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OVERVIEW

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OECD
BETTER POLICIES FOR BETTER LIVES

This Overview is extracted from the 2017 Economic Survey of Switzerland. The Survey is published on the responsibility of the Economic and Development Review Committee (EDRC) of the OECD, which is charged with the examination of the economic situation of member countries.

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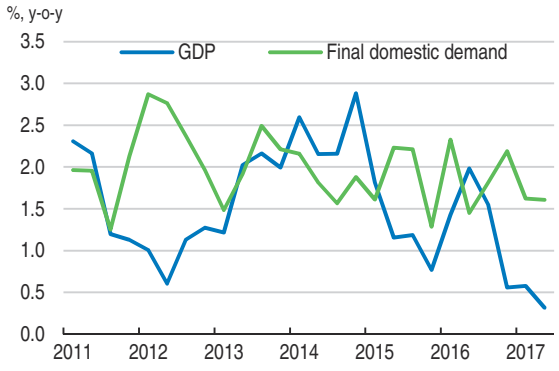
Executive summary

- *The economy is growing slowly*
- *Faster productivity growth is needed to raise incomes*
- *The demand for skilled workers has been strong*

The economy is growing slowly

Growth in output and domestic demand are modest



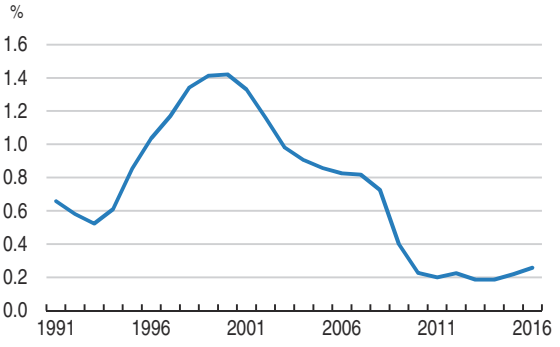
Source: SECO.

StatLink http://dx.doi.org/10.1787/888933620417

Switzerland continues to provide its citizens with a high standard of living. The economy has shown considerable resilience, most recently to the exchange rate appreciation in 2015. Nevertheless, growth has been too slow to absorb spare capacity or raise income per capita meaningfully. Unconventional monetary policies have helped return inflation to positive territory, but pose other risks. The current account surplus remains large. Fiscal policy is sound, and the federal fiscal rule has helped lower public indebtedness but it implies that spending priorities must be funded from other areas. Ensuring the sustainability of the pension system and implementing effective policies for extending healthy working lives are becoming increasingly urgent.

Faster productivity growth is needed to raise incomes

Trend labour productivity growth has stalled



Source: OECD Economic Outlook database.

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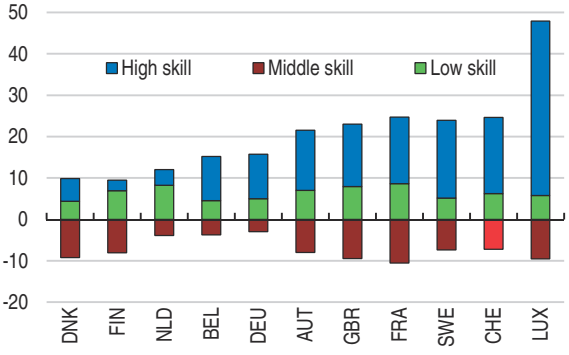
Swiss labour productivity growth has been falling since the late-1990s to be one-third of the OECD average rate in the past decade. Swiss R&D and innovation are top-ranked but need to be more widespread across firms and sectors. Boosting entry by innovative start-ups could reverse the recent divergence between frontier firms and the rest. Improving competition, raising trade in services and investment and lowering administrative burdens could boost the creation of innovative start-ups and revive growth. Higher education institutions can play a role by enhancing entrepreneurship through incubators. And the nation could make more use of its women and immigrants, neither of whom are achieving their potential.

The demand for skilled workers has been strong

Employment growth has been skill-intensive

% change, 2000-16



Source: Eurostat.

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The Swiss education and training system is well regarded and has contributed to high employment rates. Demand for skilled workers has been strong and is likely to continue so. This, together with far-reaching changes such as digitalisation and the risk of declining immigration, will challenge the education and training system. The supply of tertiary-educated workers will need to be expanded further. Access to lifelong-learning opportunities should be broadened to those outside the labour force and the less well-educated and take-up by older workers encouraged. Tracking in the school system has been reduced but still limits the achievement of those from disadvantaged socio-economic backgrounds.

MAIN FINDINGS	KEY RECOMMENDATIONS
Entrenching the expansion and sustaining high living standards	
Monetary policy is supporting growth and the return to price stability. There is limited scope for further monetary accommodation, and financial stability risks are rising. The fiscal position is sound.	Avoid persistent budget underspending through better co-ordinating procedures at federal and sub-national levels. Reduce agricultural subsidies and pursue efficiency gains in public spending to free up funds for measures that enhance growth and inclusiveness.
House price growth has slowed, but imbalances remain. Parts of the banking system are highly exposed to housing. Guarantees provided by cantons to their public banks are a fiscal risk and distort competition. Bank lending standards may be declining.	Eliminate remaining explicit cantonal government guarantees to their public banks. Establish a formal framework for setting mortgage lending limits that takes affordability into account and is enforced on a comply-or-explain basis.
Ageing-related spending represents a fiscal burden that may crowd out other expenditure. Workers face increased uncertainty about their retirement incomes and working lives. Precautionary household saving resulting from uncertainty about the future and the need to finance costly housing purchases may be contributing to the large current account surplus.	Fix the retirement age at 65 for both sexes, and thereafter link it to life expectancy. Increase financial incentives to work longer before retirement. Promote programmes to lengthen healthy working lives, including preventative health programmes. Promote lifelong training, career planning and tailored job-search assistance to enhance workers' resilience to change.
Boosting productivity for long-term growth	
Government involvement in sectors such as energy, telecommunications and transport is significant and competition weak. The competition authority's board includes representatives of economic associations, harming its perceived independence. Market access between cantons is difficult for several occupations.	Increase private ownership and remove barriers to entry, including restrictions on the number of competitors, in energy, telecommunications and transport. Remove representatives of economic associations from the board of the competition authority.
Restrictions on services trade and agricultural imports are substantial, especially regarding the movement of persons. New free-trade agreements provide an opportunity to increase market size, achieve scale economies and boost productivity.	Lower restrictions on trade in both goods and services, notably in highly protected agricultural products. Complete the negotiations for free-trade agreements that are underway with Asian nations and MERCOSUR.
The entrepreneurship rate is low for younger age groups. The administrative burden is high. Fragmented delivery reduces the effectiveness of government support.	Finalise the virtual one-stop shop for administrative affairs. Establish cantonal physical contact points to improve delivery of advisory services and public financing programmes.
Parts of the population, notably women, are not achieving their potential. Child-rearing responsibilities fall disproportionately on mothers, and the tax system discourages second earners. Slowing immigration may worsen skill shortages.	Increase childcare affordability. Shift income taxation to individual rather than household incomes, or implement equivalent measures. Facilitate high-skilled immigration from non-EU countries to meet labour market needs.
Ensuring a dynamic skills-training and life-long learning system	
Jobs requiring tertiary education are expanding, and vacancy rates in skilled sectors are high. Separating students into vocational and general streams after lower secondary school weakens intergenerational mobility.	Collect more detailed data on skills to facilitate adjustments to education in response to changing labour market needs. Increase the effectiveness of pathways between vocational and general streams by increasing the academic component of the vocational curriculum and vice-versa.
The vocational system relies on apprenticeships, but small firms tend not to participate. The system has generally been responsive to changes in labour market conditions, but the school-based model is less connected to firms.	Encourage small firms to participate more in apprenticeships by promoting sharing of apprenticeship places between firms and training centres that undertake part of the training. Strengthen linkages between the vocational education and training system and employer associations in school-based vocational training.
Participation in continuing education and training is high but not broad-based. Public spending is low and the framework complex.	Use subsidies to encourage participation in continuing education and training for groups with low participation rates.

Assessment and recommendations

- *Switzerland is doing well by most measures of economic and social well-being*
- *The recovery has been difficult to sustain*
- *Assessing the large current account surplus*
- *Preserving price and financial stability*
- *Balancing fiscal priorities in the short and medium term*
- *Boosting productivity for long-term growth and living standards*
- *Ensuring dynamic skills training and life-long learning*
- *Enhancing environmental sustainability*

Switzerland is doing well by most measures of economic and social well-being

The Swiss economy has shown remarkable resilience in recent years in the face of the 2009 financial crisis and significant currency appreciation in 2015. But the upward momentum in the recovery has been difficult to maintain and GDP per capita has plateaued since 2008. Inflation has recently returned to positive territory, supported by unconventional monetary policy tools. The current account surplus is the largest among OECD countries relative to GDP.

In aggregate, the population enjoys a high standard of living, as measured by GDP per capita and by broader measures of well-being (Figure 1, Panel A). In particular, jobs and earnings, personal security and subjective well-being are especially high. Confidence in government has increased since 2007 and is the highest in the OECD (OECD, 2017a; Figure 1, Panel B). Income inequality before taxes and transfers is one of the lowest in the OECD, partly reflecting the high employment rate (Panel C). The Gini coefficient after taxes and transfers is around the OECD average. Yet, the share of income and wealth held by the top 1% has increased in the past two decades, as in many countries (Atkinson et al., 2017). The gap between the highest and lowest socio-economic groups is around or above the average across OECD countries in some other measures of well-being, such as the employment rate, student skills and self-reported health, reflecting the particularly impressive outcomes for the highest socio-economic groups.

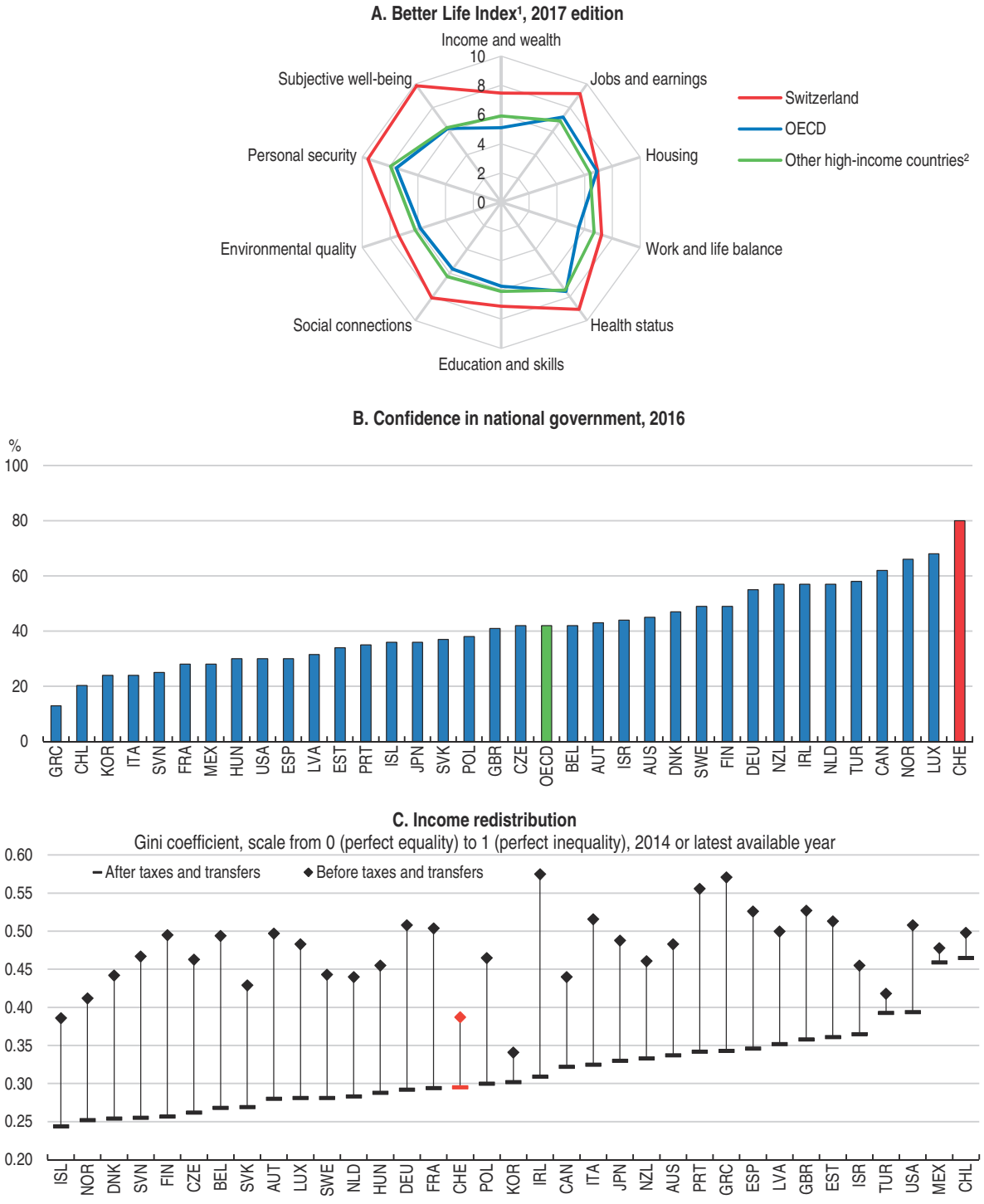
The economy consistently ranks highly in international comparisons. For example, Switzerland came second in the 2017 IMD World Competitiveness Ranking. GDP per capita is the third-highest in the OECD, due to high levels of employment and labour productivity (Figure 2). Maintaining Switzerland's enviable well-being is the paramount challenge facing policymakers. Trend annual labour productivity growth has slowed over the past two decades to 0.3%, one-third of the average rate across OECD countries (Figure 3). Weak competition, especially in some key domestic sectors, generates high prices and weighs on productivity outcomes. The high employment rate masks a sharp difference in hours worked between men and women: Switzerland has one of the highest rates of female part-time employment, reflecting a lack of affordable childcare and tax disincentives for second-income earners, as well as personal preferences. These factors hinder women's career prospects and lower their well-being (OECD, 2015a; OECD, 2013; Dutu, 2014).

A skilled workforce, reflecting in part Switzerland's renowned vocational education and training system, and high (albeit declining) capital intensity, have delivered high labour productivity, wages and job quality (OECD, 2017b). At the same time, increasing demand for high-skilled workers has been met in part by immigration, facilitated by agreements with the European Union. But as digitalisation and globalisation increase demand for such workers and if immigration continues to slow, shortages are likely to intensify.

Against this background, the key messages of this *Survey* are:

- Monetary policy is supporting growth and the return to price stability, but the scope for further monetary accommodation is limited, and financial stability risks are rising. The

Figure 1. **Well-being and trust in government**



1. Each dimension is measured by one to four indicators from the OECD Better Life Index (BLI) set. Normalised indicators are averaged with equal weights. Indicators are normalised to range between 10 (best) and 0 according to the following formula: (indicator value – minimum value)/(maximum value – minimum value) × 10. The OECD aggregate is weighted by population. Please note that the OECD does not officially rank countries in terms of their BLI performance. The civic engagement component has been omitted, as direct democracy in Switzerland means that there are a disproportionately large number of national polls, with relatively low average turnout.
2. Based on income per capita; unweighted average of Ireland, Luxembourg, Netherlands, Norway, United States.

Source: OECD, *Better Life Index*; OECD, *Income Distribution Database*; Gallup World Poll.

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Figure 2. **Sources of real income differences across OECD countries, 2015**

1. The OECD GDP per capita is a population-weighted average of nominal GDP converted using 2015 purchasing power parities (PPPs). Note that the population of Luxembourg is augmented by cross-border workers and Norway GDP refers to the mainland.
2. Labour utilisation is measured as total number of hours worked per capita.
3. Labour productivity is measured as GDP per hour worked.

Source: OECD (2017), *Economic Policy Reforms: Going for Growth 2017*.

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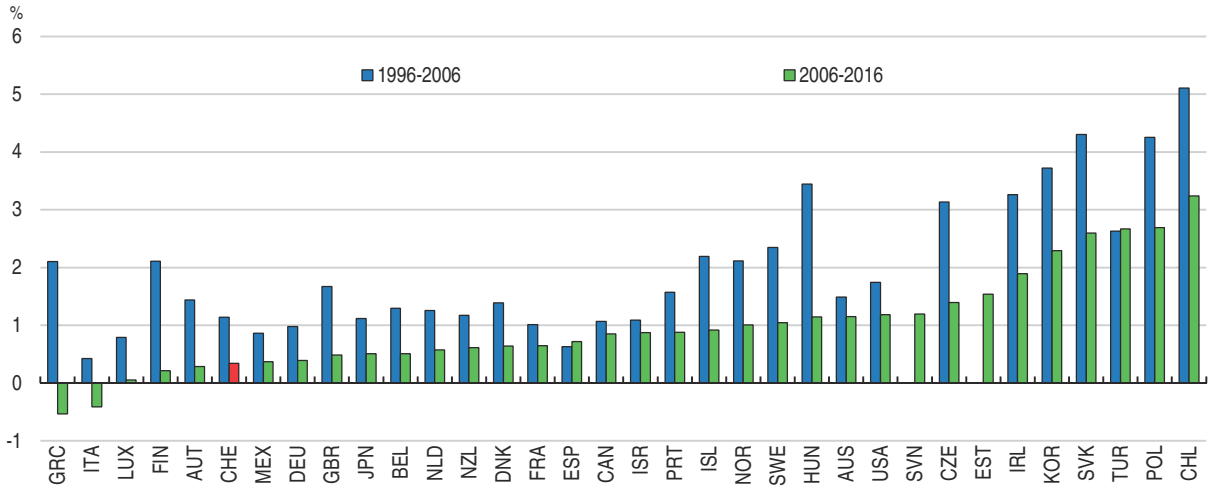
fiscal position is sound. Population ageing will require further reforms to pension systems and policies supporting longer working lives.

- High labour productivity sustains Switzerland's high living standards, but productivity growth has been slow for many years. Maintaining and increasing living standards will require policies to restore productivity growth, enhance competition by lowering import barriers and government involvement in key network sectors, and encourage greater use of women's and immigrants' skills.
- The well-regarded education and training system has contributed to strong Swiss labour market outcomes. But it is being increasingly challenged by the ever-growing demand for high-skilled workers along with the changing nature of work, calling for a nimble and inclusive lifelong learning system.

Figure 3. **Average annual rate of trend labour productivity growth**



Source: OECD, *OECD Economic Outlook 102 database*, preliminary version.

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The recovery has been difficult to sustain

The Swiss economy lost momentum throughout 2016 with little pick-up in the first half of 2017. While GDP growth edged up to 1.4% in 2016, supported by domestic demand as well as exports, growth in several components has slowed (Table 1; Figure 4, Panels A and B). Improvements in confidence have supported private domestic demand (Panel C). But services sectors have been surprisingly weak. Retail activity has been modest, even though the strong franc boosted households' purchasing power. One possible explanation is that households lifted precautionary saving. More recently wage growth appears soft. Business investment has been subdued, reflecting past export sluggishness and spare capacity, particularly in the manufacturing sector (Panels B and D). But stronger prospects for growth and exports, improving profit margins and continued negative interest rates are supporting investment. In all, a number of leading indicators point to a firming of activity in the second half of 2017.

The current account surplus was 9.8% of GDP in 2016 – the highest in the OECD (Figure 5, Panels A and B). It represents mainly a positive balance on goods and services. Low inflation has mitigated the effect of the 2015 nominal exchange rate appreciation on export competitiveness, and export performance had improved until recently (Panels C and D). The diversity of Swiss export destinations also helped (Figure 6, Panel A). Pharmaceuticals exports and merchanting activity (associated with trade in commodities) are significant, contributing 11% to GDP in 2016, and are less price sensitive than other exports (Panel B; Yeung et al., 2016; SNB, 2012). The high degree of integration of some manufactured products in global value chains (for example, in pharmaceuticals) also reduces sensitivity to exchange rate movements (Ollivaud et al., 2015). But other exports, such as machinery, tourism and financial services, have been weak. Specialisation in relatively specific products allows exporters to achieve scale and international competitiveness, but also raises vulnerability to changes in regulations or consumer preferences, for example.

The employment rate has reached 80%, the second-highest in the OECD, surpassing its pre-crisis peak (Figure 7, Panel A). The unemployment rate has been edging down since

Table 1. **Macroeconomic indicators and projections**

	2013	2014	2015	2016	2017	2018	2019
	Current prices (CHE billion)	Percentage changes, volume (2010 prices)					
Gross domestic product (GDP)[1]	**638**	**2.5**	**1.2**	**1.4**	**0.8**	**1.7**	**1.8**
Private consumption	341	1.3	1.8	1.5	1.3	1.4	1.6
Government consumption	76	2.2	1.2	1.6	1.4	1.1	1.2
Gross fixed capital formation	151	2.9	2.3	3.0	2.1	2.4	2.6
Housing	20	2.3	3.8	4.2	2.8	2.9	2.8
Final domestic demand	568	1.8	1.8	1.9	1.5	1.6	1.8
Stockbuilding[2]	-7	0.6	0.5	-1.4	-1.3	-0.3	0.0
Total domestic demand	561	2.7	2.4	0.2	0.1	1.3	1.9
Exports of goods and services	459	-6.1	2.2	6.5	0.5	5.3	4.0
Imports of goods and services	382	-7.7	4.5	6.0	-0.7	5.5	4.6
Net exports[2]	77	0.2	-0.9	1.0	0.7	0.5	0.1
Other indicators (growth rates, unless specified)							
Potential GDP	..	1.8	1.7	1.6	1.5	1.4	1.4
Output gap[3]	..	-1.1	-1.6	-1.8	-2.5	-2.3	-1.9
Employment	..	1.7	1.5	1.5	1.0	1.3	1.4
Unemployment rate[4]	..	4.8	4.8	4.9	4.8	4.5	4.4
GDP deflator	..	-0.6	-0.6	-0.5	0.4	0.7	0.8
Consumer price index	..	0.0	-1.1	-0.4	0.5	0.5	0.6
Core consumer prices	..	0.1	-0.5	-0.3	0.3	0.5	0.6
Terms of trade	..	0.0	2.5	-2.2	-1.0	0.1	0.0
Household saving ratio, net[5]	..	18.9	17.6	18.8	19.1	19.1	18.9
Trade balance[3]	..	11.8	11.5	11.3	11.4	11.9	11.9
Current account balance[3]	..	8.6	11.2	9.8	10.2	10.7	10.9
General government fiscal balance[3]	..	-0.2	0.6	0.3	0.3	0.4	0.4
Three-month money market rate, average	..	0.0	-0.8	-0.7	-0.7	-0.7	-0.5
Ten-year government bond yield, average	..	0.7	-0.1	-0.4	-0.1	0.2	0.8

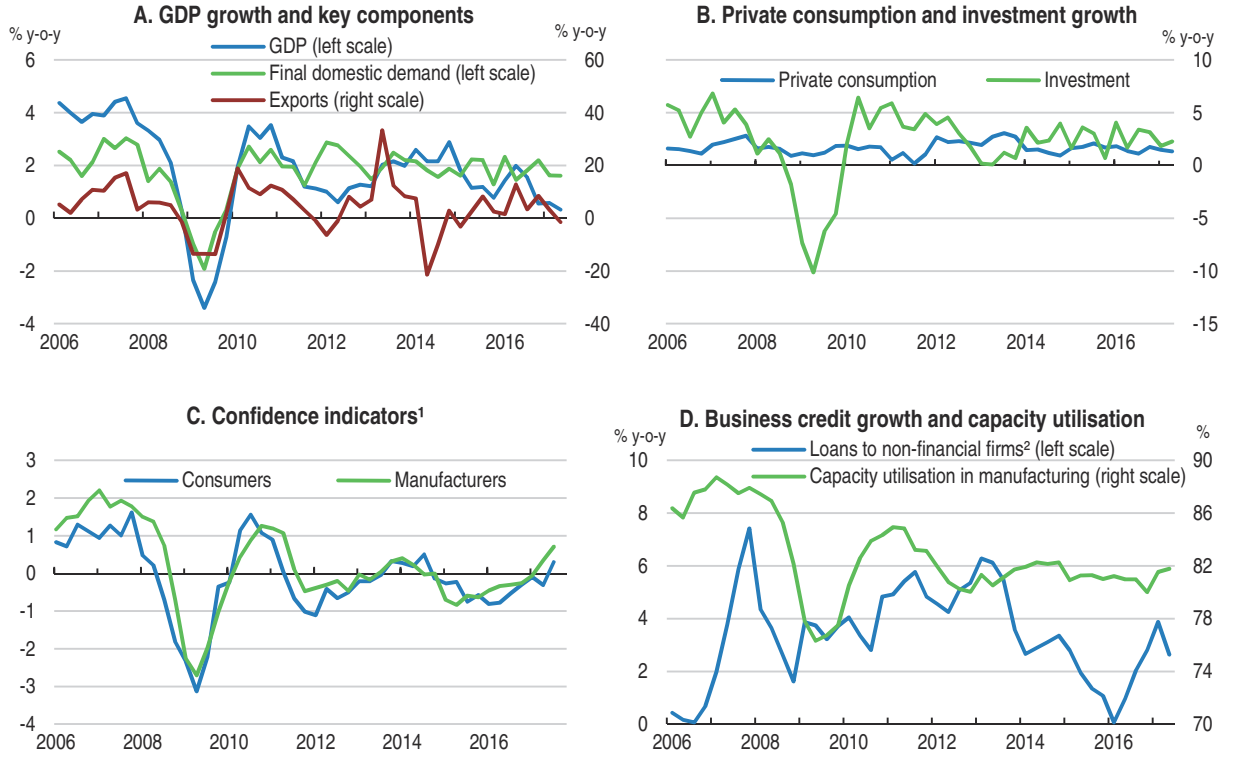
1. Based on seasonally and working-day adjusted quarterly data.
2. Contributions to changes in real GDP, actual amount in the first column.
3. As a percentage of GDP.
4. As a percentage of the labour force.
5. As a percentage of household disposable income.

