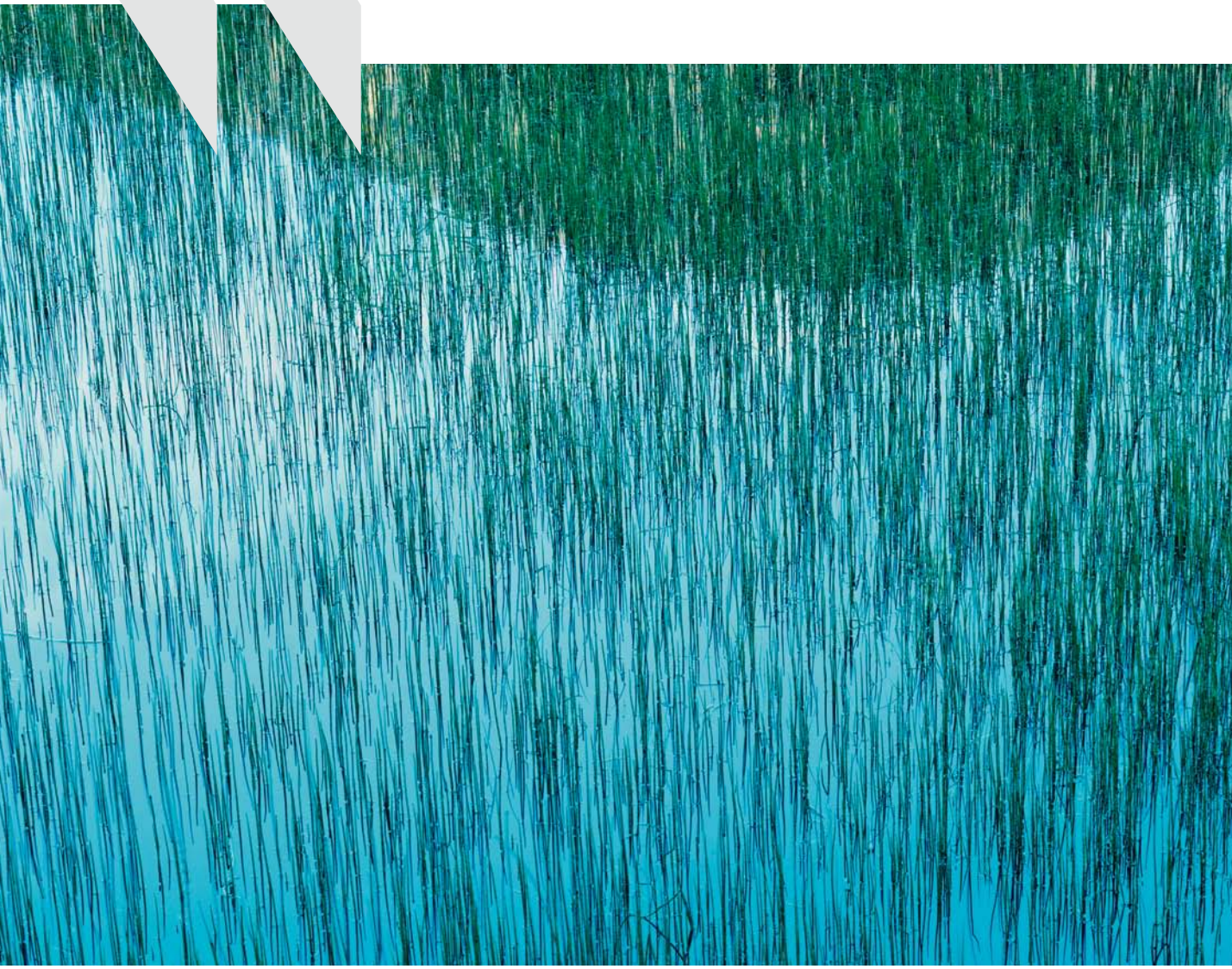
OECD Economic Surveys

SWITZERLAND



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This Survey *is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.*

The economic situation and policies of Switzerland were reviewed by the Committee on 22 October 2009[2]*. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 13 November 2009.*

The Secretariat's draft report was prepared for the Committee by Andrés Fuentes, Charles Pigott and Eduardo Camero under the supervision of Pierre Beynet. Statistical assistance was provided by Patrizio Sicari. The survey also benefited from external consultancy work.

