature

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Swiss Companies Set to Invest More

In 2018, Swiss companies plan to increase their investment activities by around 8%. Remarkably, they intend to step up expansion investment as well as capital investment. These lively investment activities also reflect the healthy state of the Swiss economy.

After the appreciation of the Swiss franc in January 2015 had placed a significant strain on the Swiss economy, the situation largely recovered in 2016. Despite the currency appreciation and the associated loss of competitiveness, Switzerland's GDP expanded by 1.2% in 2015. In 2016, GDP grew by 1.4%. According to the KOF Economic Forecast of December 2017, Swiss economic output is expected to have grown by 1% last year. However, momentum should be much higher this year, with the current KOF forecast projecting 2.3% GDP growth for 2018.

There is a strong correlation between the investment trend and the GDP development. Typically, investment activities increase faster in times of economic growth than in times of economic weakness. In the last three years, capital investment oscillated around the longer-term average, similar to the GDP trend. On a price adjusted basis, capital investment increased by 2.2% in 2015, 3.1% in 2016 and 2.3% in 2017. In comparison, the average capital investment growth rate in the period 2004 to 2014 was around 2.2%. The latest KOF Investment Survey provides the first appraisal of expected investment activities in 2018. According to the survey results, nominal growth of capital investments will amount to approximately 8%¹ (2017: 8.5%). The qualitative statements given by the respondents also confirm a higher propensity to invest. In response to the question whether they intend to raise or reduce their investments in plant and machinery compared to 2017, or leave them unchanged, 29% of the companies stated that they would increase investments in plant machinery in 2018. 16% of the respondents indicated that they would expand their building investments in 2018. In comparison, around 16% of the respondents plan to reduce their investments in plant and machinery, while 8% intend to reduce their building investments. Graph 1 presents the balance of the respective question for the last four years broken down by investment type. It shows that autumn 2014 was the last time the companies were similarly confident about their investment activities.

G 1: Next Year, will you Increase or Reduce Investments or Leave them Unchanged? (balance)



¹ The rates of change in the survey results reflect the capital investments made by private companies in Switzerland. Agriculture, private households and semi-public enterprises were not, or not fully, included. The rates of change are thus not directly comparable with the NA rates.



G 2: Investment Structure

Graph 2 presents the proportion of companies that made replacement, expansion and rationalisation investments in the last five years. While the percentages between 2014 and 2017 relate to realised investments, the figures for 2018 show the percentages relating to investment projections. Some investments are not necessarily limited to a single category and can, in extreme cases, be assignable to all of the listed investment types.

From an economic perspective, the different investment categories do not have the same relevance. As suggested by their name, pure replacement investments serve to replace existing plant and machinery and do not impact on the economy's production capacity. By contrast, expansion investments are of central importance to the future development of the economy. On the one hand, they raise the capital stock and hence production capacity, on the other, they can serve as an indicator of companies' expectations. In weak economic phases with a negative outlook and high levels of uncertainty, companies tend to hesitate before expanding their production facilities and frequently restrict themselves to replacing existing machinery. During optimistic phases, however, companies expect rising demand and expand their capacities to meet this extra demand. According to the KOF Investment Survey, over 47% of the surveyed companies plan to make expansion investments in 2018, which reflects rising optimism among the enterprises. A substantial portion of the budgeted 8% rise in capital investments is likely to go into the expansion of existing capacities and will thus raise Switzerland's total production potential. Aside from expansion investments, this year should also see a rise in rationalisation investments. Companies engage in this type of investment to replace existing production facilities with more efficient ones and attempt to raise their competitiveness via more productive plants.

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The survey

The current KOF Investment Survey was conducted among a panel of over 8,000 companies chosen to reflect the structure of the Swiss economy. The public sector, semi-public enterprises and private households are not included in the calculation of the investment figures. A total of 3,000 companies responded.

Eurozone Debt (1/3): Government Budgets

The first of three articles on Eurozone debt focuses on government budgets. Since the debt crisis, the Eurozone member states have significantly reduced new borrowing, with the debt-to-GDP ratio – a key convergence criterion under the Maastricht Treaty – falling steadily from over 6% in 2010 to just above 1% last year. However, consolidation efforts are on the decline again.