Source: OECD, *OECD Economic Outlook 102 database*, preliminary version.

early 2016, to just under 5% (ILO definition). Labour market flexibility and large migratory inflows and outflows helped stabilise employment. However, the long-term unemployment rate and the number of unemployed who are not registered for benefits appear high relative to history, although not compared to other countries (Panel B). Real wages have increased faster than productivity since the crisis, squeezing firms' profits. This trend, together with a declining rate of self-employment, has driven labour's income share to historically high levels (Panel C), whereas it has fallen in other OECD countries. This points to the dependence of future real wage growth on firms' ability to raise total factor productivity, particularly given the difficult environment for investment.

Inflation has averaged only 0.1% per year since 2007, and import prices have fallen, reflecting the strength of the franc and low trading-partner inflation (Figure 8, Panel A). But domestic price pressures have also been weak until recently. Measures of underlying inflation have finally turned positive (Panel B). Survey data suggest that the share of consumers expecting further price falls has declined. The risk of deflation – i.e. persistent price reductions – is still present but seems to have receded.

Figure 4. **Drivers of growth dynamics**



1. Deviation from 20-year average in standard deviations.
2. The data are adjusted for a break in coverage in September 2006 when the banking statistics covered all Raiffeisen banks. Previously the statistics covered only the larger Raiffeisen banks.

Source: SECO; OECD, *Main Economic Indicators database*; Swiss National Bank; Thomson Reuters Datastream.

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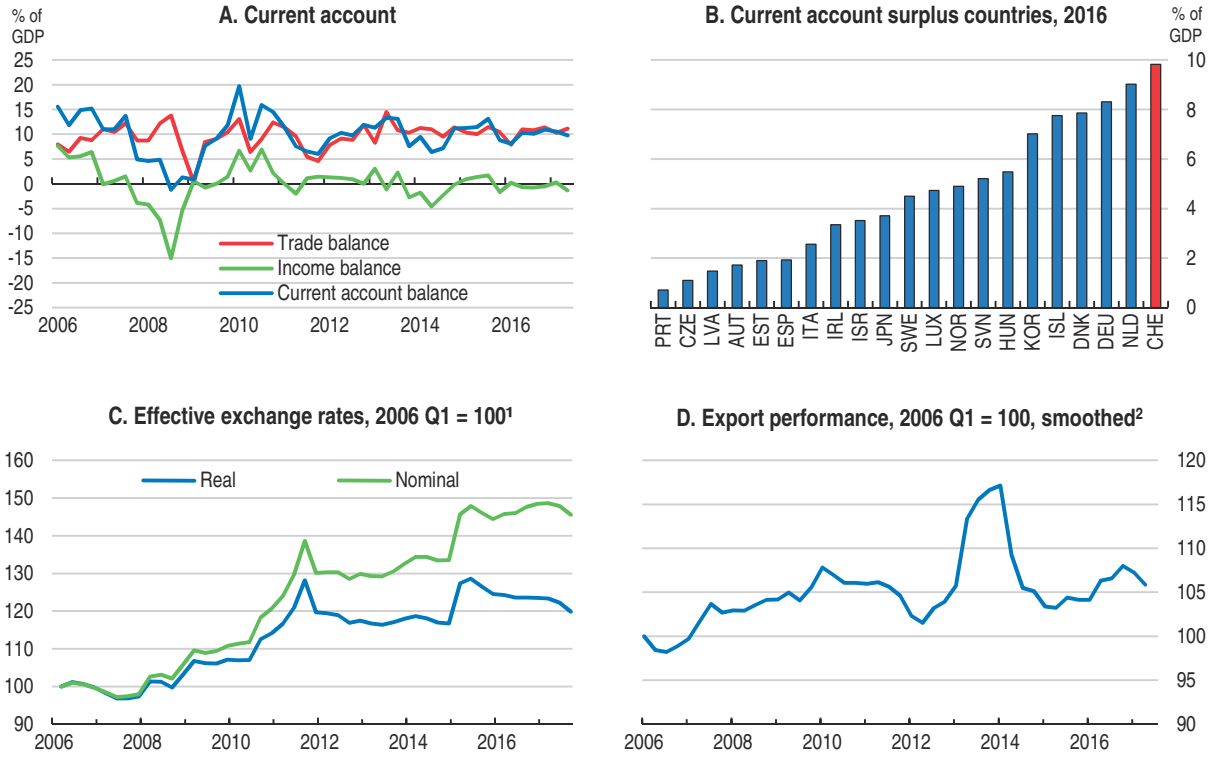
GDP growth is projected to pick up to 1.8% by 2019 as the recovery resumes (Table 1). This is sufficient to expand employment and slowly reduce the unemployment rate. The improved labour market will support household incomes and consumption. Strengthening growth globally, and particularly in Europe, will raise capacity utilisation and boost confidence, encouraging business investment, given favourable financial conditions. In this context, and assuming the exchange rate remains at current levels, inflation is projected to edge up. The current account surplus will remain large due to the inelasticity of some exports to the exchange rate, and rising investment income as the global economy strengthens.

External risks dominate the projections due to the economy's considerable openness. The euro area recovery could prove stronger than assumed, boosting exports and confidence more than projected. But renewed turbulence in the euro area, a disorderly exit of the United Kingdom from the European Union or increased global protectionism would weigh on activity. Indicators of macro-financial vulnerabilities point to small increases in some imbalances, including the external sector where competitiveness deteriorated due to the currency appreciation (Figure 9). Other dimensions have improved. Large adverse external shocks could also be transmitted to the Swiss economy (Table 2). These could include geopolitical tensions or a sudden worsening of the European banking situation. The high level of house prices and the financial sector's exposure through mortgage lending and direct housing ownership mean that a negative shock could trigger a correction with knock-on effects to the financial sector and wider economy.

Figure 5. **The current account surplus has remained large despite the appreciation of the franc**



1. Nominal effective exchange rate uses chain-linked trade weights; real effective exchange rate uses constant trade weights.
2. Four-quarter moving average. Export performance is measured by the ratio of exports of goods and services to the trade-weighted average of trading partners' imports in volumes.

Source: OECD, *OECD Economic Outlook 102 database*, preliminary version.

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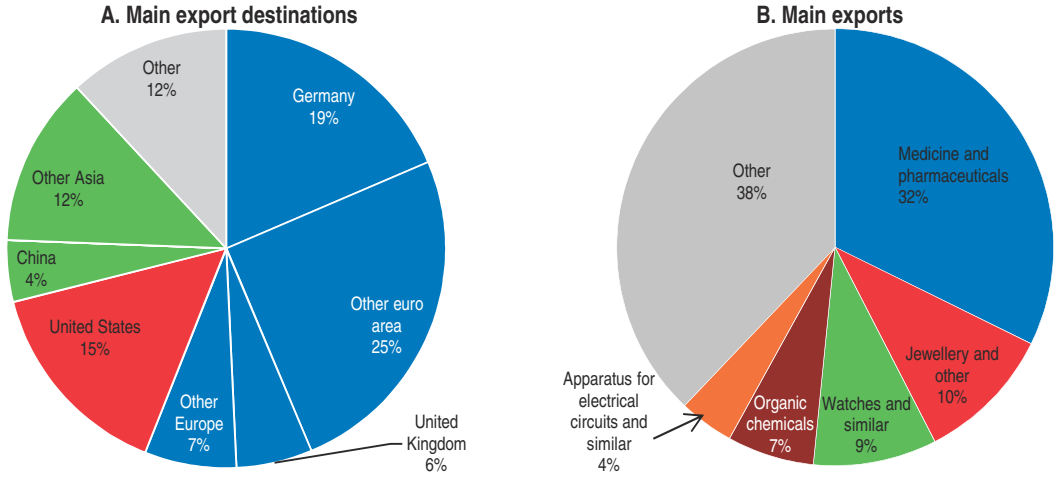
Figure 6. **Exports of goods by market and type[1], 2016**



1. Excludes exports of non-monetary gold, which accounts for 27% of the value of gross exports but are a net import.

Source: OECD, *International Trade Commodity Statistics database.*

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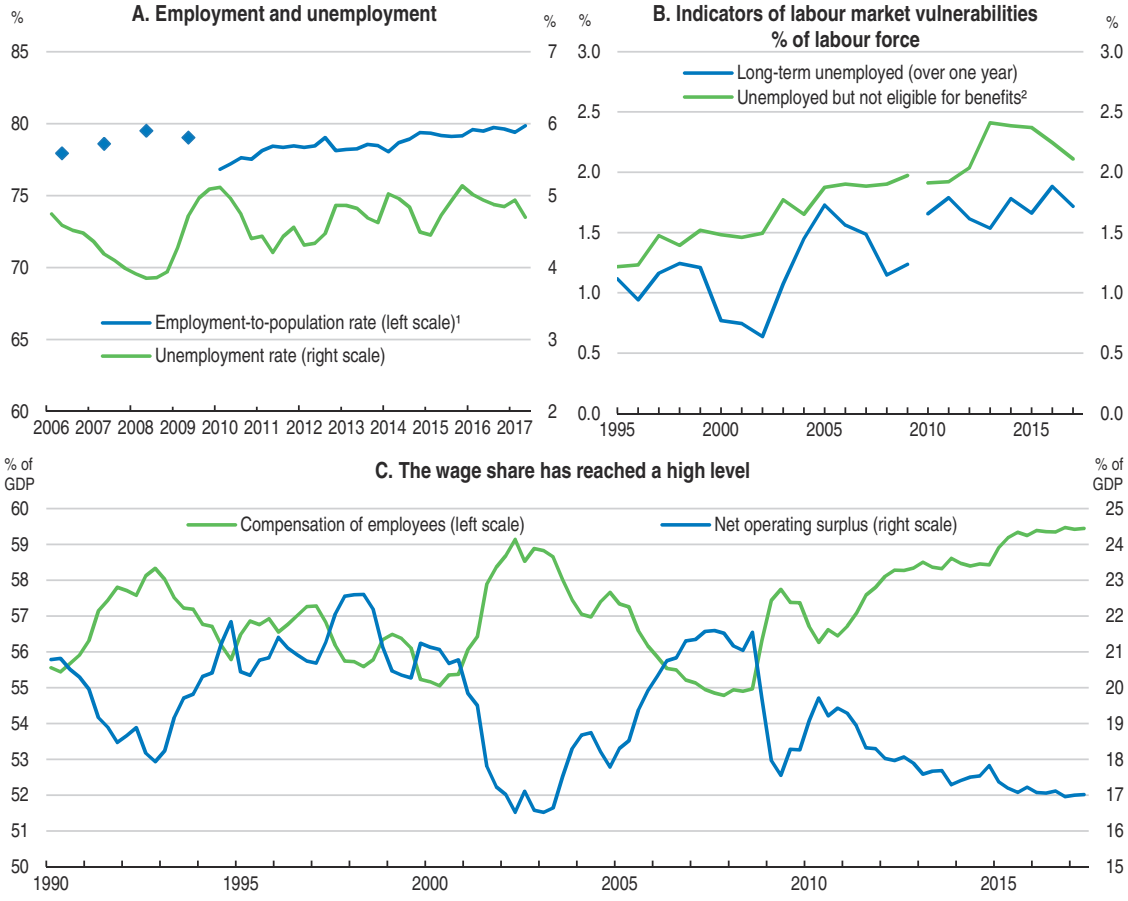
Figure 7. **Labour market developments**



1. There is a break in the methodology for labour force statistics in 2010. In addition, data prior to 2010 are available only for the second quarter of each year.
2. Unemployed workers not registered at a regional employment centre.

Source: OECD, *OECD Economic Outlook 102 database*, preliminary version; OECD, *Labour Force Statistics database*; Federal Statistical Office.

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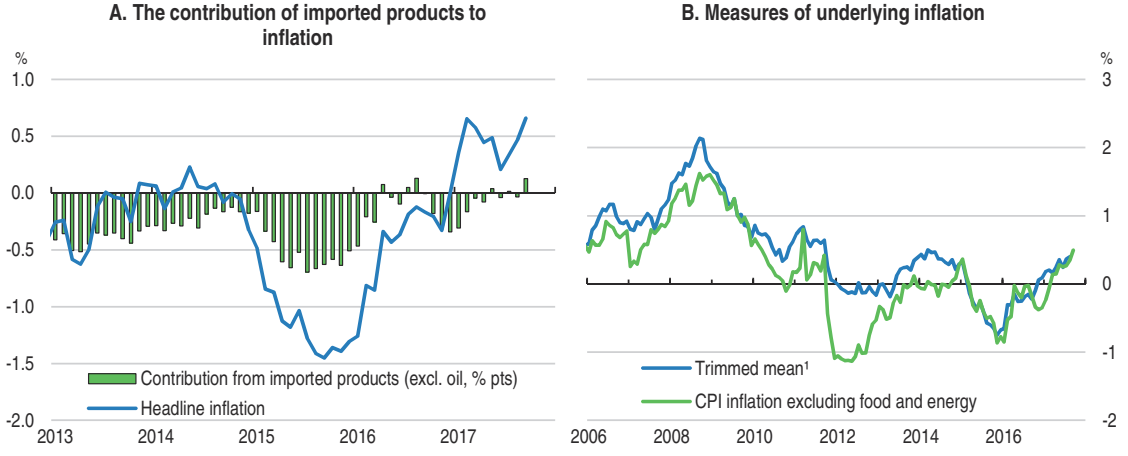
Figure 8. **Inflation has become positive**



1. The trimmed mean measure of inflation excludes the top and bottom 15% of price changes.

Source: Swiss National Bank; OECD, *Main Economic Indicators database*; OECD calculations.

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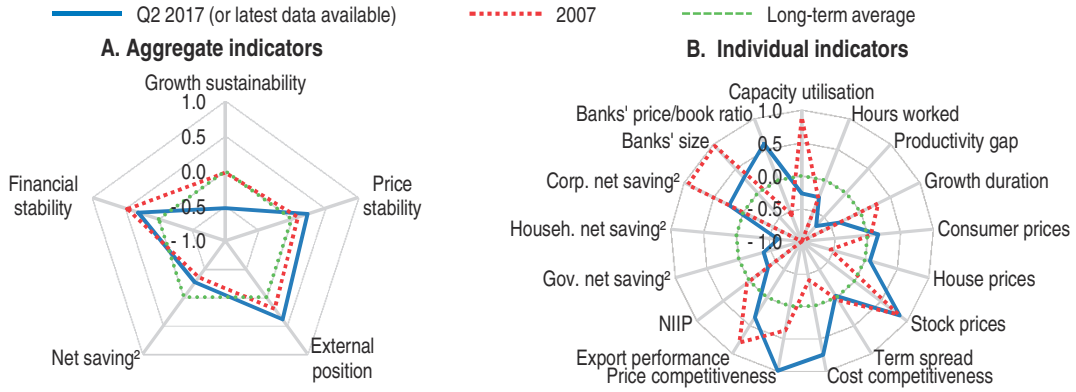
Figure 9. **Developments in macro-financial vulnerabilities since 2007**[1]

Deviations of indicators from their real time long-term averages (0), with the highest deviations representing the greatest potential vulnerability (+1), and the lowest deviations representing the smallest potential vulnerability (-1)[1]



1. Each aggregate macro-financial vulnerability indicator is calculated by aggregating (simple average) normalised individual indicators. Growth sustainability includes: capacity utilisation of the manufacturing sector, total hours worked as a proportion of the working-age population (hours worked), difference between GDP growth and productivity growth (productivity gap), and an indicator combining the length and strength of expansion from the previous trough (growth duration). Price stability includes: headline and core inflation (consumer prices), the average of the house prices-to-rent ratio and the house prices-to-income ratio (house prices), stock market index adjusted by nominal GDP (stock prices), and the difference between long-term and short-term government bond interest rates (term spread). External position includes: the average of unit labour cost based real effective exchange rate (REER), and consumer price based REER (cost competitiveness), relative prices of exported goods and services (price competitiveness), ratio of exports to export markets (export performance), and net international investment position (NIIP) as a percentage of GDP. Net saving includes: government, household and corporate net saving, all expressed as a percentage of GDP. Financial stability includes: banks' size as a percentage of GDP (banks' size) and the ratio of price to book value for publicly listed banks (banks' price/book ratio).
2. Annual data.

Source: OECD calculations based on *OECD Economic Outlook database*; Swiss National Bank; Thomson Reuters Datastream.

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Table 2. **Possible shocks and their economic impact**

Shock	Possible outcome
Rising geopolitical tensions	Safe-haven flows could push up the exchange rate substantially, slowing growth and increasing deflationary pressures in the economy.
Banking crisis in Europe	Funding costs could rise due to concerns about capital adequacy and contagion effects. It may also generate safe-haven inflows. Together these effects would have a major contractionary impact.
Major house price correction	A large correction in housing prices coinciding with a contraction in GDP could expose vulnerabilities in the financial system, causing a domestic banking crisis with feedback to the real economy.

Assessing the large current account surplus

The current account surplus has tallied around 10% of GDP since the late 1990s. It has persisted while the real effective exchange rate has appreciated by around 1% per year on average, without denting the goods and services balance. Likewise, cyclical developments appear to have played little role, lowering the surplus only at the margin, except in 2008 (Box 1).

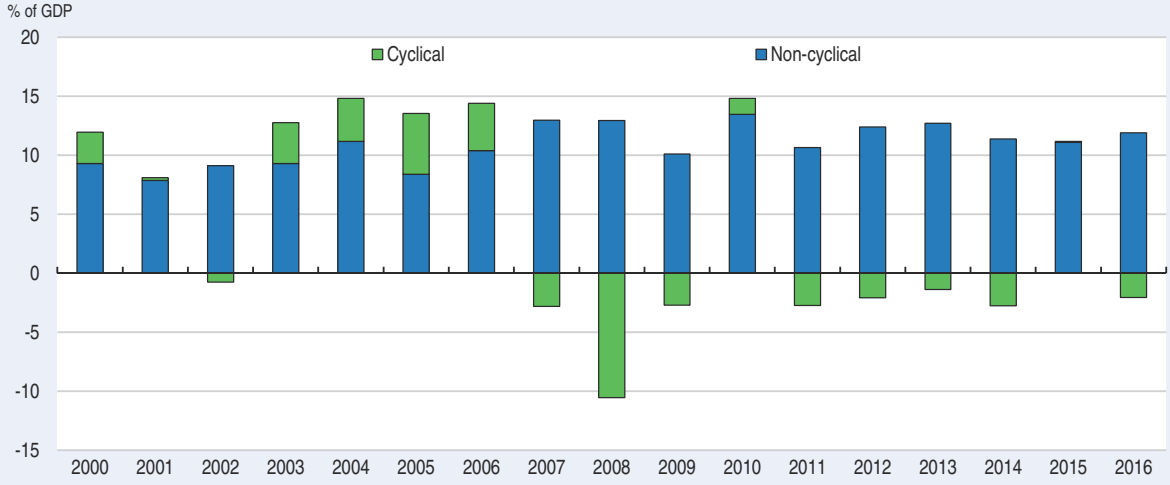
One explanation for the sticky surplus is the rising share of price-insensitive exports, discussed above, which may be more sensitive to the tax and regulatory regime (including intellectual property rights for pharmaceutical products) than exchange rate developments. To the extent that location decisions by merchanting companies have been influenced by past tax policies (Beusch et al., 2014), upcoming tax changes to meet international commitments may shrink the surplus stemming from these companies.

Box 1. **Estimating the cyclical component of the current account surplus**

The current account balance can be decomposed into structural and cyclical components, following Ollivaud and Schwellnus (2013). In this framework the cyclical components are extracted from separate models for the trade and investment income balances; the former is a function of the relative output gap (the domestic output gap minus partners' trade-weighted gaps) and the latter of the global neutral interest rate and differential with other countries. Due to the trend increase in pharmaceuticals exports, this component is first extracted from the trade balance.

This exercise reveals that the cyclical component is currently in deficit, as its biggest driver is interest rates (on net foreign assets), which are lower than neutral (Figure 10).

Figure 10. **Components of the current account surplus**[1]



1. The cyclical component is computed as the sum of estimated cyclical components in oil, non-oil non-pharmaceutical goods and services, and investment income balances; while the remaining part is the residual.