The previous Survey of Switzerland *was issued in November 2007.*

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BASIC STATISTICS OF SWITZERLAND

THE LAND

Area (1 000 sq. km)	41.3
Cultivated land, grassland and pastures (1 000 sq. km)	15.2
Forests (1 000 sq. km)	12.7

Major cities (1 000 inhabitants, 31/12/2008)	
Zurich	365.1
Geneva	183.3
Basel	164.9
Bern	122.9

THE PEOPLE

Population (thousands, 31/12/2008)	7 702
Number of inhabitants per sq. km (2008)	186
Net natural increase (thousands, 2008)	15.5
Number of foreign workers (thousands, 2008)	1 201

Civilian employment (thousands, 2008)	4 495
Primary sector (%)	4.0
Secondary sector (%)	23.3
Tertiary sector (%)	72.7

PRODUCTION

Gross domestic product, current prices (2008)	
CHF billion	541.8
GDP per head (USD)	65 040

Gross fixed investment, current prices (2008)	
% of GDP	21.3
Per head (USD)	13 824

THE GOVERNMENT

Public consumption (% of GDP, 2008)	10.7
General government (% of GDP, 2008)	
Expenditure	31.8
Revenues	34.3
Gross debt (2007)	43.7

Composition of Parliament	National Council	State Council
Swiss People's Party	60	6
Social Democrats	42	8
Parliamentary group FDP/Liberals	35	11
Christian Democrats/EPP	36	16
Green Faction	22	2
BDP Faction	5	1

Last elections: 21 October 2007
Next elections: October 2011

FOREIGN TRADE

Exports of goods and services (% of GDP, 2008)	56.4
Commodity exports (billion CHF, 2008)	206.3
Distribution by area (% of total, 2008)	
To industrialised countries	77.1
To 27 EU countries	61.9
To OPEC	3.9
Distribution by categories (% of total, 2008)	
Raw materials and semi-finished goods	23.4
Capital goods	32.3
Consumer goods	51.2
Energy	3.5

Imports of goods and services (% of GDP, 2008)	45.2
Commodity imports (billion CHF, 2008)	186.9
Distribution by area (% of total, 2008)	
To industrialised countries	88.8
To 27 EU countries	81.2
To OPEC	2.5
Distribution by categories (% of total, 2008)	
Raw materials and semi-finished goods	26.0
Capital goods	25.6
Consumer goods	39.0
Energy	9.3

THE CURRENCY

Monetary unit: Swiss franc

Currency unit per USD, average of daily figures	
Year 2008	1.0836
October 2009	1.0218

Executive summary

The global crisis will have a lasting impact on the Swiss economy. *Despite the recession, Switzerland has weathered the crisis better than other OECD economies in part owing to exports in goods less sensitive to the business cycle and resilient domestic credit markets, in part reflecting the absence of a marked housing cycle. Swift intervention by the authorities to support the country's largest bank also helped avoid an aggravation of the crisis, the large size of the financial intermediaries posing a potential risk for public finances and macro-economic stability. After a marked expansion of employment, unemployment is on the rise and some of the increase resulting from the crisis may persist. While living standards are among the highest in the OECD, the gap in productivity per hour worked relative to other leading OECD economies is considerable and trend productivity growth remains weak. Scope for expansion of financial services may have diminished.*

Monetary and fiscal policies need to adjust in the medium term. *The Swiss National Bank (SNB) took decisive action to dampen the recession by providing liquidity. The expansionary stance will need to be maintained until the recovery strengthens, but excess liquidity will have to be withdrawn gradually such as to ensure price stability over the medium term. On the fiscal side, stimulus has been modest. Nonetheless, expenditure reductions are needed in the medium term to adhere to budgetary rules and expected increases in ageing costs highlight the need for healthcare spending and pension reforms.*