A breakdown of the budget deficit allows for more detailed analysis of the economic impact of public debt (see Graph 3). A small part of the budget balance is made up by non-recurrent effects and other temporary measures, for instance funds spent on bank rescues or proceeds from the auctioning of mobile licenses. Another part consists of the cyclical component which corrects lower tax revenue and higher social expenses in times of weak economic activity. After adjustment for these cyclical and non-recurrent effects, one arrives at the structural budget balance. Accordingly, this balance reflects the theoretical budget balance if the economy were working at full capacity and the production gap were closed. The European Commission estimates that the structural budget deficit improved from 4.3% in 2010 to around 1% in 2014. Since then, however, it has remained largely unchanged although the ECB's low interest rate policy of the last few years has significantly reduced the interest burden on public households.

To arrive at a reliable measurement of the fiscal orientation and the associated economic effects, interest expenses are deducted from the structural budget balance. Since interest expenses mostly affect finance companies or budgets with high savings quotas, they are of minor relevance to the



G 3: Fiscal Orientation – Eurozone



economy. Changes in the so-called structural primary balance, which results after this deduction, indicate the fiscal orientation. The structural primary balance suggests that, instead of using the relief afforded by lower interest rates to continue their consolidation efforts, government budgets in the Eurozone have pursued a more expansive orientation in their fiscal policies.

Consolidation measures were taking effect

After the big recession, the aggregated structural primary balance in the Eurozone showed a deficit of 1.5%. Government budgets' consolidation efforts during the debt crisis were having an effect and the structural primary balance improved significantly, reaching a surplus of 1.6% in 2014. Since then, however, efforts have been waning and the balance is likely to have amounted to around 1% in the past year. A glance at the big member states shows that the structural primary balance improved substantially until 2013/14 and fiscal policies were thus mostly following a restrictive orientation (see Graph 4). Both Italy and Spain have since adopted slightly expansive monetary policies, while German and French policies should be mostly neutral.



G 4: Fiscal Orientation of Individual Eurozone Countries

(Structural primary balance, % of GDP)

During the crisis years, stimulus packages and bank rescues resulted in a substantial increase in sovereign debt in many countries and debt levels are still higher than before the crisis (see Graph 5). In the Eurozone, the debt-to-GDP ratio currently stands at just under 90%. In 2007, it was still at 65%. Among the bigger countries, at around 130%, Italy has a particularly high debt-to-GDP ratio. However, Portugal and Greece also have very high ratios of 130% and 180% respectively. Spain and France both stabilised their debtto-GDP ratios at a high level. All in all, government budgets in the Eurozone have substantially less fiscal leeway now than they had before the crisis. For most countries, the Maastricht debt ceiling of 60% is out of reach. Among the big nations, Germany is the only one that may reach this criterion in the near future.

G 5: Government Debt-to-GDP Ratio in Individual **Eurozone Countries**



In the coming years, the European Central Bank is likely to initiate a normalisation of its monetary policy. A rise in interest rates would also push up the financing costs incurred by government budgets. This raises concerns in two areas: On the one hand, debt-to-GDP ratios are now much higher than a decade ago. On the other hand, since the crisis, some countries have acquired noticeable spreads compared to German government bond yields. Both factors are likely to affect the financing costs of countries with more significant debts.

How soon a normalisation of monetary policy will affect the interest burden of the individual countries depends on various factors, such as the speed of the interest rate turnaround, the trend in risk premiums and the debt structure. Analysis of outstanding bonds in Germany, France, Italy and Spain shows that between 15% and 18% of the outstanding debt is typically financed via short-term instruments (due in <1 year) and a further small percentage via bank loans. In the case of short-term financial instruments, interest rate changes should affect government budgets relatively swiftly. The largest percentage of public debt has an average term to maturity of 4 to 6 years. Accordingly, the full impact of interest rate changes on the interest burden of public budgets would be delayed for several years.

In the medium-term, an interest rate turnaround would result in an additional consolidation requirement every year, when expiring bonds are replaced with new securities that may be subject to higher interest rates. This involves the danger of a new sovereign debt crisis in the Eurozone, spreading primarily from the countries with higher debt levels. It is not clear whether institutional framework conditions in the Eurozone are now strong enough to counteract this risk.