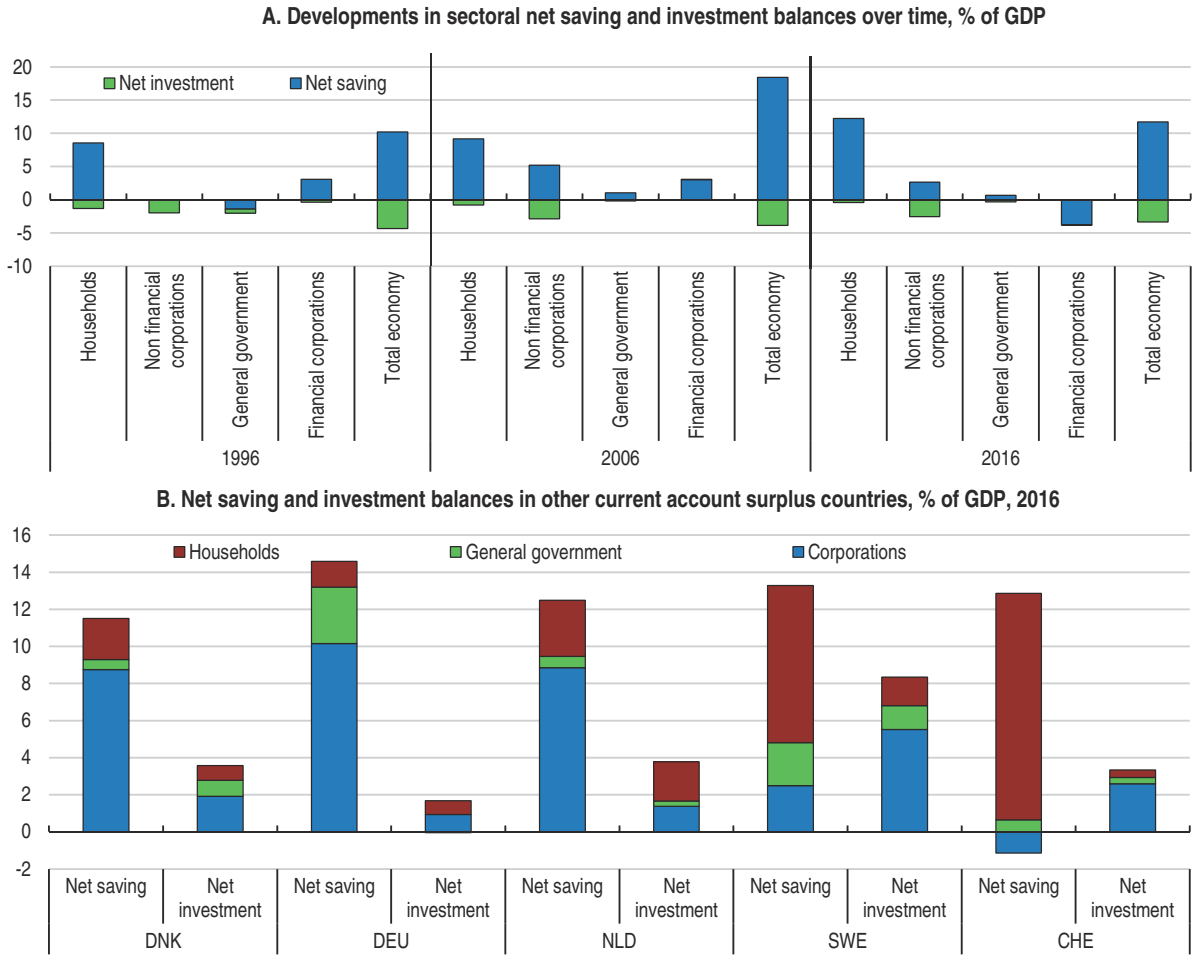
Source: UN, *Comtrade database*; IMF, *Balance of Payments database*; OECD, *OECD Economic Outlook 102 database*, preliminary version; OECD calculations based on Ollivaud and Schwellnus (2013).

StatLink http://dx.doi.org/10.1787/888933620645

The surplus also reflects a growing excess of household saving – the highest rate in the OECD in 2016 – over investment (Figure 11, Panel A). This contrasts with many other surplus countries, where corporate savings drive the surplus, but is similar to Sweden's situation (Panel B). High household saving appears partly linked to the rapidly rising share of Swiss approaching retirement and their retirement savings and to the need to save for costly owner-occupied housing. Households also appear less willing to spend than in the past: consumption fell by 4 percentage points of GDP in the mid-2000s and remains low relative to the mid-1990s; and household investment is 0.9 percentage points lower. Persistent price gaps relative to neighbouring countries induce cross-border shopping, which is, however, difficult to measure. Government saving has increased, while its investment has fallen a little. Although business-sector investment exceeds saving in aggregate, this masks heterogeneity between types of firms, including measurement issues associated with profits of foreign-owned multinationals (Jarrett and Letrémy, 2008) and the abovementioned contributions of pharmaceuticals and merchanting that boost the surplus.

Although large surpluses are less concerning than deficits, they generate large exposures to credit, currency and interest-rate risk. In particular, currency appreciation leads

Figure 11. **The savings-investment balance**



Source: Federal Statistical Office; OECD, *OECD Economic Outlook 102 database*, preliminary version, and *Annual National Accounts database*; OECD calculations.

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Table 3. **Switzerland's net international investment position**

Per cent of GDP

	Assets		Liabilities		Net assets	
	2000	2016	2000	2016	2000	2016
Private non-financial sector	297	462	215	400	82	63
Banks	165	101	155	127	9	-26
Swiss National Bank	20	113	1	18	19	94
Public sector	2	4	2	5	0	-2
Total	484	680	373	550	110	130

Source: Swiss National Bank; OECD, *OECD Economic Outlook 102 database*, preliminary version.

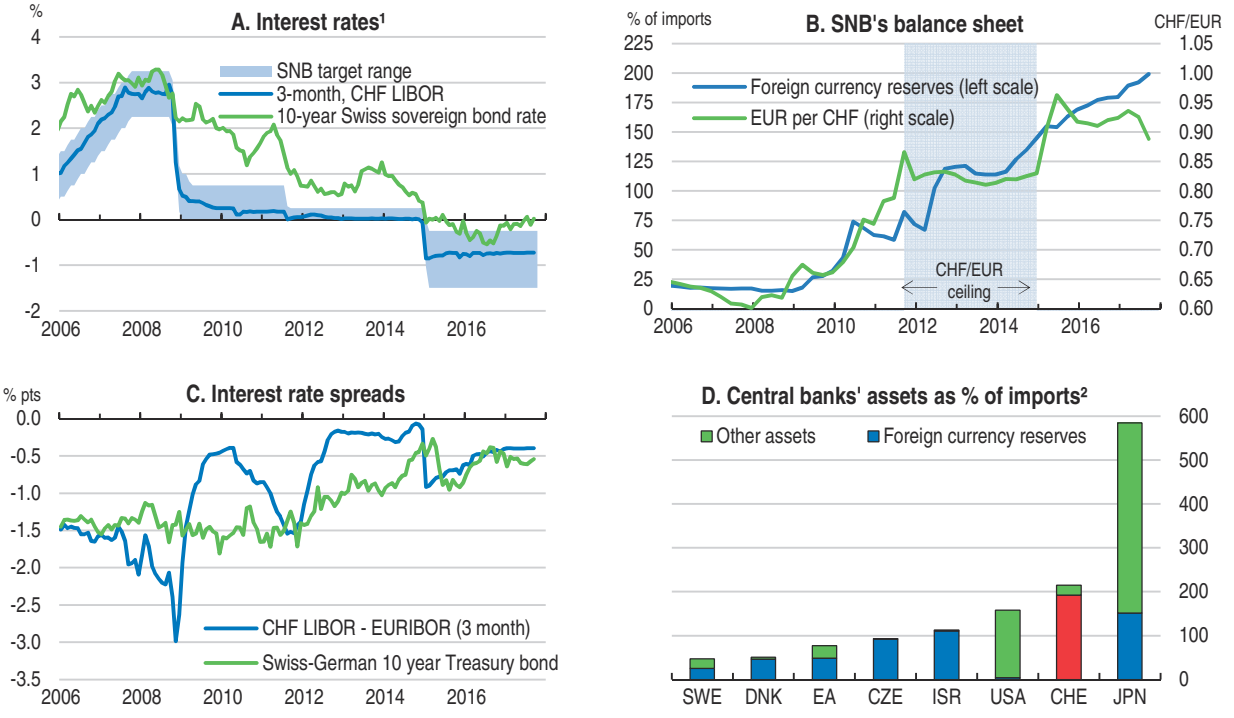
to valuation losses. This may mean that households do not correctly anticipate the returns on their investments. In 2016 Swiss net international assets were the world's fifth-largest and 130% of GDP. This is relatively little changed since 2000, but the gross exposure of the private non-financial sector has increased substantially as has the Swiss National Bank's exposure (Table 3). The implied return on Switzerland's assets has tended to be a little lower

than that on its liabilities, but in 2007-08 the differential was much larger. If the imbalance is driven by concerns about retirement incomes stemming from rising but uncertain longevity and lower investment returns, policymakers have a potential role. Reforms could encourage longer working lives, reduce income uncertainty pursuant to job loss by extending unemployment insurance coverage, and increase certainty around the pension system, discussed below. As the population ages and older households dissave, the surplus of saving over investment should fall, reducing the current account surplus (Peters and Winkler, 2016).

Preserving price and financial stability

Monetary policy has been fighting against disinflation, including the effects of safe-haven inflows, since the onset of the global financial crisis. After conventional monetary policy tools were exhausted, an exchange rate ceiling against the euro was imposed (Figure 12, Panels A and B). Since the ceiling was removed in January 2015 the Swiss National Bank (SNB) has used a two-pronged approach including a negative policy interest rate of -0.75% – partly restoring the traditional negative interest rate differential with the euro area – and periodic foreign exchange intervention to prevent excessive appreciation. However, interest rate differentials with the euro area have narrowed again (Panel C). And the SNB's assets reached 113% of GDP in 2016, with foreign reserves equivalent to 192% of imports in June 2017 – the highest of any OECD central bank (Panels B and D).

Figure 12. **Monetary policy has remained very accommodative**



1. The SNB implements its monetary policy by fixing a target range for the three-month Swiss franc Libor. The Libor is a reference interest rate in the interbank market for unsecured loans. It is a trimmed mean of the rates charged by 11 leading banks and is published daily by the ICE Benchmark Administration.
2. As at June 2017.

Source: Swiss National Bank; OECD, *OECD Economic Outlook 102 database*, preliminary version; Thomson Reuters Datastream.

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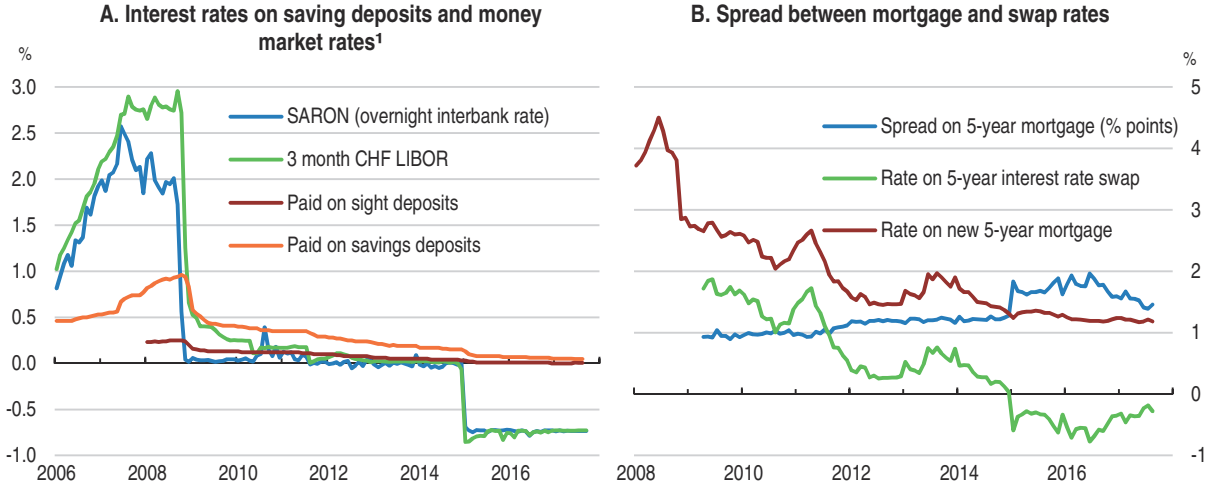
While the two-pronged approach has been successful in warding off deflation, it also raises current and future challenges. First, as the SNB's balance sheet grows, so does the potential for greater debate around its investments. Assets are mostly held in foreign government bonds, although around 20% are invested in foreign equities according to prescribed rules for diversification (in Denmark, Japan and the Czech Republic around 10% of reserves are likewise allocated to equities). The balance-sheet risks to the SNB will be present for many years, both from appreciation and from the underlying asset prices. Second, if and when the SNB will start reducing the size of its balance sheet, appropriate early communication will be key to reduce the risk of large market reactions.

As inflation moves more comfortably away from zero and the risks of deflation fade, the SNB will be able to consider beginning interest rate normalisation. This is unlikely to be appropriate before the euro area policy rate begins to increase (so that the interest rate differential with the euro area does not shrink, putting upward pressure on the franc) unless the Swiss economy is expanding sufficiently robustly for inflation pressures to mount or financial stability concerns intensify. Interest rate normalisation will reduce some negative side-effects from negative interest rates, including their burden on commercial banks' profitability, even though the SNB exempts them from the negative rate on a large part of their reserves. As elsewhere, Swiss banks have been reluctant to charge negative rates on retail deposits, but they increased their margins on new mortgages (Figure 13). Mortgage income, and in turn bank profitability, is vulnerable to increasing competition, including from life insurers and pension funds, which have different funding structures and are searching for returns. Indeed, interest margins have fallen since the crisis and appear to have fallen further recently (SNB, 2017; Panel B). Domestically focussed banks have taken on more interest rate risk to boost income from maturity transformation, increasing their exposure to a sharp steepening (SNB, 2017).

Figure 13. **Banks are recouping some costs on mortgages**



1. Reserves exempted from the negative rate are 20 times required reserves or CHF 10 million for banks without required reserves.
Source: Swiss National Bank; Thomson Reuters Datastream.

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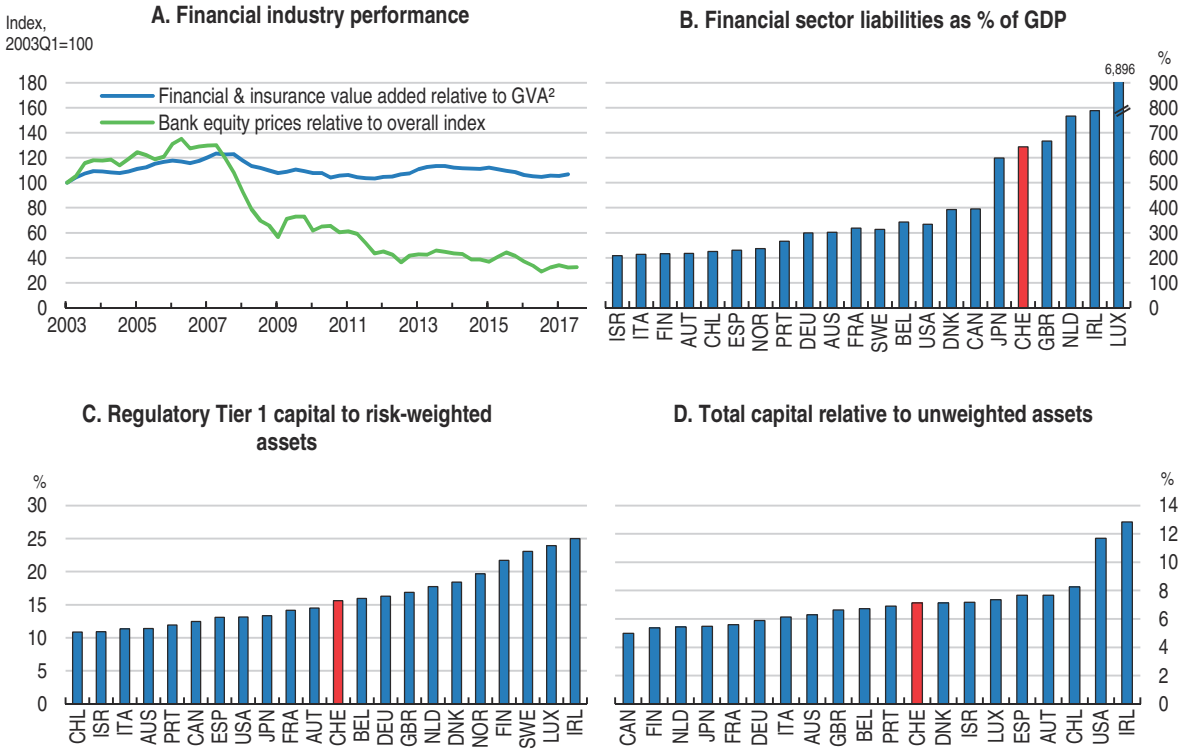
Overall, banks have underperformed the rest of the economy since the crisis due to low interest rates as well as litigation, higher capital requirements and an increasing likelihood that bank secrecy would be curtailed (Figure 14, Panel A). Returns on equity fell

Figure 14. **The financial sector is adjusting to the post-crisis environment**[1]



1. Panels B to D are for all banks and for 2016 or latest available year.
2. GVA is gross value added; both series are volumes.

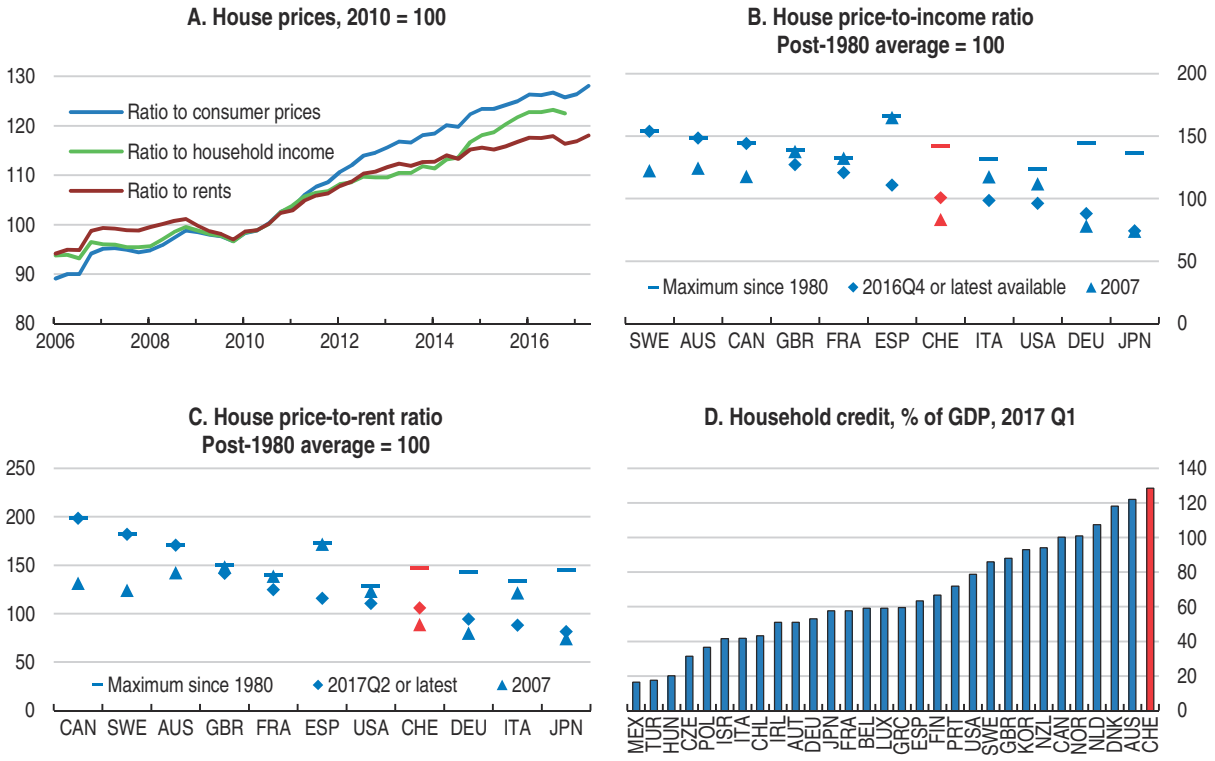
Source: Thomson Reuters Datastream; OECD, *National Accounts database*; IMF, *Financial Soundness Indicators*; OECD, *Vulnerability Indicators database*.

StatLink http://dx.doi.org/10.1787/888933620721

from 10% to 5% between mid-2015 and mid-2016. Reflecting the significance of the financial sector, capital requirements have been raised since the financial crisis, and capital ratios are now, on average, around the median of OECD countries (Panels B to D). As elsewhere, a key concern for regulators has been that near-zero interest rates raise the risk of excessive mortgage borrowing and a house price bubble. Accordingly, prudential regulation, including self-regulation, was tightened over 2012-14. After cooling in 2016, prices are rising again (Figure 15, Panel A). Non-performing loans were just 0.8% of gross loans in mid-2016.

Nonetheless, risks from housing market imbalances remain (SNB, 2017). House price increases substantially outpaced incomes and rents over the past decade and made home ownership less affordable (Figure 15; OECD, 2015b). In a longer context, the gains have been less dramatic than in other some OECD countries (Panels B and C). Households' mortgage debt is high and accounts for over 90% of household credit, which itself is the highest in the OECD relative to GDP (Panel D). At least on an aggregate level this is offset by financial assets; however, financial information at the individual household level is not available. The exposure of cantonal banks has increased since the 2015 *Survey*, with mortgages representing around 60% of their total assets. Raiffeisen and regional banks have exposures of 70% and 80%, respectively. Overall, these banks are considered to have sufficient capital to withstand the SNB's current stress test scenarios (SNB, 2017). Because most cantonal banks are guaranteed by their cantons, a house price correction could generate a public finance problem in a crisis.

Figure 15. **Housing prices and household debt**



Source: OECD, *House Price database*; Swiss National Bank; OECD, *Vulnerability Indicators database*.

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Cantonal banks also benefit from cheaper funding costs relative to their competitors. Thus, remaining explicit guarantees should be removed, as previously recommended (Table 4).

Another growing risk posed by the high and rising level of mortgage debt combined with low interest rates is that banks (and other mortgage issuers) may lower their lending standards to chase returns. An indication of this behaviour is the rising share of loans with

Table 4. **Past recommendations relating to financial-sector regulation**

Recommendation	Action taken since the November 2015 *Survey*
Eliminate explicit cantonal government guarantees to their cantonal banks.	The guarantee for the Banque Cantonale de Genève was phased out in 2016.
Establish a framework for explicitly addressing affordability risk, to be used if needed to contain financial stability risks related to imbalances in the housing and mortgage markets.	No action taken.
Consider periodic rotation of the outside auditors responsible for particular financial institutions, and widen the range of authorised external auditors.	While lead auditors do periodically rotate, the regulator (FINMA) believes that periodic rotation of audit firms would not be helpful, given the limited number of large audit firms. FINMA is currently considering possibilities to widen the range of authorised external auditors by re-evaluating the requirements for lead auditors.
Complement the accounting triggers for the contingent convertible bonds (CoCos) by market indicators. FINMA could, for example, be required to request an independent audit of a bank's book value when market indicators drop below predefined values. A higher trigger of 7% of common equity relative to risk-weighted assets should be introduced for all CoCos.	No action taken.
Develop resolution plans for the large Swiss insurers.	Light resolution plans were implemented by 2015 for the three largest Swiss insurance groups.

an implied debt-servicing ratio exceeding one-third of income, based on imputed costs that assume an interest rate of 5% and 2% for other costs and gross wage, pension or rental income. In 2016 46% of new owner-occupier mortgages exceeded this affordability ratio (SNB, 2017). In practice banks' internal definitions differ, but the 7% rate is usually applied. To contain the risks from a downturn or (eventually) rising interest rates, a proper framework for setting lending limits, taking affordability into account, should be formalised and enforced on a comply-or-explain basis.