Macro-risks posed by financial intermediaries require further reforms. *In view of the large size of bank balance sheets, relative to the size of the economy, there is a particular need for Switzerland to limit the probability of failure of its largest financial intermediaries. It should hence be ensured that the capital adequacy and leverage ratios for the two big banks are set such that they are close to the highest actually observed ratios of major international banks. The SNB should lead, together with the financial market regulator, the elaboration of macro-prudential standards. The staffing level of the financial market regulator should continue to be reviewed.*

Low productivity performance in sheltered sectors is denting living standards. *Reforms in product market need to be pursued further. In addition, in the housing sector, restrictions on the setting of a new rental price should be removed and the adjustment of rents to market conditions ensured. Municipalities' incentives to develop buildable land should be strengthened.*

Scope remains to improve productivity performance through education. *The Swiss education system deserves its excellent reputation. However, outcomes at the end of compulsory education can be improved further, especially for children from modest background. Tertiary attainment of young workers is relatively low for a high income country Access to affordable childcare facilities should be widened, which would also benefit female labour supply, and early childhood education should be strengthened. Accountability of schools needs to be improved. The impact of socio-economic background on attainment could be reduced, including by eliminating early tracking. In tertiary education, government-sponsored loan schemes for students with income-contingent repayments should be widely introduced to help students finance study fees and living expenses. With such loan schemes in place, higher study fees could be charged in tertiary academic education.*

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Assessment and recommendations

The recession has been deep and triggered decisive monetary policy action

As in most OECD countries, the global financial and economic crisis has pushed the Swiss economy into a recession, reflecting its exposure to international trade and the relatively large weight of financial intermediation in economic activity. Switzerland has so far weathered the impact of the global crisis better than its main trading partners, owing to the sectoral specialisation of manufacturing with goods less sensitive to the business cycle, the moderate level of leverage of domestic borrowers in the private non-financial sector, resilient domestic credit and the absence of a housing cycle. Intervention from the government and the central bank to support UBS (the country's largest bank) also helped contain the effects of the crisis. The exposure of the public sector to potential losses from the rescue package are moderate in international comparison, despite the very large size of the biggest banks relative to the economy. The Swiss National Bank (SNB) took decisive action to support liquidity in the interbank lending market, cutting interest rates on its repurchase operations to close to zero, contributing to reduce interbank spreads, intervening to halt the appreciation of the Swiss Franc and purchasing Swiss franc denominated bonds. Past prudent fiscal policy provided room to implement fiscal stimulus in 2009 and 2010 but the stimulus has been modest compared to other OECD countries, expected to reach about 0.6% of GDP in 2009 and 2010.

The recovery seems underway but the withdrawal of the stimulus should be cautious

Swiss real GDP continued to decline in the second quarter albeit at a much reduced pace. Leading indicators suggest that a recovery is underway. According to the latest OECD projections, activity is expected to contract by 2% in 2009 and to resume growth at a rate of 1% in 2010 and 2% in 2011 with the unemployment rate rising to 5%. The timing of the exit strategy will be crucial for monetary and fiscal policy. Since the recovery is still fragile, the current expansionary monetary stance will need to be maintained until the recovery strengthens and deflationary pressures recede. However, monetary stimulus will need to be gradually withdrawn to ensure that price stability over the medium term is not threatened by the extra liquidity that has been created. Similarly, the fiscal stance should avoid becoming restrictive in 2010 as some cantons are likely to withdraw part of fiscal stimulus in 2010, owing to particularly stringent fiscal rules. Enhanced fiscal co-operation between the cantons and the federal government would make it easier to achieve the

appropriate policy mix, both in the recovery phase of the current cycle and in the longer term, while ensuring the budgetary independence of cantons guaranteed by the constitution.