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This article is the first article of three-part series on debt in the euro area. A second article, which focuses on debt in the financial sector, will follow in March. The third part deals with the indebtedness of households and non-financial companies.

KOF INDICATORS

KOF Globalisation Index: Globalisation Down Worldwide in 2015

The level of globalisation fell slightly in 2015. Overall, the Netherlands, Switzerland and Sweden were the most highly globalised countries worldwide. The current KOF Globalisation Index reflects economic, social and political globalisation up to and including 2015.

The level of globalisation worldwide increased rapidly between 1990 and 2007 and has risen only slightly since the Great Recession (see Graph 6). In 2015, globalisation decreased for the first time since 1975. The fall was due to the decline in economic globalisation, with social globalisation stagnating and political globalisation increasing slightly.

G 6: KOF Globalisation Index



The basis for calculating the KOF Globalisation Index has been revised (see website). A distinction is now drawn between de facto and de jure globalisation. Whereas from the perspective of de jure globalisation the conditions for globalisation improved compared to the previous year, a decline in de facto globalisation is responsible for the fall in the overall index. With regard to economic globalisation it is apparent that in particular de facto globalisation of trade, i.e. the cross-border exchange of goods and services, along with de jure financial globalisation, i.e. the regulatory environment for international financial glows, were responsible for the decline.

Country focus

the Netherlands was the most strongly globalised country in the world, followed by Switzerland and Sweden (see Graph 7). The next places in the ranking were occupied by Austria, Belgium, Denmark, France, Germany, Finland and Norway. The first non-European countries were the United Arab Emirates in 11th place, Canada in 15th place and the United States in 23rd place. The lowest rankings in the table were held by Eritrea, the Central African Republic, the Comoros and Sudan.

Due to their greater degree of interdependence, for example with neighbouring countries, smaller countries tend to be placed higher up in this ranking than larger countries. This leaves the largest national economies around the world in the mid-range. The USA held 63rd position for economic globalisation, as against 29th and 10th for social and political globalisation, respectively. The People's Republic

G 7: KOF Globalisation Index, Top 15 Countries

(Overall index value and contributions from de facto and de jure index, data for the year 2015)



of China is in the lowest third in – 88th in the overall index. Whilst it is ranked in the top 15 for political globalisation, its level of economic and social globalisation is significantly lower. The third-largest economy in the world, Japan, is ranked 36th. Due to their high level of economic, social and political interdependence within the EU, the largest European economies – namely Germany, the United Kingdom, France and Spain – are overall much more globalised. Within the overall ranking, France and Germany occupied places 7 and 8, Spain 12th and the United Kingdom 17th. Whilst the United Kingdom achieved a high score in particular for social globalisation, Germany, France and Spain had stronger results for political globalisation.

The emerging economy India achieved very different levels of globalisation in the three sub-domains. Although it is ranked 11th for political globalisation, the level of economic and social globalisation is significantly lower. In these sub-domains India is situated at the lower end of the middle of the ranking.

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You can find more detailed information about the KOF Globalisation Index on our website: www.kof.ethz.ch →

KOF Economic Barometer Is Easing

In January, the KOF Economic Barometer does not continue its upward tendency, which started in September 2017, but has declined (see Graph 8). However, despite the decline, the indicator remains well above its long-term average. It still indicates a more dynamic economic development than in mid-2017. The recovery of the Swiss economy is thus likely to continue, albeit with slightly less momentum than indicated in the past few months.

In January 2018, the KOF Economic Barometer declined compared to the previous month (revised to 111.4 from 111.3) – by 4.5 points to a value of 106.9. Despite the decline, the indicator remains well above its long-term average and the recovery of the Swiss economy is thus likely to continue.

Declines in the manufacturing and the banking sector are mainly responsible for this weakening. At the same time, the indicators for the hotel and catering industry, the export development, the construction sector and private consumption are also easing in January.

Within the manufacturing industry, more negative overall outlook was primarily driven by the chemical, electrical, wood-processing and textile industries. On the other hand, the prospects for the machine-building and food industry have brightened.

The overall markedly deteriorated sentiment in the manufacturing sector is primarily a reflection of the more negative assessment of incoming orders. By contrast, the indicators for the competitive and profit situation cushioned the downward tendency.

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

G 8: Economic Barometer and Reference Series



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 →

AGENDA

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