The supervisor, FINMA, has been increasing its supervisory visits (IMF, 2016). However, still it relies heavily on outsourcing. It should reduce the associated risks of outsourcing or raise the extra resources to carry out such tasks itself (Table 4; IMF, 2016; OECD, 2015b). Close supervision of life insurers and pension funds also remains important given their need to generate sufficient investment income to meet the returns which they have guaranteed. Recent decisions by insurance companies to offer products without any guarantees or with guarantees from banks are welcome.

Improvements to the crisis management framework are ongoing. The revised too-big-to-fail regulations require systemically important banks to implement emergency plans, starting at end-2019 for the two globally systemically important banks. Depositor protection is being revised after two reviews highlighted severe inadequacies (IMF, 2014; Brunetti, 2014). In particular, the period for paying out on protected deposits will be shortened (from 20 working days) to improve the scheme's effectiveness. Earlier reviews highlighted that the scheme was unfunded and that there is no explicit back-up support if available funds are insufficient (IMF, 2014; OECD, 2009). The reform does improve the funding by requiring half of the banks' commitments to be secured by collateral (with regulatory requirements to hold liquid assets reduced commensurately). Public awareness of the scheme should be increased to preserve depositors' incentives to take precautions and ensure the scheme's effectiveness.

Swiss banks are also adjusting to the progressive end of bank secrecy, at least on the international level. Switzerland has, together with 100 other jurisdictions, committed to implement the OECD/G-20 Standard for Automatic Exchange of Financial Account Information in Tax Matters (Common Reporting Standard). The Common Reporting Standard sets out the types of financial accounts and non-resident taxpayers covered and the information to be automatically exchanged with other tax authorities. Swiss financial institutions must annually collect and report financial account information on non-resident account holders as from January 2017, with the first exchanges to take place with EU members and nine other jurisdictions in 2018.

Balancing fiscal priorities in the short and medium term

Public debt is low and the fiscal position sound. The general government budget has been in surplus since 2015. Small surpluses are also likely in 2017-19 (Table 5). After this, there is some uncertainty around corporate tax reforms, which were initially rejected by referendum but are necessary to align Switzerland's tax system with its international commitments (Box 2). Cantons are expected to lower their corporate income tax rates in keeping with the model of competitive federalism. To alleviate policy uncertainty, the federal government should work with cantons to pre-announce their corporate income tax cuts and how they will cover the consequent revenue shortfalls. Although it is too early to assess the final reform package, Switzerland's efforts to meet its international commitments are welcome.

Table 5. **Fiscal indicators**

Per cent of GDP

	2014	2015	2016	2017	2018	2019
Spending and revenue						
Total revenue	33.6	34.7	34.6	34.8	34.6	34.3
Total expenditure	33.8	34.0	34.3	34.5	34.2	33.9
Net interest payments	0.6	0.5	0.5	0.5	0.4	0.4
Fiscal balances						
General government fiscal balance	-0.2	0.6	0.3	0.3	0.4	0.4
Underlying government primary fiscal balance[1]	0.3	1.3	1.3	1.5	1.5	1.3
Public debt						
General government gross debt (SNA definition)	45.3	44.8	44.4	44.1	43.6	43.1
General government net debt	1.9	5.9	5.5	5.1	4.6	4.1

1. Per cent of potential GDP.

Source: OECD, *OECD Economic Outlook 102 database*, preliminary version.

Box 2. **Reforming corporate taxation to meet international obligations**

Swiss tax regimes have existed for many years that have provided lower tax rates for companies that are mainly active abroad. These have been subject to discussion both at the OECD and at the European Union since 2005. In 2016 the Swiss Parliament passed a reform package ("corporate tax reform III") designed to address this criticism and meet Switzerland's commitments relating to the OECD/G-20 Base Erosion and Profit Shifting (BEPS) project and its mutual understanding on business taxation signed with the European Union. However, 59.1% of Swiss voters rejected it in a referendum in February 2017 due to concerns about who bears the cost of the expected revenue shortfall.

A revised reform – "tax proposal 17" – was released by the Federal Council for consultation in September 2017, following widespread stakeholder consultation. It includes the following key measures:

- Abolishing special cantonal tax regimes, increasing taxation of dividends and providing equal tax treatment of all resident companies. Companies transitioning from special regimes would benefit from a five-year transition period for releasing "hidden reserves".
- A patent box that is in accordance with the international standard, which would be mandatory for all Cantons due to the federal harmonisation law.
- Cantons may introduce a super-deduction for R&D expenditure.
- Increasing family allowances and cantons' share of direct federal tax revenue to 20.5% (from 17%).

In addition, cantons are likely to cut their corporate tax rates.

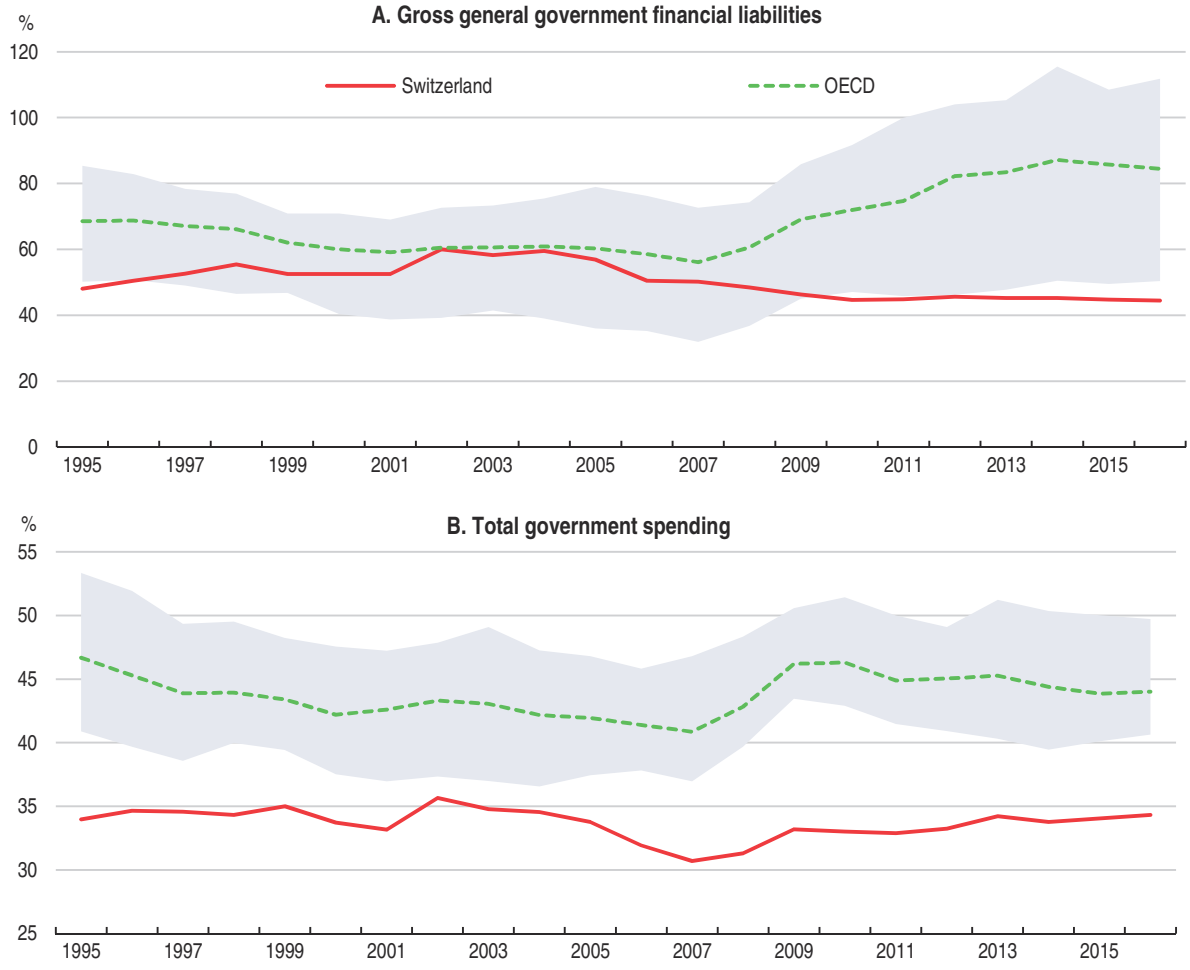
The consultation period ends in December 2017. Subject to the Swiss parliamentary/constitutional approval process, the intention is for the new Federal legislation to become effective by 1 January 2021.

The total budgetary impact is difficult to gauge because of the complexity of the tax system and uncertainty around the cantonal response. In 2011 7% of all taxable corporate entities were under a special tax regime (FC, 2015). Together these entities paid about half of federal corporate taxes (7% of revenue) and 20% of cantonal corporate tax (6% of revenue) (FC, 2017a; FDF, 2016a). Federal government revenue is estimated to be CHF 755 million lower in 2021, or 1% of projected revenue (FDF, 2017). Previously, some cantons had announced plans to reduce their corporate income tax rates by 3-10 percentage points.

General government debt has been declining relative to GDP in part thanks to the introduction of a federal fiscal rule ("debt brake") in 2003 (Figure 16). The rule aims to balance the budget over the cycle but includes an asymmetry that means that structural deficits have to be offset in future budgets but surpluses are used to pay down debt. The federal rule has been matched by fiscal rules in almost all cantons (Marti Locher et al., 2015). Accordingly, Switzerland now has one of the OECD's lowest government debt ratios (less than 45% in gross terms).

Figure 16. **Government spending and debt are comparatively low**[1]

As a percentage of GDP



1. Data represent general government accounts (i.e. including sub-national government accounts). The shaded area denotes the 25th to 75th percentile range of available data for OECD countries. OECD is an unweighted average of data for available countries.

Source: OECD, *OECD Economic Outlook 102 database*, preliminary version.

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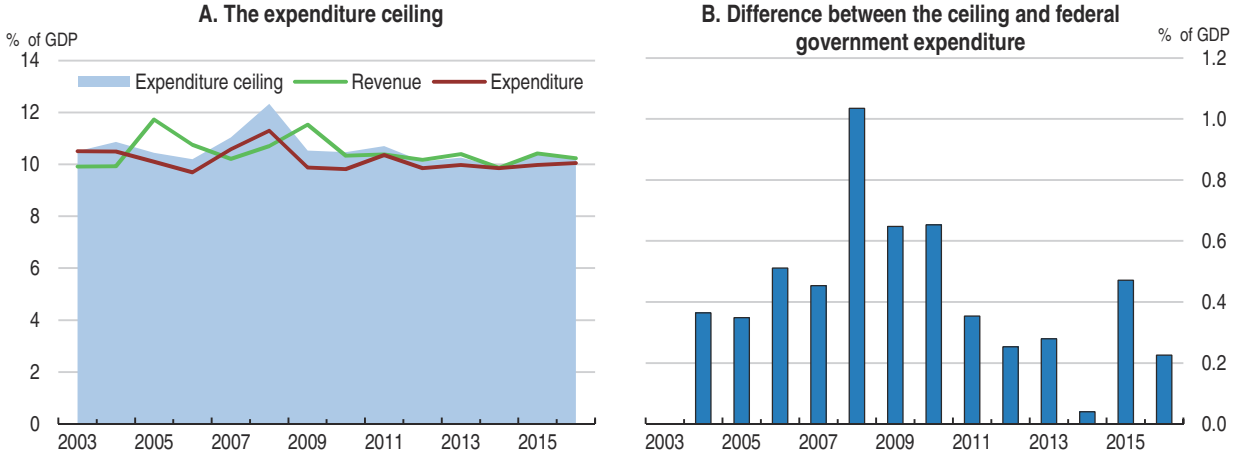
There is more scope for fiscal policy to support near-term growth

Fiscal policy is expected to be broadly neutral in 2017-19, with a continuing general government surplus. Given the remaining slack in the economy and the constraints on monetary policy it would be appropriate to avoid any persistent underspending through better co-ordinating procedures at federal and sub-national levels. Although debt is low and negative interest rates mean that fewer years are needed to repay debt-financed deficits

(Botev et al., 2016), this fiscal space is not all accessible under federal and cantonal fiscal rules. At the federal level government spending has consistently been below the ceiling by an average of 0.3% of GDP in recent years (Figure 17). However, recent improvements imply that such underspending should be modest, perhaps only 0.1% of GDP. A recent study of the debt brake commissioned by the Federal Council recommended against changing the debt brake itself (Sturm et al., 2017). At the cantonal level, sub-national government autonomy has helped ensure that spending is more effective and needs-based. The constitution requires all governments to take the economic situation into account, but not all cantons do so (Marti Locher et al., 2015). For instance, in 2015 and 2016, despite the widening output gap, cantons reduced their aggregate deficit by 0.2% of GDP (excluding extraordinary items). In addition to further co-ordination between the levels of government, all levels of government could use the scope for additional spending given their fiscal rules. The extra spending should be devoted to high-quality measures that raise output or well-being. Earlier *Surveys* and *Going for Growth* publications have called for funding the expansion of early childhood education and childcare, increasing financial support for youngsters from disadvantaged socio-economic backgrounds to undertake pre-primary and tertiary education, and investing in older workers, as discussed below.

Figure 17. **The federal debt brake**[1]



1. The expenditure ceiling is set equal to forecast revenues adjusted by the output gap.
Source: Federal Department of Finance; OECD, *OECD Economic Outlook 102 database*, preliminary version.

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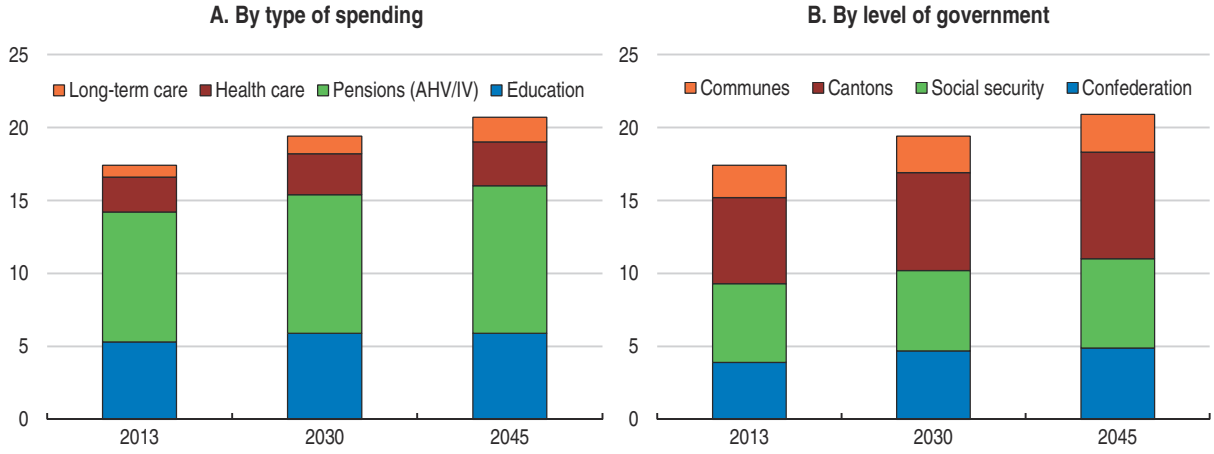
Fiscal policy can also support near-term growth by finding ways to speed up planned investment of infrastructure funds and shifting away from inefficient spending. Agricultural subsidies represent 1% of GDP, the highest in the OECD relative to sectoral value added, but are largely fixed by existing legislation until 2021; thereafter they should be lowered further (OECD, 2017c). Efficiency gains, for instance in procurement and health, should be pursued to create room for other spending or reductions of distortionary taxes (OECD, 2015b).

Looking further ahead, demographic change will increase the old-age dependency ratio and drive up public spending on old-age pensions, health and long-term care, as in many countries. UN population projections imply that the old-age dependency ratio will rise by 21 percentage points, which is a similar-sized increase to some other Western European countries, though more than in the United States or France. A 2016 government report showed that ageing-related spending could absorb 3.5% more of GDP by 2045 than in 2013

(Figure 18, Panel A; FDF, 2016b). The increase is likely greater because a planned pension reform was rejected in a recent referendum. The extra costs will fall mainly on cantons (Panel B). The rapid increase in the dependency ratio will create an additional strain on revenues, given the importance of personal income tax in overall tax receipts (31%, compared to the OECD average of 24%). Given immigrants' more favourable age structure, continued strength in immigration could help defer the problem (Box 3). Indeed, a less steep fall in net immigration (with around 25% more immigrants) could almost halve the projected increase in the debt-to-GDP ratio over 2013-45 (FDF, 2016b).

Figure 18. **Long-term projections for age-related spending**[1]

Per cent of GDP



1. These projections assume current policy settings and the passing of the Federal Council's initial 2020 retirement provision reform proposal; as no reform is currently legislated pension spending will increase by more than shown.

Source: Federal Department of Finance (2016), *Report on the Long-term Sustainability of Public Finances in Switzerland*.

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Box 3. **The importance of immigration in Switzerland**

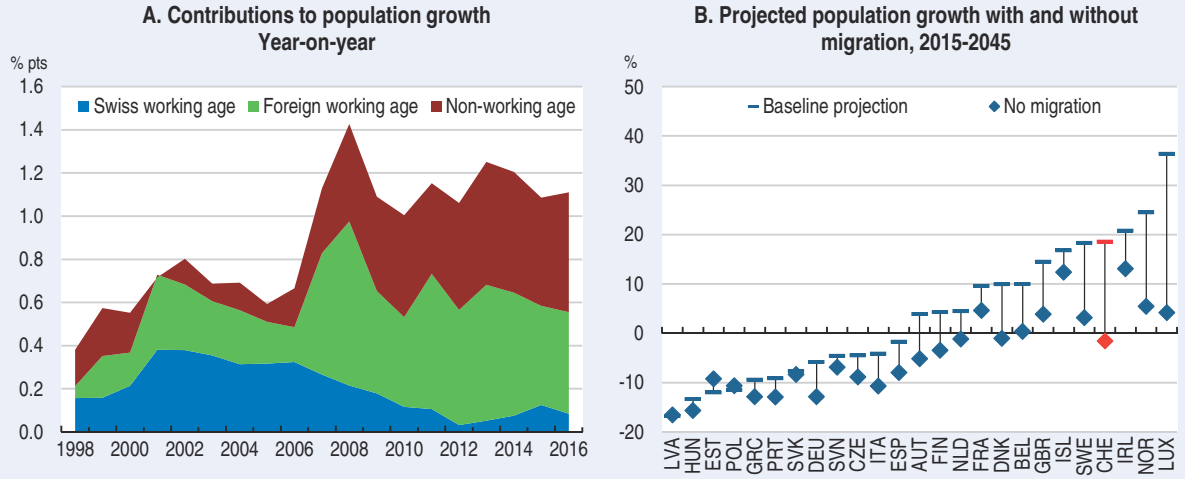
Migration is a key determinant of the size and evolution of the Swiss resident population. The share of foreign-born residents in the total population was 28% in 2013, the second-highest in the OECD. The 2002 agreement with the European Union on the free movement of persons led to sizeable inflows of European workers, driving working-age population growth that complemented the Swiss labour force (Figure 19, Panel A; Swiss Confederation, 2017). At the same time, the Swiss population has been ageing, pushing up the dependency ratio. Net inflows are likely to decline over time if the propensity of previous immigrants to leave Switzerland remains constant while inflows remain roughly stable. Nonetheless, UN projections imply that all of Switzerland's population growth to 2045 will be through net migration (Panel B).

In 2014 a vote on a popular initiative aiming to limit immigration (the "Mass Immigration Initiative") passed by a narrow margin. However under the EU Agreement, EU nationals may migrate to Switzerland if they have a valid employment contract, are self-employed or are otherwise financially independent. In December 2016 the Swiss Parliament adopted an amendment to the Federal Act on Foreign Nationals implementing the new constitutional articles. It adopted measures that aim to tackle unemployment and make better use of the workforce potential in Switzerland. On 28 June 2017 the Federal Council presented its draft ordinance and opened the public consultation. That consultation expired on 6 September 2017. The government will decide on the ordinances in the beginning of 2018. The new legislation is considered to be compatible with Switzerland's EU obligations.

Box 3. **The importance of immigration in Switzerland** *(cont.)*

Nonetheless, immigration policy remains topical. In May 2017 the authorities activated a clause in the agreement on free movement allowing them to reintroduce quotas for permanent residency applications from Romania and Bulgaria, and more votes on immigration are possible.

Figure 19. **The role of net immigration in past and projected population growth**



Source: Federal Statistical Office; United Nations, Department of Economic and Social Affairs, Population Division (2017), *World Population Prospects: The 2017 Revision – Special Aggregates*; OECD calculations.

StatLink http://dx.doi.org/10.1787/888933620816

Efforts to reform the old-age pension system suffered a setback when the Swiss people rejected a planned reform in September 2017. A reform of the pension system remains urgent, as no substantial changes have been made in the past 20 years and the shortfall between the public fund's revenues and its expenses is widening. Raising the pension age is an effective way of containing spending increases (Keuschnigg et al., 2011). Life expectancy at age 60 is higher than in many other OECD countries, at 25 years according to UN estimates, and is expected to rise in coming decades. Yet Switzerland is one of a few countries not considering raising the retirement age to 67 in 2050 or linking it to life expectancy, as recommended in previous *Surveys* (Table 6). The retirement age for women is 64 years, compared to 65 years for men; these should be harmonised. The retirement age should be linked to life expectancy thereafter. While 62% of 60-64 year-olds participated in the labour force in 2016 (one of the highest rates in the OECD), this rate plummets to 23% among 65-69 year-olds. Pension payouts should be adjusted (in all parts of the system) to enhance the incentives to continue working, thereby increasing the supply of older workers. Another possibility to reduce the future fiscal burden is to introduce an automatic stabilisation rule, whereby corrective measures would be automatic if the public pension fund's financial position reaches critical thresholds. For instance, the value-added tax could be increased. Harmonisation between the public and private schemes of incentives for timing retirement would also be welcome, alongside reforms to ensure the financial sustainability of the second pension pillar (Table 6).

There is scope to reduce pressure on health and long-term care expenditure by improving its efficiency, as highlighted in the previous *Survey* (OECD, 2015b). For example, competition should be increased and more benchmarking of hospital costs undertaken.

Table 6. **Past recommendations related to ageing**

Recommendation	Action taken since the November 2015 Survey
Fix the retirement age at 65 for both sexes, and thereafter link it to life expectancy. To cut early retirement, reduce existing incentives, and pay a larger pension premium for those who choose to work longer. Deal with lack of sustainability through adjustments to contribution rates, benefits and required years of contributions.	No action taken. A comprehensive pension reform (Prévoyance Vieillesse 2020) was passed by Parliament in March 2017 but rejected by the Swiss people in September 2017.
Allow pension funds to set the conversion rate.	No action taken.
Reassess the generosity of tax incentives for the occupational pension schemes.	No action taken.