The crisis is likely to have a long-lasting impact on the economy

In the medium-term, the fall-out of the global financial crisis for Switzerland may be substantial. The current recession is likely to lead to an unprecedented rise in unemployment, and there is a risk that part of it becomes persistent. In view of the long duration of unemployment spells as well as the diminished procyclicality of immigration inflows, the effectiveness of placing activities of public employment services needs to be examined, as recommended in the previous *Survey*, including with respect to social assistance recipients. The government has presented draft legislation shortening the duration of unemployment benefit entitlement for some workers from 2011. Scope for expansion of financial services is likely to be diminished. However, the relatively benign credit supply conditions in the aftermath of the crisis suggest limited downward adjustment of potential output driven by a lower capital stock. Growth performance was strong in the years preceding the crisis, driven by external demand, and was accompanied by marked expansion of employment. The past weakness of trend productivity growth appears to continue. The economy-wide gap in productivity with respect to best-performing countries is substantial. To foster stronger and ensure sustainable growth, improvements in structural policies (*e.g.* financial sector regulation, product market and in education policies) are needed, which are outlined below.

Monetary policy needs to react to the cycle while avoiding deflation and inflation risks

The recession has given rise to some fears of a deflationary spiral in Switzerland. The risks of this are small, if the economy recovers as expected. When interest rates were up against the zero lower bound, interventions in the foreign exchange market to prevent an appreciation of the Swiss Franc became an important element of quantitative easing and of a deflation-avoiding monetary policy and proved to be successful. The SNB has correctly emphasised its intention not to engage in competitive devaluation. Furthermore, the usefulness of the exchange rate instrument is limited in the context of a global recession that makes deflationary pressure persistent. *In the current situation, the main challenge facing the SNB concerns the exit strategy. As the economy recovers the SNB should withdraw excess liquidity in order not to jeopardize price stability over the medium term. At the same time, it must not act too soon, for otherwise the recovery could be put at risk. The exit strategy must be clearly communicated.*

One of the debates arising from the global financial crisis is whether monetary policy needs to lean more strongly against the credit cycle in upswing periods in order to avoid the build-up of financial market imbalances. Philips curves flattened prior to the financial crisis, perhaps reflecting the increased credibility of monetary policy oriented to price stability. As a result, the impact of low policy rates in periods of credit expansion may not make itself manifest in inflation but through other imbalances, such as asset bubbles. Low interest rates in Switzerland did not generate strong growth of lending domestically. However, carry trade in Swiss Franc may have reflected growing imbalances. The SNB

elaborates its inflation forecast with a portfolio of econometric models and indicators, which incorporates credit and money supply growth. *The SNB should further examine whether its current framework already takes sufficient account of the potential costs of asset imbalances.*

Upon recovery, fiscal policy needs to address long term challenges

The impact of the global financial crisis on government finances is likely to be long-lasting, on account of deferred tax collection, the budgetary burden of higher unemployment, and the significant weight of tax revenues related to financial market activity. There is a significant risk that federal budget outcomes may breach the debt brake rule, which requires a balanced budget over the cycle, if corrective action is not taken. *Areas of spending reductions need to be identified as soon as possible to abide by balanced budget rules at federal and sub-national levels in the medium term, for instance through reform of healthcare spending programmes, as recommended in the 2007* OECD Economic Survey.

Furthermore, demographic change is projected to raise annual government spending by 5% of GDP by 2050 with unchanged entitlement programmes. The ageing burden will mainly fall on the federal level. The authorities are firmly committed to the debt brake rule which will reduce the public debt to GDP ratio ahead of demographic ageing. In addition, the government should implement reforms that help to offset part of the trend increase in ageing costs, in particular by *a reform of the first pillar defined-benefits pension system.*

Public finances remain subject to relatively small contingent liabilities, amounting to 6% of GDP, resulting from the exposure of the SNB to impaired assets transferred to a dedicated fund. However, the large size of several systemically important financial intermediaries' balance sheets – 600% of GDP in the case of the two largest banks taken together – implies that a failure of one of them could potentially be very costly. There is some indication that capital markets have become sensitive about the link between default risk of financial intermediaries and risk *premia* on government debt. *Steps to reduce the risk of failure of a large intermediary and moral hazard resulting from public support to failing intermediaries, as outlined below, are therefore crucial to avoid long-term risks to public finances and to keep borrowing costs low.*

Swift action has ensured stability of financial intermediaries, but supervision, especially of the large banks, needs to be strengthened further

Since the outbreak of financial market turmoil, asset write-downs in particular of the biggest Swiss bank relative to its capital base have been larger than of most of its peers surviving the crisis in the US or among EU countries. Nonetheless, negative consequences for the Swiss financial system have been contained. In part, this reflects the provision of ample liquidity by the SNB. The early decision to transfer toxic assets from UBS to a dedicated fund helped to partially restore confidence. Moreover, the domestically oriented smaller banks have been little affected by the crisis. However, there is a particular need for Switzerland to limit the probability of failure of a large intermediary.

The Swiss financial market regulator (FINMA) was one the first to address weaknesses in the supervision of systemically important banks revealed by the global financial crisis. *First,* guidelines have been issued on compensation for bank and insurance staff to

mitigate incentives for excessive risk-taking. *Second*, the two largest banks will need to maintain minimum risk-weighted capital adequacy requirements (CAR) of at least 50% above the standard defined by the Swiss implementation of the minimum set by the Bank of International Settlements (BIS) from 2013 onwards. *Third*, this ratio will be increased to two times the standard when the bank's profits are high. *Fourth*, the large banks will be subject to a minimum capital requirement of 4% of total assets ("leverage ratio") for individual units and of 3% at the group level from 2013. This leverage ratio includes all assets acquired in investment banking although domestic loans are to be excluded.

However, the specified lower minimum for the CAR and the specified group-level minimum for the leverage ratio are below the ratios currently maintained by a significant number of international banks, including the two large Swiss banks. A definition of a cyclical criterion based on market rather than individual bank performance would more effectively counteract the tendency for excessive risk-taking when credit markets are buoyant and avoid imposing lower capital costs on weakly performing banks. *In view of the particular risks stemming from any potential large bank failure in the Swiss context, it should be ensured that capital adequacy and leverage ratios for the two big banks are set such that they are close to the highest actually observed ratios of major international banks*. Given current circumstances this would imply keeping capital adequacy ratios to at least 150% of the current BIS minimum in the near-term and raising them to twice that level once the banks' financial strength has been restored as well as a leverage ratio of at least 4% at the group level. Decisions will also need to adapt to emerging international supervisory standards. *The rule-based mechanism mandating cyclical capital buffers that rise during market expansions should be based on indicators of the market cycle and risks, rather than on bank profitability. Domestic lending should be included in its calculation*.

The share of assets and liabilities held in foreign currency is large. Owing to the mismatch of maturities between assets and liabilities, a liquidity shortage in foreign currency could trigger a run by creditors and potentially a currency crisis, although banks have access to liquidity facilities of foreign central banks. Hence, liquidity regulation and oversight of the largest institutions needs to be given high priority and should be extended to other financial institutions over time. The authorities are considering specific foreign currency liquidity requirements imposed on banks. *Consideration should be given to specifying a minimum ratio of liabilities likely to be the most stable relative to foreign currency denominated assets as part of the liquidity regulation*. Deposit insurance is currently unfunded and therefore particularly vulnerable to requiring public funds when a systemic crisis occurs. *Partial funding of the deposit insurance system should be instituted. The present ceiling on insured deposits should be revised if necessary to keep in line with further changes in other countries*. The government has submitted a reform of deposit insurance to public consultation, foreseeing partial funding and risk-weighted contribution rates.