The country-wide strategic framework – Health2020 – should be used to set priorities and facilitate national health policies.

Measures to encourage longer working lives and improve job quality for older workers would ease future spending pressures and may lower the high saving rate and current account surplus. Although the participation rate of 55-64 year-old workers is high relative to other countries, employment rates are 20 percentage points lower for those without upper-secondary education than with tertiary education and lower for women at each education level. Digitalisation also poses risks for older workers since they are less likely to have skills needed in technology-rich environments (OECD, 2017d). The government's Skilled Workers Initiative includes measures to increase the engagement and productivity of older workers. Increasing take-up of targeted training, including in innovative technologies, and expanding preventative health programmes would help to maintain productivity and well-being. More flexible work arrangements and job mobility combined with career planning would help ensure that older workers remain well matched with their jobs. Working with social partners to link pay scales more closely to relevant experience rather than tenure would facilitate mobility (OECD, 2014). Efforts to increase awareness about discrimination against seniors should continue.

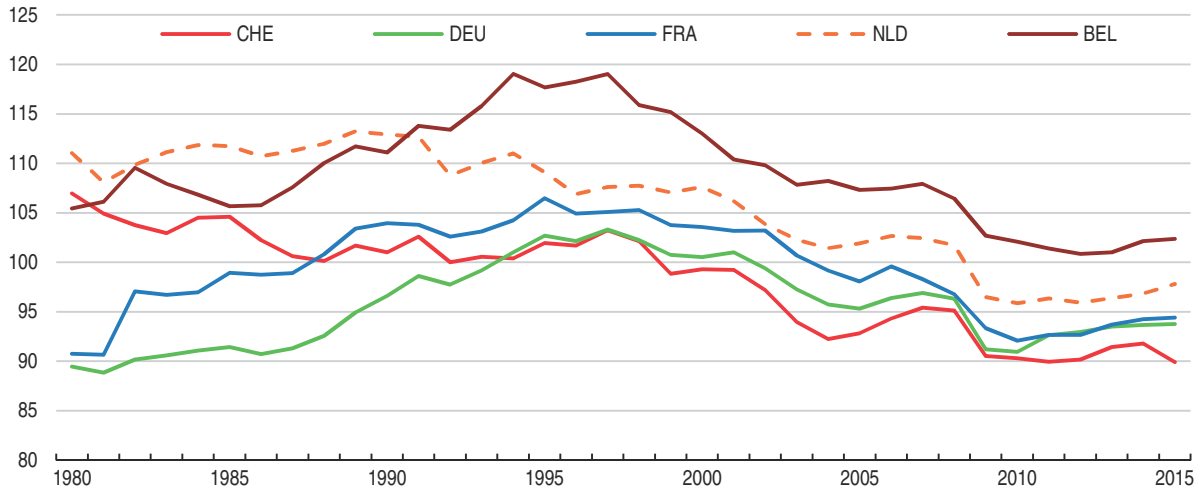
Growth-enhancing tax reforms discussed in earlier *Surveys* could help to finance ageing-related spending (OECD, 2011). However, these reforms are typically complex and can be unpopular, which makes them likely to be subjected to a referendum, as for corporate tax in 2017. Ahead of a referendum, the government must provide a booklet of arguments for and against the proposition. A small independent fiscal institution may be able to provide improved communication on complex fiscal issues by providing independent analysis of the potential budgetary effects, as in some other OECD countries such as Australia, Canada, the Netherlands and the United States (Von Trapp and Nicol, 2017).

Boosting productivity for long-term growth and living standards

Swiss labour productivity developments have been disappointing for some time. While the country was in an enviable position almost 40 years ago, it has steadily lost ground in terms of productivity levels (Figure 20). Even though its productivity growth has remained weak, trend GDP per capita accelerated noticeably during the five years before the global crisis (Figure 21), partly thanks to immigrants, who have been disproportionately of working age and have high employment rates (Box 3). Increased employment weighs on labour productivity by lowering capital intensity, but it could raise multi-factor productivity (MFP) by complementing capital and reducing skills mismatches. However, MFP has slowed since the early 2000s and contributed to lower labour productivity growth, as in most OECD countries (OECD, 2015c). At the same time, its advanced ICT sector and developed infrastructure makes

Figure 20. **Comparison of hourly productivity levels across several European economies**

USA = 100, constant prices, 2010 PPPs



Source: OECD, *Productivity database*.

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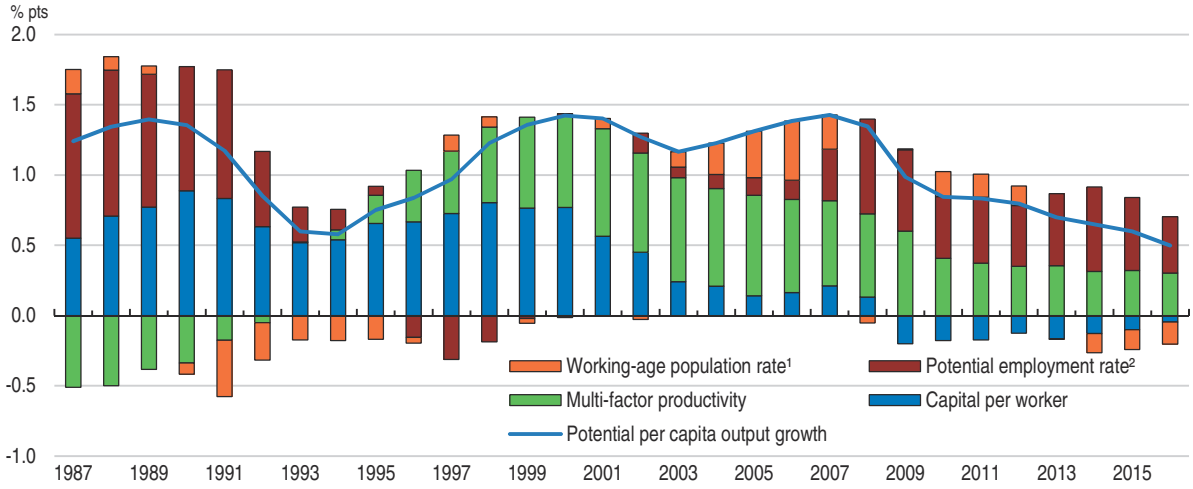
Figure 21. **Decomposition of the growth rate of Swiss potential output per capita**



1. Share of the population aged 15-74 in the total population.
2. Potential employment rate refers to potential employment in percent of the working-age population. In particular, it includes the evolution of structural unemployment, trend labour force participation rate and the ratio of national versus domestic workers (including cross-border).

Source: OECD calculations based on OECD, *OECD Economic Outlook 102 database*, preliminary version.

StatLink http://dx.doi.org/10.1787/888933620854

Switzerland well placed to take advantage of digitalisation and the next production revolution. However, this depends on the diffusion of innovation and the responsiveness of the education and training system to changing skill needs (OECD, 2017d and 2017e).

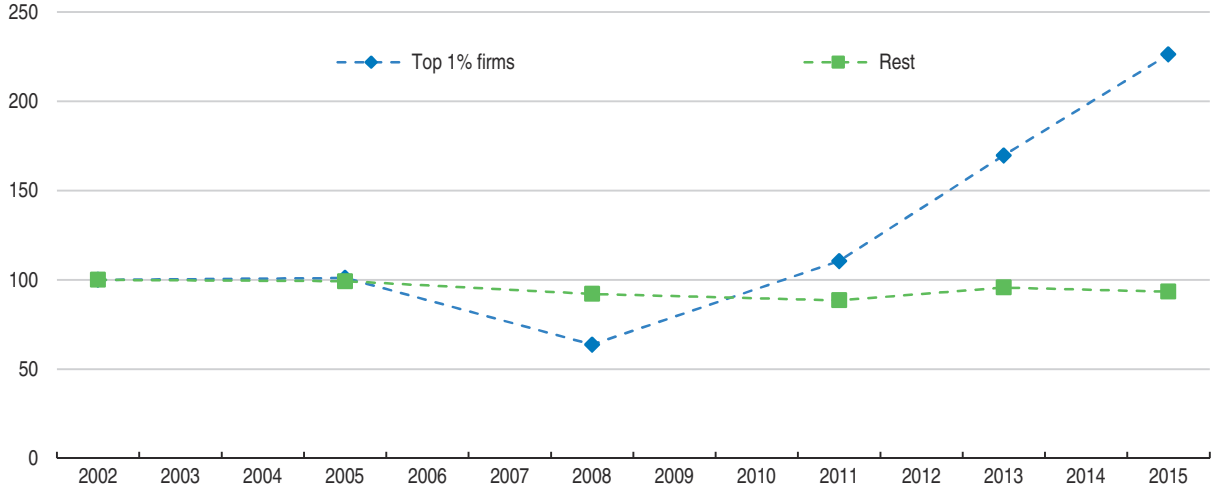
The benefits from the higher employment rate could have been magnified with commensurate investment dynamism. Instead, declining capital intensity has detracted from productivity growth. Creating more conducive conditions for private investment would be helpful. For instance, investment is needed in a range of environmental areas, including in energy and transport (OECD, 2017f). A range of financial instruments can leverage private

capital for investment in clean infrastructure, for example (OECD, 2017g). In addition, public investment has been relatively weak, averaging about 3% of GDP since 2000, compared to 4% over the 1980s and 1990s. It is likely, although not certain, that raising it and directly increasing the public capital stock would boost MFP and potentially generate spill-overs to private investment. Intangible investment like spending on early childhood education and care also raises long-run productivity and enhances inclusiveness (Fournier and Johansson, 2016).

There is increasing cross-country evidence of linkages between decelerating productivity and rising inequality (OECD, 2016a). Swiss firm-level data (from the KOF Institute) indicate a widening productivity gap between the most efficient enterprises and the rest, which appears to be linked to a widening wage gap (Figure 22; Chapter 1). Studies of other OECD countries have linked wage divergence to growing productivity differentials between firms (Berlingieri et al., 2017; OECD, 2016b). While the KOF database is useful in shedding light on firm-level productivity developments, it is imperfect: for example, it lacks information on hours worked and excludes start-ups and young firms. Greater efforts should be made to resolve these problems and to participate in cross-country firm-level data-gathering exercises so as to enable firmer comparisons. Public policies (education spending, active labour market measures) to spur skills development across the population and cushion the effects of structural change would help to sustain long-term inclusive economic growth (OECD, 2016c; Chapter 2). In Switzerland potential explanations for productivity divergence include weak competition in domestic markets despite many competitive global firms and a lack of technology diffusion.

Figure 22. **Firm performance has diverged since the crisis**

Labour productivity[1], 2002=100



1. Markers denote survey years. Labour productivity is value added per employee; it is not adjusted for average hours worked per employee. The sample of the 1% most productive firms is recalculated each survey year at the 2-digit industry level. See Chapter 1 for further details of the calculation.

Source: OECD calculations based on KOF, *Swiss Innovation Survey database*.

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Improving the framework conditions for business development

Increasing competition

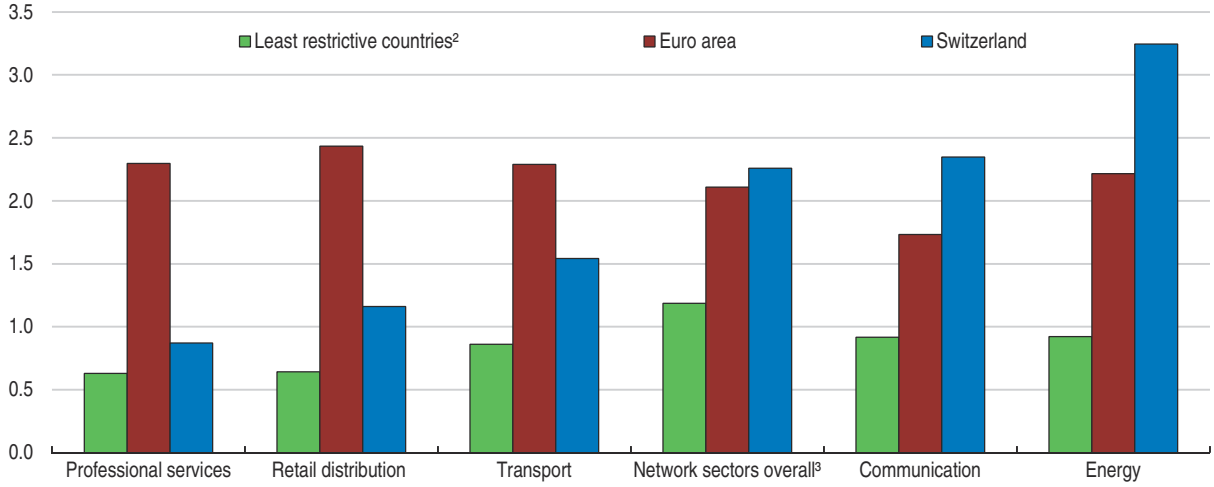
Improving framework conditions will remove hindrances for businesses, strengthen incentives and create opportunities. Lowering the stringency of product market regulations

tends to raise MFP, because competition enforces more effective adoption and diffusion of innovations, broadens consumer choice and lowers prices (Bouis and Duval, 2011; Égert, 2016). Anti-competitive regulations in upstream sectors, such as network industries, curb MFP growth, especially in countries closer to the global frontier (Bourlès et al., 2010). Government involvement can also inhibit firms' growth (OECD, 2015d). State control over business operations is especially high in Switzerland in international comparison. By improving the conditions for technology diffusion, increased competition would help Switzerland reap the benefits of the digital economy and technological change (OECD, 2017e).

Regulations in network industries – energy, telecommunications, postal and transport services – inhibit competition considerably more than in the least restrictive countries and generally than in the euro area (Figure 23). Swiss network sectors are characterised by public ownership, vertical integration (energy and rail), entry barriers that protect incumbents (gas, postal services, rail and road transport) and concentrated markets (gas, postal services and rail). Recent research comparing the governance of sector regulators in network industries in terms of their independence, accountability and scope of action suggests that the Swiss set-up is slightly less effective than the average OECD country's (Koske et al., 2016). As recommended in the last *Survey*, public ownership should decrease, notably in the telecommunications and energy sectors, including via the privatisation of Swisscom. A proposal intending to set the foundation for a future privatisation of Swisscom was recently rejected by Parliament. Indeed, that company receives an implicit state financial guarantee, lowering its costs (Moody's, 2016). Competitive neutrality should be ensured, including a regulatory level playing field, so that state-owned and private companies are treated equally (OECD, 2012a). For example, most stores should not be disadvantaged compared to those located in facilities owned by Swiss federal railways, and commercial activities operated by a public entity should be incorporated.

Figure 23. **Network sectors are highly regulated**

Product market regulation indicator[1], 2013



1. The product market regulation indicator is a composite index that encompasses a set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable.
2. "Least restrictive countries" is the average of the three countries with the lowest score in each sector. Scores range from 0 to 6 and increase with restrictiveness.
3. Network sectors overall is the unweighted average of communication, transport and energy.

Source: OECD, *Product Market Regulation database*.

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Promoting the work of COMCO (the competition authority) would also encourage competition. Its board comprises seven experts and five economic representatives. The latter have been controversial for many years; gradually removing them would give a clearer majority to the independent experts and increase COMCO's perceived independence (OECD, 2006). A closer relationship with EU institutions would facilitate a common, stronger position in cases involving large multinationals. Merger control is considered more "permissive" than elsewhere, because of the high bar for reducing competition before a merger is prohibited (OECD, 2006). Only 3 of 51 merger notifications in 2015-16 were investigated after preliminary examination (COMCO, 2017a). Planned updates to merger procedures to put more weight on negative consequences for competition will align Switzerland with European practices and should be expedited.

There is also considerable scope to enhance regulatory transparency and coherence across cantons. This would ease internal labour and capital mobility and increase market size, thereby raising productivity. It may also reduce the 20% gap between the most and least productive regions. Greater co-ordination is needed to overcome administrative fragmentation alongside continued efforts to harmonise regulations. Federal laws should be applied equally across the country; COMCO (2017b) found that some cantons have excessive restrictions on inter-cantonal market access for many occupations.

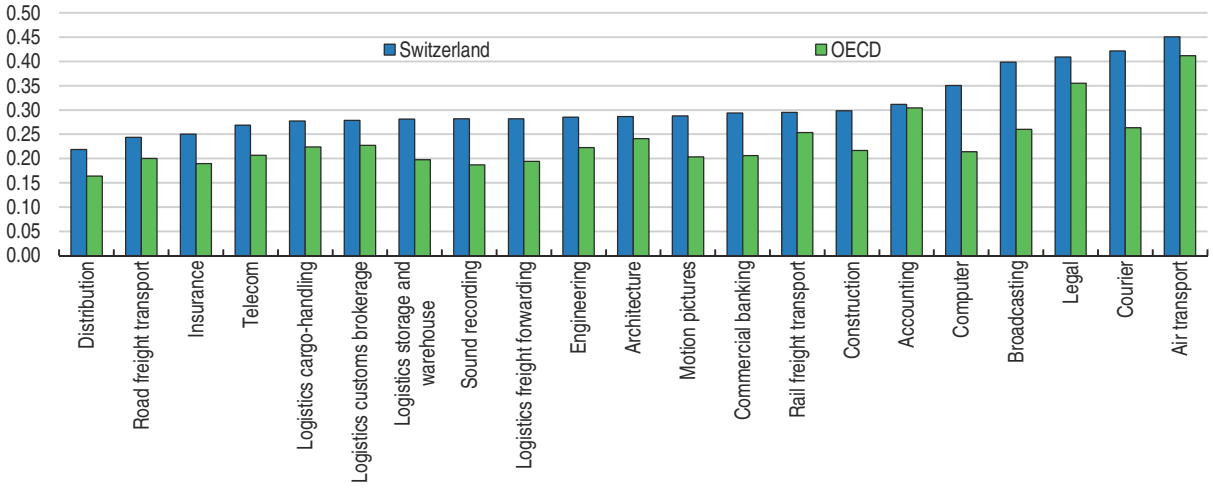
Liberalising foreign trade and investment

Developing trade can boost productivity through different channels, including access to a wider variety of inputs, diffusion of foreign knowledge and larger market size to seize opportunities for increasing returns (OECD, 2017h). While Switzerland has already benefited tremendously from globalisation, it should pursue ongoing trade liberalisation negotiations through the European Free Trade Association, notably with India, Indonesia, Malaysia, Vietnam, Ecuador and, most recently, MERCOSUR. Indeed, Argentina, Brazil, Indonesia and India together represent about 13% of world GDP but only 4% of global trade, indicating their potential for further opening. And while 5% of Swiss exports are currently sold to India, almost 90% are gold, suggesting lucrative opportunities in other markets. These agreements would further increase trade openness, which is empirically linked to higher MFP (Égert and Gal, 2017). Reducing border protection in agriculture – a costly way of supporting farmers – would facilitate trade negotiations, particularly with MERCOSUR, and benefit consumers (OECD, 2015b). While tariffs are generally low, those on food are high, with a weighted average of 27% in 2015. And even for industrial goods there is scope to lower tariffs and ease border procedures, as highlighted by the *Doing Business* indicators (World Bank, 2017).

Switzerland has more binding restrictions in services trade than the OECD average in all 21 major services sectors (Figure 24). The gaps are particularly large in computer services, broadcasting and courier services. Barriers include procedures that make it difficult to bring in foreign workers, obtain a business visa and register a company, as well as specific obstacles such as the monopoly on letter delivery and needing a commercial presence to provide courier services. Those constraints directly limit trade in services, increase domestic mark-ups by restricting competition and weigh indirectly on trade in manufactures, given the importance of services as intermediate inputs (Nordås and Rouzet, 2015; Rouzet and Spinelli, 2016). Lowering these restrictions would have positive productivity spill-overs. Easing visa processes for temporary foreign staff would also increase knowledge transfer and alleviate skills shortages.

Figure 24. **Regulation of trade in services is relatively restrictive**

OECD Services Trade Restrictiveness Index[1], 2016



1. Higher values mean heavier restrictions. Values range from 0 to 1.
Source: OECD, *Services Trade Restrictiveness Index database*.

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Facilitating firm entry and exit

Aggregate productivity rises when labour and capital resources move to more productive firms. This process depends on conditions that facilitate entry of new firms and exit of weak firms (OECD, 2015c). Switzerland's rate of firm creation appears to be close to the OECD average, but Swiss firms have a particularly high survival rate (Ecoplan, 2016). Nevertheless, entry rates could be higher: indicators of regulatory barriers to entrepreneurship are around the OECD median but above the best performers (Slovak Republic, New Zealand and Netherlands). The *Doing Business* indicators rank Switzerland 71st for starting a business, due partly to high minimum capital requirements and the time needed to register a firm (10 days against about 8 on average in OECD high-income countries) (World Bank, 2017). Half of all Swiss exiting businesses cite bureaucracy as the main cause, which is higher than for other comparable countries (Baldegger et al., 2015). Existing regulations should be reviewed with a view to streamlining them and reducing their disproportionate impact on smaller and especially younger firms who are important sources of innovation and job creation (Criscuolo et al., 2014; OECD, 2015c).

Swiss programmes to support entrepreneurs are fragmented. At the canton level, there are 87 different measures to finance existing firms and start-ups (FC, 2017b). Concentrating efforts by consolidating programmes, increasing transparency and developing e-government could increase the government's effectiveness. The envisaged virtual one-stop shop would ease administrative burdens and should be accelerated. It could be associated with physical contact points in cantons, which assist firms in overcoming the regulatory burden and bring together delivery of public financing programmes. Finally, perceptions that entrepreneurship is a good career choice are rarer than in other advanced economies (Baldegger et al., 2015). Promoting leadership, creativity and innovation at school and in post-compulsory education could raise the entrepreneurship rate, which is low for younger cohorts (OECD, 2010).

Improving the framework for exit of the weakest firms would free their labour and capital resources for more productive companies and reduce the cost of business failures

(Adalet McGowan et al., 2017). The OECD measure of the quality of the *de jure* framework is slightly better than of average peer countries (Table 7), but the *Doing Business* indicators which are based on a stylised case show that: i) the Swiss insolvency regime has a relatively low recovery rate; and ii) it takes about three years to complete proceedings, ranking Switzerland 30th amongst OECD countries. The regime would be improved by reducing the delays in conducting and concluding insolvency proceedings, in particular for large firms, and increasing the use of early warning mechanisms. However, creditors would continue to face significant upfront costs in initiating proceedings, adding to delays. Improving the regime's efficiency would free resources stuck in weak surviving businesses by facilitating their exit or restructuring, thereby raising productivity. An amendment being discussed in parliament would introduce additional options to restructure distressed companies and incentives to act at an early stage. Furthermore, the lack of an effective discharge proceeding from personal bankruptcy considerably limits the ability of individual entrepreneurs to obtain a "second chance". The government is currently conducting a preliminary study on whether to enhance the current legal regime in this respect. Reducing the period during which individuals are required to repay past debt from future earnings to three years would align Switzerland with international trends.

Table 7. **Comparison of the regime for resolving insolvency**

	Recovery rate (cents in the dollar)	Time (years)	Cost (% of estate)	OECD indicator of insolvency regimes[1]	Of which:	
					Time to discharge	Early warning mechanisms
Switzerland	46.6	3.0	4.5	0.32	1.0	1.0
OECD high-income countries	73.0	1.7	9.1	0.41	0.6	0.6

1. Composite indicator based on a survey with 13 indicators and takes values between 0 and 1. A lower value means a more efficient regime.

Source: World Bank *Doing Business 2017 database;* M. Adalet McGowan, D. Andrews and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris.

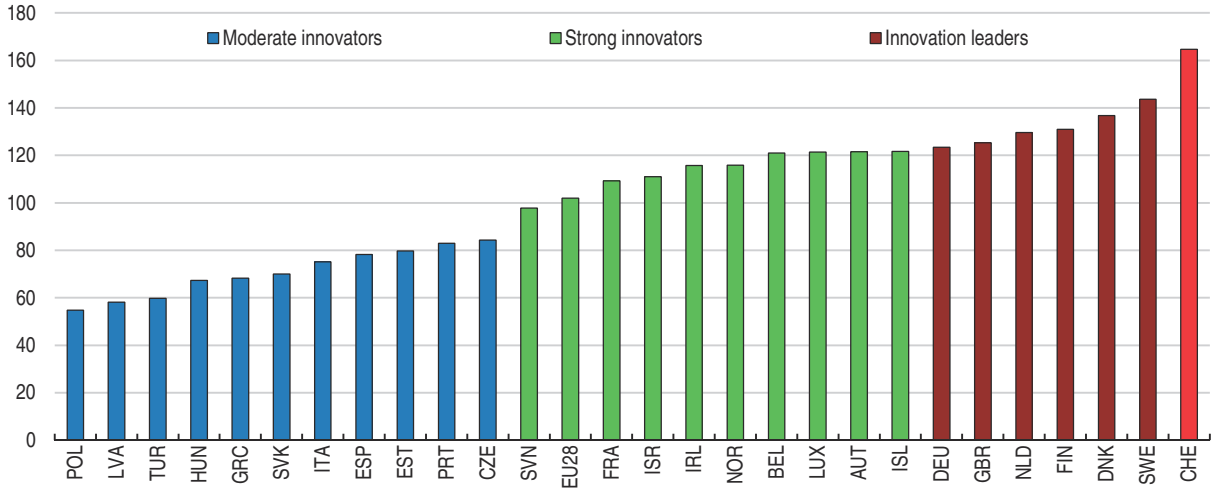
Benefiting more from the high level of R&D

Switzerland is a global leader in R&D spending, high-quality research and innovation performance (Figure 25). Its innovation performance has improved since 2010 compared to the EU despite declines in innovations by SMEs, falling exports of medium and high tech products, and shrinking opportunity-driven entrepreneurship (European Commission, 2017). The OECD-wide deceleration in productivity raises concerns about the implied downward trend in economic returns from R&D. Alternatively, other factors could be at play, such as: the mechanisms linking R&D and innovation to output; the capacity of workers to adopt and optimally use innovations; and the usefulness of new technologies. Andrews et al. (2014) relate the returns to innovative activity to the economic environment, including: well-functioning product, labour and capital markets; an efficient judicial system; and a suitable insolvency regime. Thus, the aforementioned reforms to regulation and insolvency processes could raise the returns to R&D.

The increasing divergence between leading and lagging firms partly explains the productivity slowdown observed in most OECD countries (Andrews et al., 2016). In Switzerland, a similar pattern is observed: the productivity of frontier firms has risen while the rest have stagnated, resulting in a low aggregate productivity growth rate (Chapter 1).

Figure 25. **Innovation performance is high**[1]

Performance relative to the 2010 EU28 level, 2016



1. Average performance is measured using a composite indicator building on data for 27 indicators (25 for Switzerland).
Source: European Commission (2017), *European Innovation Scoreboard 2017*.

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One explanation could be that a falling share of Swiss firms performs R&D, although those doing so spend a higher percentage of turnover (Arvanitis et al., 2017). The pharmaceuticals industry conducts almost 30% of total Swiss business R&D. The payoff from its R&D is especially long and variable. This specialisation in a particular industry and a few firms may also limit the mobility of researchers and knowledge spill-overs to the rest of the economy, contributing to the broader productivity slowdown.

The level of Swiss government support for business R&D is low by international standards, even though the share of firms receiving such support has risen in recent years (Arvanitis et al., 2017). Financial support is mostly through two funds: the Swiss National Science Foundation (focusing on basic research) and the Commission for Technology and Innovation (becoming Innosuisse, supporting applied research through entrepreneurship, start-ups and R&D projects). While the lack of incentives or grants for R&D has not prevented strong national performance, it may have contributed to its narrow base. The proposed corporate tax reform will allow domestic and multinational companies alike to benefit from R&D tax incentives. The envisaged patent box is not a high-quality innovation policy tool (Appelt et al., 2016), even if it serves mainly to compensate for the planned corporate income tax increase for multinationals. Likewise, the proposed R&D tax incentive will benefit many firms already conducting R&D.

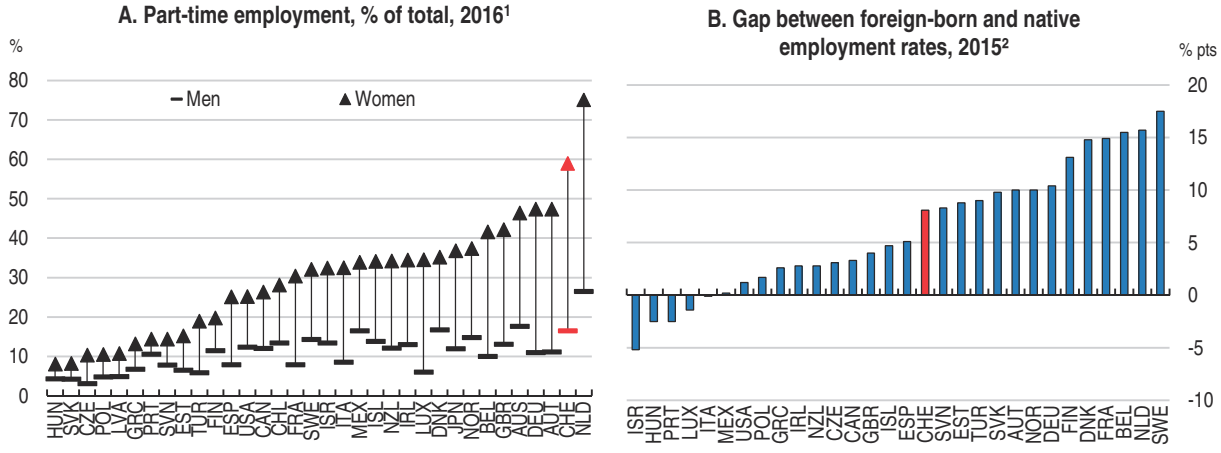
Policies that promote diffusion of knowledge and technology can reduce the productivity gap between firms and realise the potential of technological change (OECD, 2017d and 2017e). Government support could be broadened to help young firms overcome financing constraints and combat the trend decline in the number of firms investing in R&D (Arvanitis et al., 2017; Chapter 1). Continuing to promote incubators at higher education institutions would boost start-up rates, facilitate co-operation between firms and help diversify R&D and technology outside multinationals. Entrepreneurship could also be integrated more broadly into educational curricula, and professorial competencies could be raised.

A more inclusive economy can increase productivity

As Switzerland's high income level is closely related to its world-leading employment rate, demographic change will weigh on living standards unless labour productivity increases. The process has been partly postponed by immigration. Measures discussed above – including training and career planning – would increase inclusiveness and the productivity of older workers. Greater integration of immigrants and women in the labour market would increase well-being, raise productivity and mitigate the effects of population ageing.

Women disproportionately work part-time due to a lack of affordable childcare, including early childhood education, disincentives due to the family-based income tax system and personal preferences (Figure 26, Panel A). Lowering childcare costs would allow parents to work extra hours and maintain a solid career path (OECD, 2013; Dutu, 2014). The government has established and replenished a fund to expand childcare provision; to be effective the additional places should be located in areas of high demand and better cover parents' working hours. The government is also currently investigating whether childcare supply and demand are in balance. The Federal Council is proposing to increase tax allowances for childcare costs to encourage women to work more hours. Because this would benefit higher-income households more than their lower-income counterparts, it is all the more important to improve access to affordable childcare. In any case shifting to individual-based income taxation or implementing other equivalent tax changes would reduce tax-based work disincentives for second earners. Together these changes would improve aggregate productivity by better allocating women's skills and shrink the gender wage gap.

Figure 26. **Parts of the population are underutilised in the labour market**



1. Population aged 15 years and over.
2. The employment rate of native-born 25-64 year-olds less that of foreign-born among that age group.

Source: OECD, *Labour Force Statistics database*; OECD, *Migration Statistics database*.

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Immigrants in Switzerland have one of the highest employment rates within the OECD. However, their employment rate is lower than that of natives, especially for tertiary-educated immigrants (Figure 26, Panel B). For non-EU/European Free Trade Association citizens recognition of foreign qualifications is rather complex and their language skills are often lacking, so many do not work in their field of expertise. Non-EU/EFTA immigrants have

the most difficulties achieving labour market success (Swiss Confederation, 2017). The Migrant Integration Policy Index ranked Switzerland only 21st out of 38 in 2014 (Huddleston et al., 2015); it is especially weak with reference to anti-discrimination laws and access to nationality laws. However, this contrasts with Switzerland's overall good performance in the integration of immigrants (OECD, 2012b). Several actions have been taken to facilitate the social and labour market integration of recognised refugees and temporarily admitted persons. Furthermore, Switzerland is currently adapting its law to reduce administrative hurdles to enter the labour market. Promoting uptake of high-quality language training, adult education, bridging courses and work placements and improving support for early childhood education would enhance immigrants' integration, helping them fully use their competencies (Huddleston, et al., 2015; OECD, 2015b). In addition, to the extent that immigrants help fill skills shortages (Swiss Confederation, 2017), the cost of the recent slowdown in net immigration could be mitigated if Switzerland would be more open to non-EU immigration.

Ensuring dynamic skills training and life-long learning

Switzerland uses its human resources better than most other OECD countries: it has high labour force participation and low unemployment rates across most segments of society, including youth. Previous OECD studies have shown that the comprehensive vocational education and training system does an excellent job of transitioning students of all aptitudes into the workforce (Hoeckel et al., 2009; OECD, 2009). After lower secondary school the system bifurcates into two streams: general (academic) and vocational. Most young people join the vocational stream, with apprenticeships and vocational schools, and may engage in tertiary vocational education or attend a university of applied sciences. The general stream leads to academic tertiary education. Looking ahead, the challenge is to ensure that the system produces the mix of skills the economy needs, can face ongoing changes such as from digitalisation, and is inclusive. A particular challenge is ensuring that both workers with vocational education as well as those with academic education are adaptable in a fast-changing world; cross-country research shows that vocationally trained workers tend to have lower employment rates later in their careers than those with a general education (Forster et al., 2016).

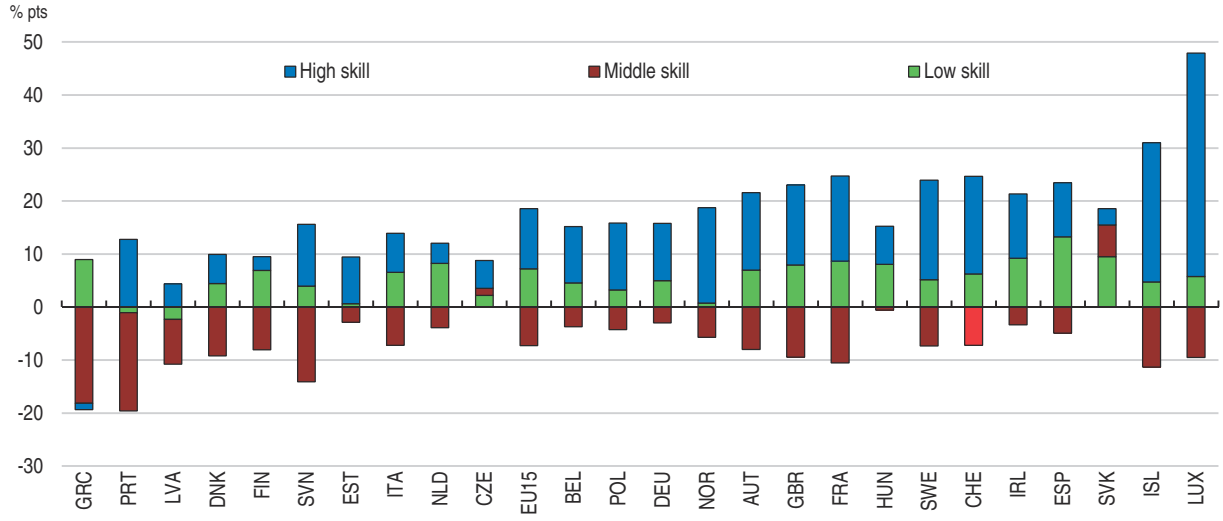
The needs of the economy are changing

Over the past decade and a half Switzerland has enjoyed comparatively strong employment growth averaging 1.1% per year. Most has been in high-skilled occupations, while the number of middle-skilled jobs fell (Figure 27). The lack of qualified staff remains a problem (SECO, 2017). Vacancy rates are persistently elevated in high-skilled sectors such as information technology and finance and insurance (Figure 28). Shortages of engineers have been enduring (Economiesuisse, 2017).

Digitalisation will change the structure of the labour market. Estimates of exposure based on sectors and occupations find that around half of all current Swiss jobs are at risk (Deloitte, 2015). But allowing for the types of tasks performed leads to lower estimates, averaging 9% across the 21 countries participating in PIAAC, with a further 25% of jobs changing significantly (Arntz et al., 2016). Digital skills gaps will need to be reduced (OECD, 2017d). The Swiss economy is also highly exposed to changes in foreign demand, with 36% of jobs depending on it. In the future new jobs will be generated through digitalisation and globalisation, but anticipating their skills requirements is difficult. Training should ensure

Figure 27. **Most of Switzerland's job growth has been in high-skill jobs**

Contributions to changes in total employment over 2000-16[1]



1. Countries are ordered by the change in net employment over 2000-16. High-skill occupations are: managers, professionals and technicians and associate professionals; medium-skilled occupations are clerical support workers, skilled agricultural, forestry and fishery workers, craft and related trades workers and plant and machine operators and assemblers; low-skilled occupations are service and sales workers, and elementary occupations. The armed forces and non-responses are not shown.

Source: Eurostat.

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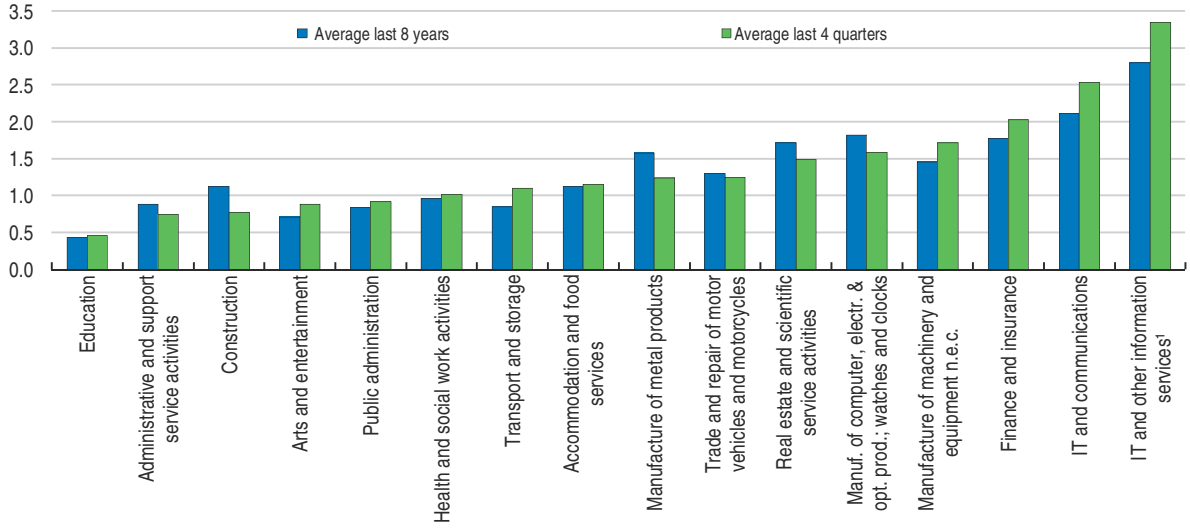
Figure 28. **Job vacancy rates by sector**

Per cent, 2017 Q2



1. IT and Other Information Services is a subsector of IT and Communications.

Source: Federal Statistical Office.

StatLink http://dx.doi.org/10.1787/888933620987

basic technological skills and the ability to think critically and work collaboratively and flexibly (OECD, 2016c).

Richer data on the distribution of Swiss workers' skills would enable policymakers to better respond to these challenges. A first step would be to participate in the next rounds of PIAAC – the OECD's periodic survey of adult skills. These results have been instructive in

formulating skills policy in other OECD countries. Developing longitudinal or cohort data within the Swiss education system would also assist policymakers.

The Swiss vocational education and training system is closely linked to the business sector, particularly the dual-track system, through firms' decisions to supply apprenticeships as well as the board of industry representatives that oversees study programmes. This has underpinned the strong school-to-work transitions. Programmes are reviewed at least every five years. However, the system can be slow to react to change (SERI, 2017). Time limits on curricular changes may be needed. Providing a broader range of skills than those specific to an occupation would increase the adaptability of workers to future changes in work, such as those from digitalisation, and allow students to change their studies more easily. In the school-based vocational system, linkages to the business sector could be strengthened to better ensure that curricula are flexible and relevant. Horizon-scanning-type exercises as in the United Kingdom (through the Commission for Employment and Skills) or Finland (through the Oivallus Project) could help stakeholders better anticipate shifts in skills demands.

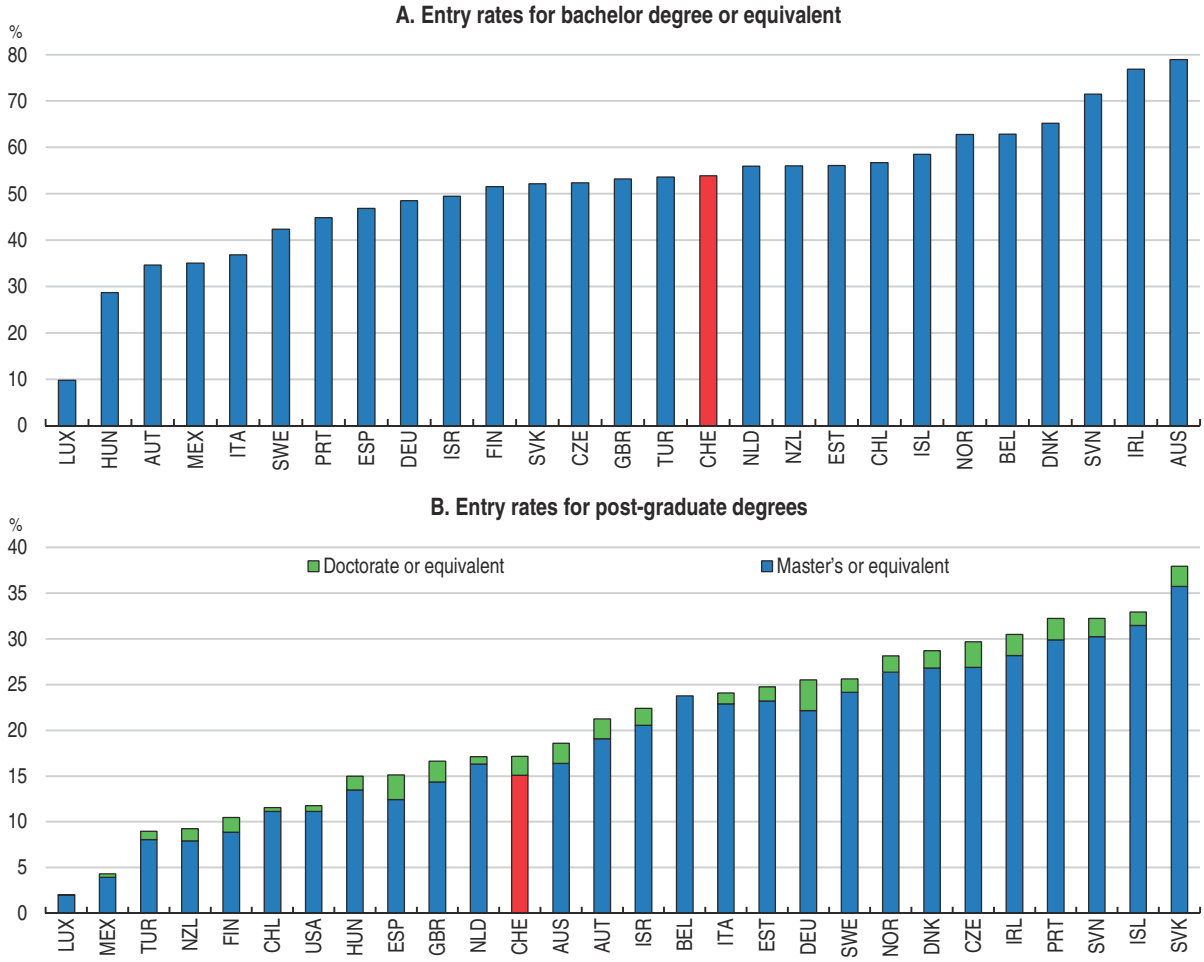
Increasing the supply of home-grown high-skilled workers

Despite a growing demand for tertiary-educated workers entry rates to tertiary education are still only around the OECD average (Figure 29). This is partly because only 41% of young people are expected to graduate from academic upper-secondary programmes, which is one of the OECD's lowest rates. However, the possibility to enter the academic institutions after the vocational education and training stream contributes to the bachelor's (or equivalent) overall graduation rate, which was 45% in 2015. Swiss wage premiums have previously attracted foreign skilled workers to fill shortages; in net terms, over half of all working-age immigrants over the past two decades were tertiary educated. The share of foreign workers is highest in natural sciences, medicine and pharmacy, and engineering (Economiesuisse, 2017). Switzerland's reliance on immigration combined with continent-wide shortages in some occupations and Europe's ageing population implies that more high-skilled workers are needed. That supply could be expanded by making it easier to move between vocational and academic streams, for example by increasing the academic component of vocational education and the applied component of academic education. Some OECD countries have altered the school curricula to improve preparedness for later tertiary studies in science and maths.

The supply and mix of employer-supplied vocational education and training has become an increasingly important issue. The number of places in handicraft and industrial professions is growing, but segments of the services sector, such as ICT, are under-represented. At the same time, many places go unfilled in some lower-skilled occupations, suggesting a supply-demand mismatch. Growing economic internationalisation may be reducing supply in newer industries since small firms, especially foreign firms, are less likely to participate (Muehlemann, 2014; SKBF, 2014). Sharing apprenticeships between firms, as in Germany and Austria, would lower administration costs (Kuczera, 2017). Training centres could take on a greater co-ordination role. These possibilities could be promoted more actively.

Continuing education will play an increasingly important role in ensuring that skills evolve to meet rapidly changing labour market demands and that people can work for longer. This is true for current workers, but also for those out of work and seeking to enter or re-enter the labour force, including people with low basic skills and those displaced from

Figure 29. **Tertiary qualifications in OECD countries[1], 2015**



1. First-time entry rates, excluding international students. First-time entry rates indicate the share of young adults expected to enter that type of tertiary education programme during their lifetime.