The capabilities of the supervisor are improving but need to be further bolstered…

FINMA enjoys a degree of independence from government broadly similar to that of peers in other OECD countries and the powers assigned to it follow international best practice. Nonetheless, ensuring the financial supervisor's freedom is a particular challenge for a small country with an important financial services industry and cannot be assured through formal institutional arrangements alone. FINMA's staff resources appear relatively limited in view of

the size of the intermediaries it regulates and significant recourse is taken to external auditors primarily on the banking side. *FINMA's personnel and other resources should continue to be reviewed to determine if they are adequate. In particular, compensation policies should be sufficiently flexible to attract and retain highly-skilled staff. Consideration should be given to widening the range of authorized external auditors and to regularly rotating those responsible for particular institutions, as a means to sustain the objectivity of the oversight process.*

… with a stronger implication of the SNB in macro-prudential regulation and institutionalized international co-operation

Weaknesses in supervisory frameworks identified in OECD countries include inadequate monitoring and assessment of systemic risks and limited ability to oversee the cross-border activities of large complex institutions. In Switzerland, besides FINMA, the SNB is responsible for monitoring developments in the banking system as a whole while current arrangements provide for the exchange of information and co-ordination on related risks between the SNB and FINMA. The large insurance and pension fund intermediaries are not included in the current arrangement of macro-prudential oversight. *Macro-prudential oversight needs to be broadened to include monitoring of all the major components of the financial system, including pension funds and insurance. In conformity with its legal mandate to contribute to financial sector stability, the SNB should lead, together with FINMA, which should remain the enacting body, the elaboration of macro-prudential standards and make its views public.*

Stronger cross-border arrangements with financial authorities in other countries are essential to ensuring effective supervision of the largest Swiss financial institutions. Internationally-coordinated contingency plans to unwind failing multinational intermediaries orderly, limiting the need for bail-outs, would be particularly important for Switzerland. *Steps should be taken to further develop the colleges of supervisors for each of the two largest banks to coordinate as well as develop common contingency plans for future crises.*

In March 2009 the Swiss government endorsed the OECD standard of transparency and exchange of information in tax matters, which creates an obligation to exchange information, including banking information that is foreseeably relevant to the correct enforcement of partner countries' tax laws. Since then, the Swiss government has removed its reservation to Article 26 of the OECD Model Tax Convention, has already revised its tax treaties with several OECD countries in the course of 2009 and is negotiating with several others. One or more of these treaties may be subjected to approval by referendum. *The OECD welcomes this important policy change and encourages Switzerland to continue to implement this decision as rapidly as possible.*

Productivity performance remains considerably weaker than in best-performing OECD countries

While GDP per capita is among the highest in the OECD, sustained by high employment rates, aggregate productivity is still held back by low performance in sectors not exposed to international competition, keeping the overall price level of goods and services high. In particular, housing costs contribute to the high living costs. Reforms of product market regulation indicated in previous *OECD Economic Surveys* need to be pursued further, notably by improving framework conditions in network industries, further opening government procurement to competition and further dismantling protection of domestic agriculture.

Lowering the high cost of housing would raise economic welfare considerably

Among the mostly non-tradable services, the gap in prices of housing services relative to those in other OECD countries is particularly large. The negative impact on welfare is significant, as households spend almost 25% of their disposable income on housing services. Supply has responded little to demographic pressures on demand in recent years, particularly in some regions, which have led to large increases in rents for new housing. The heterogeneity of regulations and building laws set by cantons and local governments limit competition in the construction industry. *These regulations should be harmonised*. To reduce differences in technical standards set by cantons and local governments, private parties could be given the right to take legal action against the refusal of construction permit applications on the basis of the Internal Market Act.