Source: OECD (2017), *Education at a Glance 2017*.

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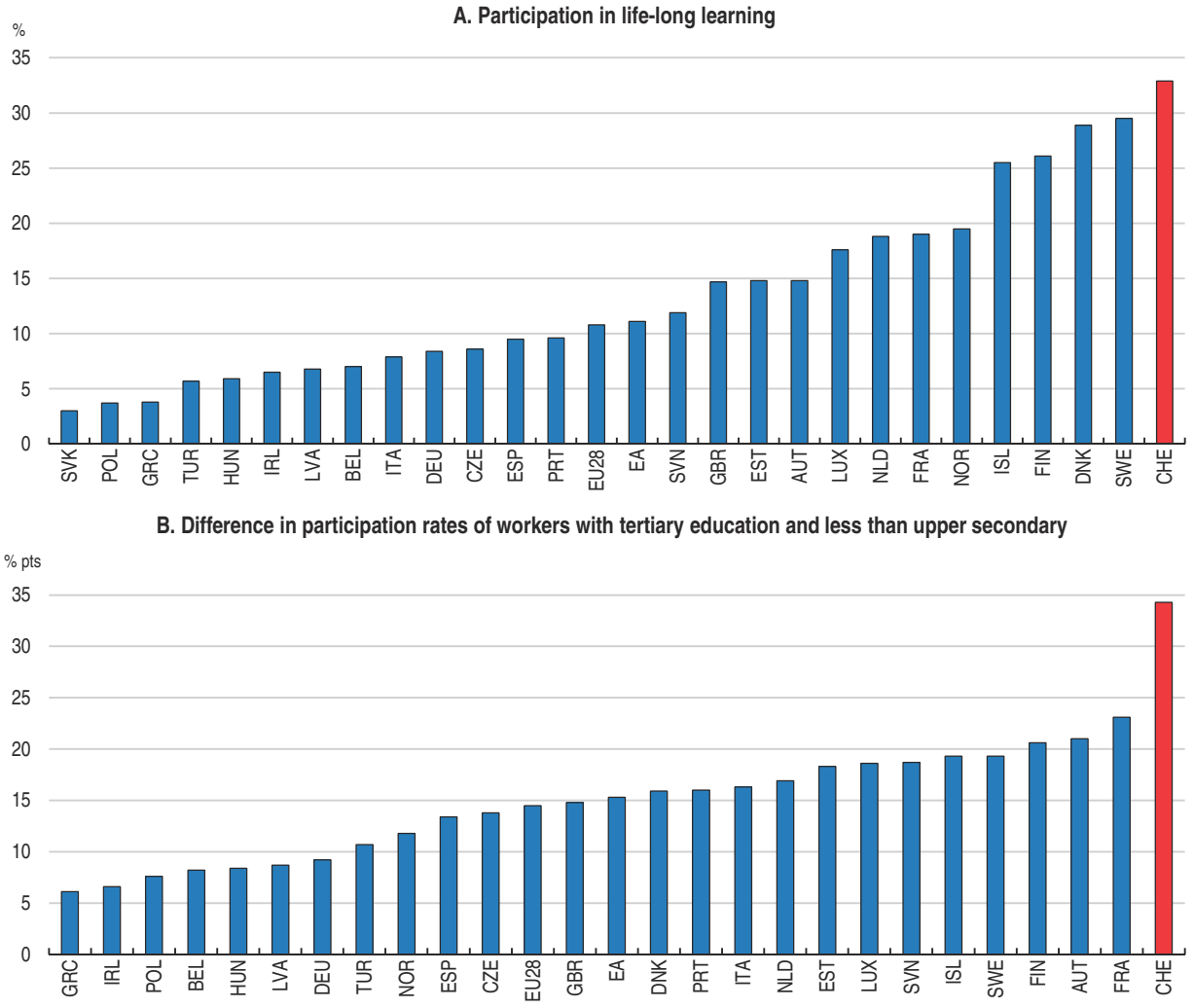
their jobs in structurally declining industries (Windisch, 2015). There is a higher barrier to participation for workers who are not working in the profession of their apprenticeship; in 2000 over half of all vocationally trained workers were not working in their original profession (Meyer, 2009). In 2011 around three-quarters of training participants stated that they were partly supported by their employers (SKBF, 2014). Reflecting high employer engagement, around a third of all 25-64 year-old residents participated in continuous education or training in 2016, the highest in Europe (Figure 30, Panel A). But the dispersion in participation by education level is also the largest (Panel B).

Swiss public funding of continuous education and training is limited. Personal spending is tax deductible, but this benefits higher-income households. Increasing public support for lifelong learning is hampered by the fragmentation of the system across jurisdictions and government departments. The Continuing Education and Training Act came into effect in 2017, giving effect to a 2006 constitutional amendment, and should help to increase co-ordination and improve the nationwide coherence of the system. It states that training is an individual's responsibility and should be market-based, but also that the

Figure 30. **Participation in life-long learning across Europe**

Per cent of population aged 15-64 participating in education and training in the preceding four weeks, 2016



Source: Eurostat, *Labour Force Survey 2016*.

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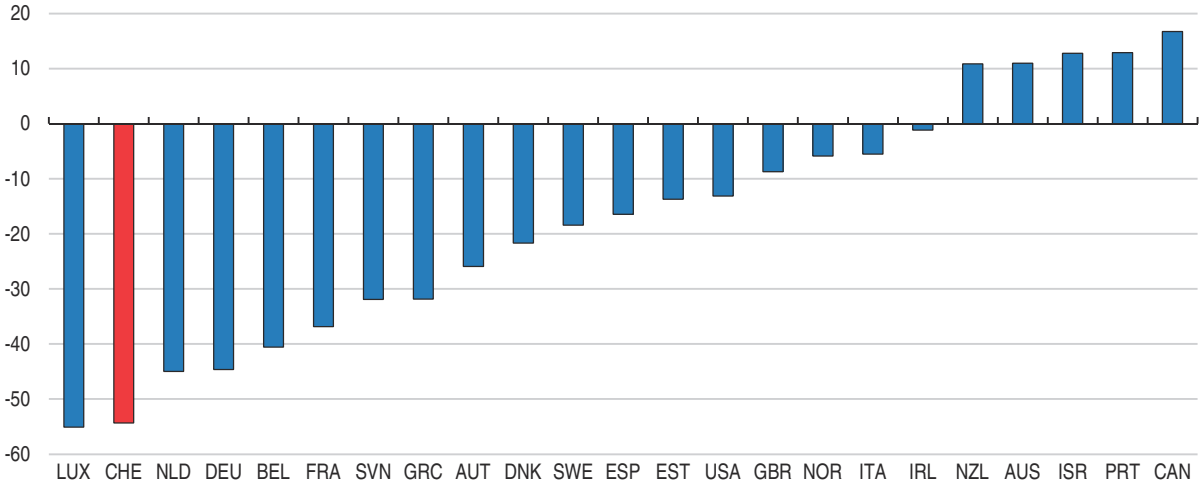
Confederation and cantons should contribute to the accessibility of training and equality of opportunity. Importantly, it will facilitate data collection. Because workers and firms may not fully internalise the need for further investment in human capital, subsidies may help incentivise take-up. Recognition of prior learning and work experience could also raise participation.

Ensuring equity in education and training

Overall, Switzerland performs relatively well in integrating immigrants, people from disadvantaged backgrounds and women in the economy, as evidenced by high employment rates (OECD, 2017b). But for women a high share of part-time work and an unadjusted gender earnings gap of 17% for full-time employees contribute to large differences in incomes (OECD, 2017b). Such gaps with the broader population highlight scope to better realise the potential of these population groups.

Youth with an immigrant background significantly underperform according to PISA. The gap in 2015 relative to non-immigrant students was the same for immigrant students and those born in Switzerland to migrant parents, implying that underperformance persists across generations. Recent evidence shows that almost three-quarters of the school underperformance of children from an immigrant background is accounted for by socio-economic characteristics (Cattaneo and Wolter, 2015). Clustering of students with immigrant parents across schools results in large differences in student performance between schools with high and low immigrant concentrations (Figure 31). In the past this reflected the fact that these students were often directed into "special education programmes"; these programmes are being used in a more focussed way now. Encouraging take-up of early childhood education for those from poorer socio-economic backgrounds, for example through conditional cash transfers, could boost later performance.

Figure 31. **Difference in PISA science score levels between students in schools with high and low concentrations of students with an immigrant background[1], 2015**



1. Students with an immigrant background are those who are foreign born or have foreign-born parents. Schools with a low (high) concentration of students with an immigrant background are those schools in bottom (top) half of the concentration distribution.

Source: OECD, *PISA 2015 database*.

StatLink http://dx.doi.org/10.1787/888933621044

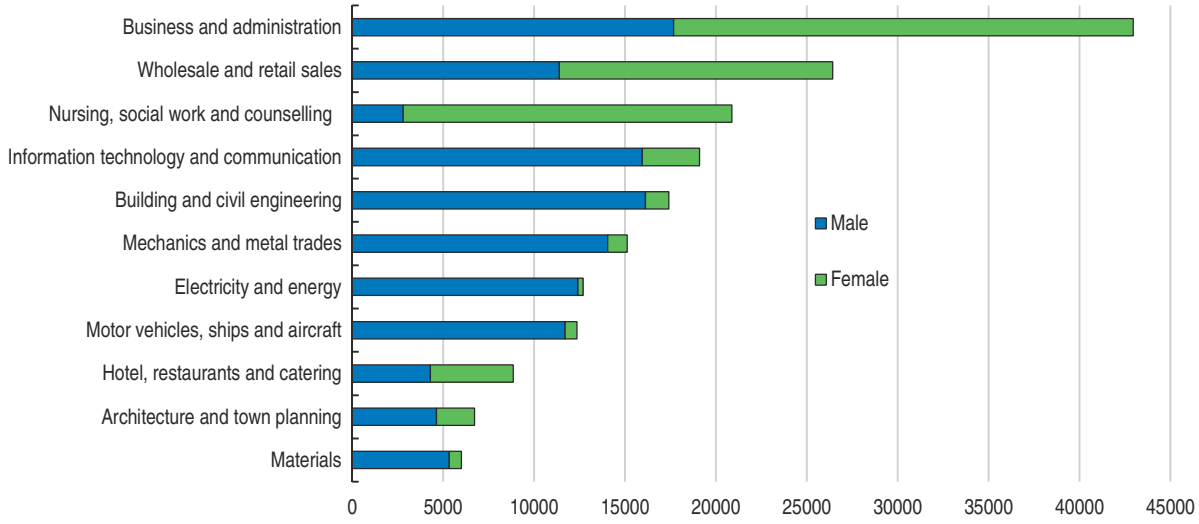
At age 15 students must choose between the academic and vocational streams. Cross-country evidence shows that the influence of parental background on children's secondary school performance is lower in countries with later tracking or with a comprehensive secondary school system (Causa and Johansson, 2010). In Finland the gradual move from tracking to a comprehensive system is estimated to have reduced the intergenerational income elasticity from 0.30 to 0.23 (Pekkarinena et al., 2009).

The extent of tracking has been reduced. In lower secondary schools students are now often separated by ability in the same school, rather than into schools based on different academic performance levels. But this will reinforce inequality if movement between streams is difficult and poorer performers systematically enter vocational education and training, as is the case in Switzerland. This could be overcome by reducing the number of classes grouping students by ability or easing the movement between streams, perhaps with some use of external assessment. There is a strong case to re-examine the age and way that students are separated to boost equity and intergenerational mobility.

The historical gender gap in education has now reversed, with Swiss women studying longer than men. However, large differentials across fields of study influence labour market outcomes. For example, female participation in technical courses in the vocational system, like engineering and computing, is a fraction of men's, while in nursing the gap is reversed (Figure 32). Because children choose their education path when not fully mature, family influence or their own pre-conceptions may be stronger. Indeed, in Swiss cantons with more *gymnasiums* (where choices are made later) than VET schools, gender allocation is less stereotypical (Imdorf et al., 2014). This may be because the general track offers students more opportunities to change paths or because they make career choices later. Re-examining the age at which students make career-determining choices and the ease of changing paths may improve gender equity.

Figure 32. **Students in vocational education and training**

Training sectors and gender, 2015/16[1]



1. The training sectors not shown represent 17% of the students.

Source: Federal Statistical Office.

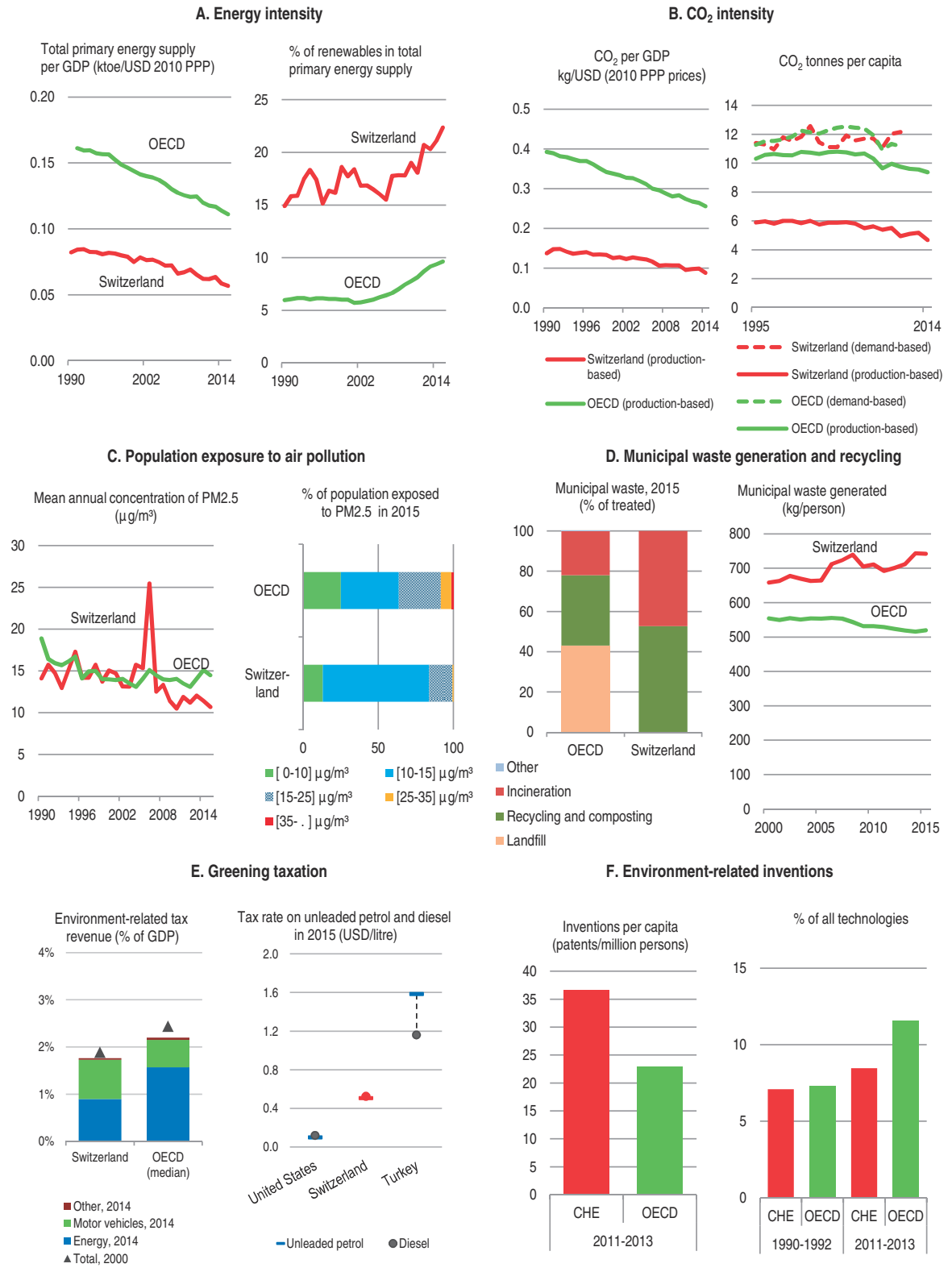
StatLink http://dx.doi.org/10.1787/888933621063

Enhancing environmental sustainability

Switzerland's per capita emissions of greenhouse gases (GHG) are only half the average OECD country's, largely because 93% of electricity is generated from hydroelectric and nuclear energy. Renewables' share in energy supply has risen rapidly over the past decade (Figure 33, Panel A). Nuclear power provides about one-quarter of total final energy supply, indicating the challenges in phasing out nuclear as planned, as new plants are prohibited and existing plants are ageing.

Although domestic per capita emissions are well below the OECD average, CO_2 emissions attributable to Swiss expenditure, which includes imports, are much higher and have recently increased above the OECD average (Figure 33, Panel B). Between one-half and three-quarters of Swiss environmental impacts are estimated to be embodied in imports (FOEN, 2014). Similarly, Swiss municipal waste has not yet decoupled from economic growth, driving a growing gap with the average OECD waste per capita, currently 40%. Although a large proportion of waste is recycled, much is incinerated. In surface water, organic micropollutants exceed legal limits. Planned upgrades to infrastructure should be pursued.

Figure 33. **Environmental indicators**



Source: OECD (2017) Green Growth Indicators (database). For detailed metadata see: *http://stats.oecd.org/wbos/fileview2.aspx?IDFile=02a134e1-c3ec-4c5c-9a05-4ebb41a60539*.

StatLink http://dx.doi.org/10.1787/888933621082

The recently passed package of measures under the Energy Strategy 2050 will steer changes in Switzerland's energy mix. It envisages a substantial increase in electricity production from non-hydro renewables (mostly solar and wind), by over 50% by 2020 and 300% by 2035 compared to 2015. Hydro will remain the main source of electricity, with triple the output of other renewables in 2035. The Strategy aims to cut average per capita energy consumption by 43% by 2035 compared to 2000. It includes measures to promote investment in renewables and energy efficiency. For Switzerland to meet its goal of reducing GHG emissions in 2030 by 50% from 1990 levels, upcoming revisions to the CO_2 Act for 2021-30 will be critical (OECD, 2017f).

Increasing environmentally related taxation would provide additional incentives to gradually green the economy. Total environmentally related taxation is low relative to GDP, and collected mostly via taxes on energy use and motor vehicles (Figure 33, Panel E). While earmarking is not recommended, additional resources would help meet needs for investment, including the transition costs away from nuclear. Switzerland prices 82% of its CO_2 emissions from energy use, and 63% at over EUR 30 per tonne of CO_2 (OECD, 2016d). The Energy Strategy proposes increasing the existing electricity network surcharge, which is used for the promotion of renewable energy, energy efficiency and improvement of water quality. Widening the CO_2 tax base and increasing other taxes designed to reflect externalities would also help to meet current ambitious targets. However, the earmarking of these revenues for environmental programmes should be further reduced to increase flexibility to meet changing needs (Table 8; OECD, 2017f). A combination of increased incentive-based taxation and a review of the cost-effectiveness of existing measures to manage municipal waste could help to curtail waste.

Table 8. **Past recommendations on addressing environmental sustainability**

Recommendation	Action taken since the November 2015 *Survey*
Make greater use of market mechanisms to lower the cost of the transition from nuclear to renewable energy. This includes redesigning the current feed-in tariff scheme. Exploit the opportunities offered by the move from nuclear to renewable sources of energy and green-house gas targets to put in place a framework that promotes competition in the energy sector.	With a complete revision of the Energy Law, renewables support will shift from feed-in tariffs to contracts for difference and investment grants from 2018. Operators of larger power plants in the feed-in system will have to sell their electricity to the market and take on full balancing responsibilities. Investment grants will be extended from currently only small-scale photovoltaics also to larger-scale photovoltaics, hydropower and biomass. A (partial) opening of the gas market by means of a yet to be drafted Gas Supply Act is planned.
Increase the CO_2 levy, and remove exemptions to this and other green taxes.	The CO_2 levy was increased from CHF 60 to CHF 84 per tonne of CO_2 in 2016 and will be increased again to CHF 96 in 2018.
Further promote private- and public-sector energy-related research, and continue engagement with foreign researchers to facilitate realisation of the Energy Strategy 2050.	The Swiss Parliament has approved CHF 120 million in funding for the second phase (2017-20) of the capacity building of the Swiss Competence Centres for Energy Research. These are R&D clusters grouping academia and industry to focus R&D on eight energy fields including electricity generation and storage and biomass. An additional CHF 19 million is earmarked for boosting co-operation between industry and universities.
Move forward with linking the Swiss and EU emissions trading systems.	Negotiations to link the Swiss and EU emissions trading systems via mutual recognition of emissions allowances were initiated in 2008 and concluded in 2016. Signature of the agreement is imminent.

Although Switzerland produces nearly twice as many environmental patents per head as the average OECD country, the share of environmental patents in all patents is lower. Mobilising the corporate and financial sector could help raise rates of eco-innovation and improve environmental performance, for instance through mandatory disclosure of

environmentally related information, including for buildings, and public-private partnerships to favour greener infrastructure investment (OECD, 2017f). Well-aligned climate, fiscal and investment policies can maximise the impact of public investment by leveraging private investment (OECD, 2017g).

Bibliography

Adalet McGowan, M., D. Andrews and V. Millot (2017), "The Walking Dead?: Zombie Firms and Productivity Performance in OECD Countries", *OECD Economics Department Working Papers*, No. 1372, OECD Publishing, Paris, *http://dx.doi.org/10.1787/180d80ad-en*.

Andrews, D., C. Criscuolo and P. Gal (2016), "The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy", *OECD Productivity Working Papers*, No. 5, OECD Publishing, Paris, *http://dx.doi.org/10.1787/63629cc9-en*.

Andrews, D., C. Criscuolo and C. Menon (2014), "Do Resources Flow to Patenting Firms?", *OECD Economics Department Working Papers*, No. 1127, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz2lpmk0gs6-en*

Appelt, S., M. Bajgar, C. Criscuolo and F. Galindo-Rueda (2016), "R&D Tax Incentives: Evidence on Design, Incidence and Impacts", *OECD Science, Technology and Industry Policy Papers*, No. 32, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jlr8fldqk7j-en*.

Arntz, M., T. Gregory and U. Zierahn (2016), "The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis", *OECD Social, Employment and Migration Working Papers*, No. 189, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jlz9h56dvq7-en*.

Arvanitis, S., F. Seliger, A. Spescha, T. Stucki and M. Wörter (2017), "Die Entwicklung der Innovationsaktivitäten in der Schweizer Wirtschaft 1997–2014 (The development of innovation activities in the Swiss economy 1997-2014)", *KOF Studien*, No. 88.

Atkinson, A.B., J. Hasell, S. Morelli and M. Roser (2017), "The Chartbook of Economic Inequality", *www.chartbookofeconomicinequality.com*.

Baldegger, R.J., S. Alberton, H. Frederik and P. Wild (2015), *Global Entrepreneurship Monitor 2015/2016 – Report on Switzerland*, School of Management, Freiburg.

Berlingieri, G., P. Blanchenay and C. Criscuolo (2017), "The Great Divergence(s)", *OECD Science, Technology and Industry Policy Papers*, No. 39, OECD Publishing, Paris, *http://dx.doi.org/10.1787/953f3853-en*.

Beusch, E., B. Döbeli, A. Fischer and P. Yesin (2014), "Merchanting and Current Account Surplus", *CEPR Discussion Paper Series*, No. 9990.

Botev, J., J. Fournier and A. Mourougane (2016), "A Re-assessment of Fiscal Space in OECD Countries", *OECD Economics Department Working Papers*, No. 1352, OECD Publishing, Paris, *http://dx.doi.org/10.1787/fec60e1b-en*.

Bouis, R. and R. Duval (2011), "Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond", *OECD Economics Department Working Papers*, No. 835, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5kgk9qj18s8n-en*.

Bourlès, R., G. Cette, J. Lopez, J. Mairesse and G. Nicoletti (2010), "Do Product Market Regulations in Upstream Sectors Curb Productivity Growth?: Panel Data Evidence for OECD Countries", *OECD Economics Department Working Papers*, No. 791, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5kmbm6s9kbkf-en*

Brunetti, A. (2014), *Group of Experts on the Further Development of the Financial Market Strategy: Final Report*, Federal Council, Bern.

Cattaneo, M.A. and S.C. Wolter (2015), "Better Migrants, Better PISA Results: Findings from a Natural Experiment", *IZA Journal of Migration*, Vol. 4, No. 18.

Causa, O. and Å. Johansson (2010), "Intergenerational Social Mobility in OECD Countries", *OECD Journal: Economic Studies*, Vol. 10, No. 1, pp. 1-44, *http://dx.doi.org/10.1787/eco_studies-2010-5km33scz5rjj*.

COMCO (2017a), *Annual Report 2016 of the Competition Commission*, Competition Commission, Bern.

COMCO (2017b), "Contre les restrictions de l'accès intercantonal au marché" (Against restrictions to cross-cantonal market access), Competition Commission, press release, 20 February.

Criscuolo, C., P. Gal and C. Menon (2014), "The Dynamics of Employment Growth: New Evidence from 18 Countries", *OECD Science, Technology and Industry Policy Papers*, No. 14, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz417hj6hg6-en*.

Deloitte (2015), *Man and Machine: Robots on the Rise?*, Deloitte, Switzerland.

Dutu, R. (2014), "Women's Role in the Swiss Economy", *OECD Economics Department Working Papers*, No. 1144, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz123dzstkb-en*.

Economiesuisse (2017), "Engineers in Switzerland: State of Play", *economiesuisse dossier politique*, No 5.

Ecoplan (2016), *Statistische Grundlagen zu Neugründungen und wachstumsstarken Unternehmen (Key Stylized Facts about Start-ups and High-growth Firms)*, Swiss State Secretariat for Economic Affairs, Bern.

Égert, B. (2016), "Regulation, Institutions, and Productivity: New Macroeconomic Evidence from OECD Countries", *American Economic Review*, Vol. 106, No. 5, pp. 109-13.

Égert, B. and P. Gal (2017), "The Quantification of Structural Reforms in OECD Countries: A New Framework", *OECD Journal: Economic Studies*, Vol. 2016, No. 1, *http://dx.doi.org/10.1787/eco_studies-2016-5jg1lqspxtvk*.

European Commission (2017), *European Innovation Scoreboard 2017, http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en*.

FC (2015), *Bases statistiques de l'imposition des entreprises à l'intention de la Confédération, des cantons et des communes sélectionnés (Statistical bases for corporate taxation for the Confederation, cantons and selected municipalities)*, Rapport en réponse au postulat 12.3821 de Hildegard Fässler-Osterwalder du 26 septembre 2012, Federal Council, Bern.

FC (2017a), *Popular vote of 12 February 2017: explanations by the Federal Council*, Federal Council, Bern.

FC (2017b), *Jeunes Entreprises à Forte Croissance en Suisse (Young and High-growth Firms in Switzerland)*, Rapport du Conseil Fédéral donnant suite au postulat 13.4237 Derder du 12 décembre 2013, Federal Council, Bern.

FDF (2017), *Procédure de Consultation Concernant le Projet Fiscal 17 (PF17) (Consultation Procedure Regarding the Fiscal Project 17)*, Rapport explicatif, Federal Department of Finance, Bern.

FDF (2016a), *Synoptische Darstellung der finanziellen Aus-wirkungen der Unternehmenssteuerreform III (An overview of the financial effects of the corporate tax reform III)*, Federal Department of Finance, Bern.

FDF (2016b), *Report on the Long-term Sustainability of Public Finances in Switzerland*, Federal Department of Finance, Bern.

FOEN (2014), Development of Switzerland's Worldwide Environmental Impact: Environmental impact of consumption and production from 1996 to 2011, Extended summary of the publication "Entwicklung der weltweiten Umweltauswirkungen der Schweiz", Federal Office for the Environment, *www.bafu.admin.ch/uw-1413-d*.

Forster, A.G., T. Bol and H.G. van de Werfhorst (2016), "Vocational Education and Employment over the Life Cycle", *Sociological Science*, Vol. 3, pp. 473-94.

Fournier, J. and Å. Johansson (2016), "The Effect of the Size and the Mix of Public Spending on Growth and Inequality", *OECD Economics Department Working Papers*, No. 1344, OECD Publishing, Paris, *http://dx.doi.org/10.1787/f99f6b36-en*.

Hoeckel, K., S. Field and W. Grubb (2009), *OECD Reviews of Vocational Education and Training: A Learning for Jobs Review of Switzerland 2009*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264113985-en*.

Huddleston, T., O. Bilgili, A. Joki and Z. Vankova (2015), *Migrant Integration Policy Index 2015*, *www.mipex.eu*.

Imdorf, C., S. Sacchi, K. Wohlgemuth, S. Cortesi and A. Schoch (2014), "How Cantonal Education Systems in Switzerland Promote Gender-Typical School-to-Work Transitions", *Journal of Sociology*, Vol. 40, No. 2, pp. 175-96.

IMF (2014), "Switzerland: Financial Sector Stability Assessment", *IMF Country Reports*, No. 14/143, International Monetary Fund, Washington, DC.

IMF (2016), "Switzerland: Staff Report for the 2016 Article IV Consultation", *IMF Country Reports*, No. 16/381, International Monetary Fund, Washington, DC.

Jarrett, P. and C. Letrémy (2008), "The Significance of Switzerland's Enormous Current Account Surplus", *OECD Economics Department Working Papers,* No. 594, OECD Publishing Paris, *http://dx.doi.org/10.1787/244253177344*

Keuschnigg, C., M. Keuschnigg and C. Jaag (2011), "Aging and the Financing of Social Security in Switzerland", *Swiss Journal of Economics and Statistics*, Vol. 147, No. 2, pp. 181-231.

Koske, I., F. Naru, P. Beiter and I. Wanner (2016), "Regulatory Management Practices in OECD Countries", *OECD Economics Department Working Papers*, No. 1296, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jm0qwm7825h-en*.

Kuczera, M. (2017), "Striking the Right Balance: Costs and Benefits of Apprenticeship", *OECD Education Working Papers*, No. 153, OECD Publishing, Paris, *http://dx.doi.org/10.1787/995fff01-en*

Marti Locher, F., P. Mischler and W. Weber (2015), "Intergovernmental co-ordination of fiscal policy in Switzerland", in *Institutions of Intergovernmental Fiscal Relations: Challenges Ahead*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264246966-12-en*

Meyer, T. (2009), "Can 'Vocationalisation' of Education Go Too Far? The case of Switzerland", *European Journal of Vocational Training*, No. 46, 2009/1.

Moody's (2016), "Credit Opinion: Swisscom AG", *Moody's Investors Service Global Credit Research*, 15 March.

Muehlemann, S. (2014), "Training Participation of Internationalized Firms: Establishment-level Evidence for Switzerland", *Empirical Research in Vocational Education and Training*, Vol. 6, No. 5.

Nordås, H. and D. Rouzet (2015), "The Impact of Services Trade Restrictiveness on Trade Flows: First Estimates", *OECD Trade Policy Papers*, No. 178, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5js6ds9b6kjb-en*.

OECD (2006), *OECD Reviews of Regulatory Reform: Switzerland 2006 – Seizing the Opportunities for Growth*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264022485-en*

OECD (2009), *OECD Economic Surveys: Switzerland 2009*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-che-2009-en*.

OECD (2010), "Entrepreneurship Skills", in *SMEs, Entrepreneurship and Innovation*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264080355-49-en*.

OECD (2011), *OECD Economic Surveys: Switzerland 2011*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-che-2011-en*.

OECD (2012a), *Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264178953-en*.

OECD (2012b), "The Labour Market Integration of Immigrants and Their Children in Switzerland", in *Jobs for Immigrants (Vol. 3): Labour Market Integration in Austria, Norway and Switzerland*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264167537-9-en

OECD (2013), *OECD Economic Surveys: Switzerland 2013*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-che-2013-en*.

OECD (2014), *Working Better With Age: Switzerland – Assessment and Recommendations*, OECD Directorate for Employment, Labour and Social Affairs. *www.oecd.org/els/emp/AR_SWITZERLAND.pdf*

OECD (2015a), *OECD Economic Surveys: Austria 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-aut-2015-en*.

OECD (2015b), *OECD Economic Surveys: Switzerland 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-che-2015-en*.

OECD (2015c), *The Future of Productivity*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264248533-en*.

OECD (2015d), *Economic Policy Reforms 2015: Going for Growth*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/growth-2015-en*.

OECD (2015e), *Taxing Energy Use 2015: OECD and Selected Partner Economies*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264232334-en*

OECD (2016a), *The Productivity-Inclusiveness Nexus: Preliminary version,* OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264258303-en*.

OECD (2016b), "Promoting Productivity and Equality: A Twin Challenge", in *OECD Economic Outlook,* Vol. 2016, Issue 1, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_outlook-v2016-1-3-en*.

OECD (2016c), "Skills for a Digital World", Policy Brief on the Future of Work, OECD Publishing, Paris.

OECD (2016d), *Effective Carbon Rates: Pricing CO_2 through Taxes and Emissions Trading Systems*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264260115-en*.

OECD (2017a), *Trust and Public Policy: How Better Governance Can Help Rebuild Public Trust*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264268920-en*.

OECD (2017b), *OECD Employment Outlook 2017*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/empl_outlook-2017-en*.

OECD (2017c), "Producer and Consumer Support Estimates", OECD *Agricultural Statistics* (database). *http://dx.doi.org/10.1787/agr-pcse-data-en*.

OECD (2017d), *Going Digital: Making the Transformation Work for Growth and Well-being*, Report for the Meeting of the OECD Council at Ministerial Level, Paris, *www.oecd.org/mcm/documents/C-MIN-2017-4%20EN.pdf*.

OECD (2017e), *The Next Production Revolution: Implications for Governments and Business*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264271036-en*.

OECD (2017f), *Environmental Performance Reviews: Switzerland*, OECD Publishing, Paris, forthcoming.

OECD (2017g), *Investing in Climate, Investing in Growth*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264273528-en*.

OECD (2017h), "How to make trade work for all" in *OECD Economic Outlook*, Volume 2017, Issue 1, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_outlook-v2017-1-en*.

Ollivaud, P. and C. Schwellnus (2013), "The Post-crisis Narrowing of International Imbalances: Cyclical or Durable?", *OECD Economics Department Working Papers*, No. 1062, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5k44t7j9sdtc-en*.

Ollivaud, P., E. Rusticelli and C. Schwellnus (2015), "The Changing Role of the Exchange Rate for Macroeconomic Adjustment", *OECD Economics Department Working Papers*, No. 1190, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5js4rfhjf15l-en*.

Pekkarinena, T., R. Uusitalo and S. Pekkala Kerr (2009), "School Tracking and Intergenerational Income Mobility: Evidence from the Finnish Comprehensive School Reform", *Journal of Public Economics*, Vol. 93, No. 7-8, pp. 965-73.

Peters, H. and R. Winkler (2016), "Germany's Massive CA Surplus Set to Decline", Deutsche Bank Research, *Current Issues: Germany*, 26 August.

Rouzet, D. and F. Spinelli (2016), "Services Trade Restrictiveness, Mark-ups and Competition", *OECD Trade Policy Papers*, No. 194, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jln7dlm3931-en*.

SECO (2017), "Pénurie de main-d'oeuvre qualifiée en Suisse : Système d'indicateurs pour évaluer la demande en personnel qualifié" (Shortage of Skilled Labour in Switzerland: Indicator System to Assess the Demand for Qualified Personnel), State Secretariat for Economic Affairs, Bern.

SERI (2017), "VPET partner conference 2017", SERI *News*, May 2017, State Secretariat for Education, Research and Innovation, Bern.

SKBF (2014), *Swiss Education* Report | *2014*, SKBF/CSRE (Swiss Co-ordination Centre for Research in Education), Aarau.

SNB (2012), *Swiss Balance of Payments 2011*, Swiss National Bank, Bern.

SNB (2017), *Financial Stability Report 2017*, Swiss National Bank, Bern.

Sturm, J.E., M. Brülhart, P. Funk, C.A. Schaltegger and P. Siegenthaler (2017), *Expertise sur la nécessité de compléter le frein à l'endettement* (Experts' report on the need to supplement the debt brake), rapport du groupe d'experts sur le frein à l'endettement.

Swiss Confederation (2017), *Retour sur quinze années de libre circulation des personnes (Results of fifteen years of free movement of persons)*, Observatoire relatif à l'Accord sur la libre circulation des personnes entre la Suisse et l'UE, 13th report.

Von Trapp, L. and S. Nicol (2017), *Designing effective independent fiscal institutions*, OECD Publishing, Paris, *www.oecd.org/gov/budgeting/designing-effective-independent-fiscal-institutions.pdf*.

Windisch, H. (2015), "Adults with Low Literacy and Numeracy Skills: A Literature Review on Policy Intervention", *OECD Education Working Papers*, No. 123, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jrxnjdd3r5k-en*.

World Bank (2017), *Doing Business 2017: Equal Opportunity for All*, World Bank, Washington, DC.

Yeung, K., A. Basu, R. Hansen and S. Sullivan (2016), "Price Elasticities of Pharmaceuticals in a Value-based-formulatory Setting", *NBER Working Papers*, No. 22308.

ANNEX

Progress in structural reform

This Annex reviews actions taken on recommendations from previous Surveys *that are not covered in tables within the main body of the Assessment and recommendations. Recommendations that are new in this* Survey *are listed at the end of the relevant chapter.*

Recommendations in previous *Surveys*	Action taken since November 2015
A. Boosting long-term growth and productivity	
Examine the roots of, and propose remedies for, the poor productivity performance, including by creating a productivity commission.	In June 2017 the Federal Council adopted its "New Growth Policy 2016-19", which contains 14 measures to promote growth in productivity, the resilience of the economy and the alleviation of negative side effects of economic growth.
Accelerate the pace of agricultural sector reform, including moving entirely to direct payments to farmers, and by further integrating the entire food value chain in international trade.	In December 2014 a project was launched to simplify the administration of agricultural policy and current regulations, of which 24 simplifications were enacted in January 2016 and 18 additional ones in January 2017.
Extend the network of free-trade agreements, including with India and the United States.	In 2016 negotiations were concluded with the Philippines and Georgia, and Guatemala acceded to the agreement between EFTA and Central America. Switzerland has ongoing negotiations with MERCOSUR, Malaysia, Vietnam, Indonesia, India and Ecuador. Negotiations with Russia/Belarus/Kazakhstan, Algeria and Thailand are on hold. Negotiations with Turkey and Mexico to modernise and broaden the scope of existing agreements are ongoing.
Continue to examine options for the introduction of tax incentives that encourage innovation, for example for business angels.	Studies on the taxation of business angels are ongoing.
Be prudent with the tax treatment of intellectual property to ensure that current measures are serving their intended purpose and are not unduly distortionary internationally.	The tax proposal 17 as suggested by the Federal Council in the consultation process contains measures that may ensure the intended purpose in relation to intellectual property: 1) a patent box that is in accordance with the international standard, which would be mandatory for all Cantons due to the federal harmonisation law and 2) research and development deductions.
Ease restrictions on starting a business by reducing the number of procedures and time required, for example by improving the web-portal "StartBiz" and abolishing the compulsory public notary authentication.	No action taken.
Put more emphasis on the early activation of migrants.	Since the establishment of Cantonal Integration Programmes in 2014, cantons evaluate the abilities, qualifications and professional experience of each migrant and offer training when needed. The recent extension for the period 2018-21 will concentrate on information, training, and communication. Pre-apprenticeship integration training will be offered as of 2018.
Give a more important role to job-insertion allowances, which provide subsidies to companies to employ youths, other new entrants or the long-term unemployed.	Expenses for job-insertion allowances have increased by 30% in the period 2012-16.
Do more at the federal level to co-ordinate employment services between cantons.	In a pilot phase, the outcome indicators of the current results-oriented agreement (valid from 2015 to 2018) were extended to jobseekers without benefit entitlements to strengthen the uniformity of enforcement and comparability between employment services across cantons.
B. Upgrading education	
Step up public funding of pre-schools.	In June 2017 the parliament granted an additional CHF 100 million over the next five years for subsidies to reduce childcare costs and foster the restructuring of childcare services to meet the needs of parents.
Address integration issues within the integrated school system as part of a comprehensive policy.	No action taken.
Learn from the experience of other countries, including Finland, with their teacher preparation programmes, which focus intensively on helping teachers develop practical remedial teaching skills that help to address weaker students within aptitude-level integrated classrooms.	In October 2016 Swiss universities' Chamber of the Universities of Teacher Education adopted recommendations on the integration of remedial teaching skills in initial teacher education.
Improve access to tertiary education for all segments of society, including special measures for those from lower socio-economic and immigrant backgrounds.	Since January 2016 expenses for tertiary vocational education can be deducted from taxable income. Deductions for calculating federal income tax payable may not exceed CHF 12 000 annually. Cantons can set their own limits.
Facilitate greater mobility between career paths by creating well-marked and more numerous pathways.	No action taken.
Boost the supply and attractiveness of fields of study that are in high demand in the labour market. Further clarify study streams across the tertiary education system.	The confederation is funding programs to motivate children and youth to take STEM subjects. The second cycle of the programme runs in 2017-20.
C. Enhancing competition	
Consider allowing criminal sanctions for anti-competitive actions.	No action taken.
Apply the prohibition principle to all hard-core cartels. Raise ComCo's resources, and ensure its independence by excluding members that represent economic interests.	No action taken.

Recommendations in previous *Surveys*	Action taken since November 2015
In the electricity sector, introduce ownership separation between generation and transmission; strengthen the regulator's powers; introduce price caps and benchmark regulation; and use regulatory accounting rules for the determination of network access prices.	The planned revision to the Federal Electricity Supply Act will give the regulator the possibility to make public various indices on cost, quality, tariffs and compliance used in the "cost plus" regulation (so called sunshine regulation).
In telecommunications, apply *ex ante* regulation to access conditions to the local loop and to interconnection charges.	No action taken.
Make tendering of regional rail passenger services compulsory, ensure non-discriminatory access to rolling stock, and allow PKP's rivals to propose investment projects. Base investment decisions on an independent cost-benefit assessment.	No action taken.
Liberalise completely network industries, benchmark the public sector, and implement more efficient territorial management.	A (partial) opening of the gas market by means of a yet-to-be drafted Gas Supply Act is scheduled for around 2021. Regarding territorial management, cantons are adapting their master plans to the Spatial Planning Act revision, which came into force in May 2014 and must be implemented by 2019. Some cantons already signed with the Federal Council.
D. Improving the tax system	
Widen the VAT base by removing exemptions. Unify VAT rates. Over the medium term raise VAT rates. Explore the technical feasibility of applying a VAT to banking services. If such a VAT is not introduced, consider an additional tax on financial institutions' profits and remuneration.	No action taken.
Lower the tax wedge on second earners, for example, by introducing separate assessment of partner income. Set up uniform rules concerning the taxation of several earners within one household across levels of government.	No action taken.
Replace progressive cantonal corporate taxes with proportional taxes and abolish capital taxes. Remove taxes on the issuance of equity and debt securities.	No action taken.
Abolish the lump-sum tax regime for rich individuals who are not economically active in Switzerland. Subject all residents to standard personal income taxation.	The revision of 28 September 2012 that increases taxation for new beneficiaries took effect in 2016.
E. Expanding women's role in the economy	
Use role models to make hard sciences more attractive for girls and social sciences and health to boys, and raise awareness of career and earnings prospects associated with study choices. Inform students about rewarding gender-atypical career choices.	As part of the "Fachkräfteinitiative", Switzerland took initiatives in raising the attractiveness of gender-atypical careers. One of the objectives of the "Fachkräfteinitiative" was to raise awareness of boys and men for professional activities and careers in the health and social work sectors (Federal Administration's "Equal Opportunity at Universities of Applied Sciences" Programme 2013-16).
Reduce the influence of socio-economic background on the extent of gender-typical study and career choices by providing earlier and more intensive guidance for disadvantaged students, and greater financial support.	No action taken.
Increase women's labour market options by raising public spending on childcare and by adjusting regulations to broaden the range of available price/quality options.	In June 2017 the parliament granted an additional CHF 100 million over the next five years for subsidies to reduce childcare costs and foster the restructuring of childcare services to meet the needs of parents. In April 2017 the Federal Council launched a consultation process to increase the tax deduction for childcare expenses, with a maximum deduction to CHF 25 000 (from 10 200) at the federal level and to at least CHF 10 000 at the cantonal level. The consultation process ended in July 2017.
Remove the so-called marriage tax penalty at the federal level by introducing individual, as opposed to family, taxation or some equivalent measure.	In June 2017 the Federal Council sent a proposal to the parliament to reduce the "marriage penalty".
Create paternity leave, and consecutive "take it or leave it" parental leave to be shared between fathers and mothers.	No action taken.
Implement a corporate governance code establishing gender goals to increase the number of women in senior management. Increase the proportion of women on company boards by setting ambitious targets combined with a "Comply or Explain" requirement or by setting quotas.	The Federal Council submitted to Parliament a proposal for a reform of company law that includes gender guidelines on a comply-or-explain basis according to which women should account for at least 30% of the board of directors and at least 20% of the executive board. The parliament has yet to vote on this proposal.
Foster a positive image of entrepreneurship amongst women by allowing successful women entrepreneurs to tour secondary and tertiary educational institutions to explain the rewards and advantages of setting up one's own business, especially given women's preference for flexible work solutions.	No action taken.

Recommendations in previous *Surveys*	Action taken since November 2015
F. Taming the housing market	
Monitor closely mortgage lending to firms or households for rental properties, which may not be as responsive as the owner-occupied segment to recent regulatory measures.	Supervisors continue to closely monitor bank lending.
Review spatial planning regulations to make it easier to build denser housing.	No action taken.
G. Increasing the efficiency of public spending	
Increase public spending on early childhood education and care, especially for children with disadvantaged socio-economic backgrounds (including those from immigrant backgrounds), which could be combined with a generalisation of the childcare voucher systems in the Canton of Lucerne.	In June 2017 the parliament granted an additional CHF 100 million over the next five years for subsidies to reduce childcare costs and foster the restructuring of childcare services to meet the needs of parents. This is intended to particularly benefit lower income families and thus children with a disadvantaged socio-economic background.
Evaluate solutions to reduce the drop-out rate in the university system.	No action taken.
Switch the system for setting generic drug prices to reimbursing a pre-determined fixed amount.	A modification of the law is envisaged in 2017 to set the reimbursement of generic drugs to a pre-determined fixed amount.
Cut the marginal effective tax rates on labour income of disability insurance beneficiaries.	No action taken.