Changes in rents for incumbent tenants are mostly indexed to changes in nominal interest rates, which may prevent rents from rising in line with inflation or reflecting supply and demand pressures. Even upon a change of tenants, restrictions on changing rents still apply. These regulations risk distorting the price of old housing relative to new housing, privileging settled tenants compared to more mobile population groups and likely distorts incentives to invest into maintenance of existing houses. *Restrictions on the setting of a new rental price when a new tenant moves into a dwelling should be removed. In the longer term, adjustment to market prices should be achieved for all rental properties.*

Density of residential building in suburban areas appears to be low. Municipalities face incentives to attract rich households, resulting from tax competition and funding responsibilities of social services for low and middle income households. A relatively small share of municipalities' tax revenues consists of taxation of capital gains on residential property transactions and real estate taxes, weakening incentives to develop land for dense residential development. *Cantons should ensure that demographic determinants of demand for social services are fully taken into account in intergovernmental transfers for municipalities. With a view to raising the supply of affordable housing, municipalities' incentives to develop buildable land should be strengthened, for example, by further raising the weight of real estate tax revenues in municipalities' budgets*. Such changes in the structure of tax revenues would also shift the Swiss tax system towards a less growth-impeding structure.

Improving education outcomes helps raise productivity performance in the long-term

The Swiss education system performs well in many important dimensions. Education outcomes at age 15 are excellent in international comparison, although this reflects in part high education attainment among parents and high per-capita income. A well-developed vocational education system promotes the very successful integration of youth into the labour market. Universities enjoy an excellent reputation and participation in continuous education is among the highest in the OECD. Nonetheless, scope remains to improve productivity performance and living standards through education.

- While spending per pupil on primary and lower secondary education is high, the education outcomes of children with modest socio-economic background and children who are not native speakers of the local language fall short of high Swiss overall standards. This partly reflects the high share of school children with immigration

background relative to most OECD countries, but this fact makes successful integration particularly important. The provision of formal childcare and early childhood education can be useful in this regard, but is underdeveloped.

- In tertiary education, while public spending per student is generous in international comparison, attainment rates for young workers are low for a high-income OECD country. This reflects the size of the successful vocational educational system, in which some degrees offer qualifications that may be similar to tertiary qualifications in other countries. However, raising supply of workers educated at the tertiary level could improve productivity performance.

The contribution of pre-primary education and childcare to subsequent education outcomes could be improved

Attendance of pre-primary education is still relatively low, especially in institutional childcare at age below 4 and among children with low socio-economic background. Geographic externalities in the provision of childcare – with public funding mostly supplied by municipalities – contribute to underprovision. Federal subsidies are low, their design distorts competition between existing and newly created facilities, and they are not conditional on federal evaluation of quality. *Government subsidies towards the provision of childcare facilities for children below the age of 4 should be provided in the form of a nation-wide voucher scheme that would be linked to a system of accreditation of facilities*. 11 out of 26 cantons have agreed to introduce compulsory education from the age of 4 in a cross-cantonal agreement (the *HarmoS concordat*). In many cantons, doing so requires approval through a referendum. So far, 7 have rejected joining the concordat. *Compulsory, free pre-primary education from the age of 4 should be introduced, as foreseen in the HarmoS concordat, where this is not already the case. Common educational objectives for this educational phase should be set.*

Compulsory education can become more efficient

Differences across cantons in spending per pupil, resource utilisation and policies are considerable in compulsory education. While many cantons have made efforts to introduce mechanisms of accountability, these programmes have not generally allowed comparisons of school performance across cantons, foregoing the opportunity to determine best practice. Where the *HarmoS* concordat was approved, cantons will evaluate pupil performance against common education standards in various stages of compulsory schooling. *Implementation of this programme is important, so as to be able to identify best practice among cantonal education policies. The impact of differences in education policy, spending and resources across cantons should be investigated regularly and the results published so as to determine best practice.*

Schools have considerable autonomy in making personnel and budget decisions. Empirical evidence suggests that autonomy of schools in these respects can raise performance if combined with accountability. *Accountability of individual schools for education outcomes should be strengthened. To this end, external testing should be conducted at regular intervals over time and over the school career at all schools, and the results should be benchmarked against the newly defined standards.*

School management teams with clearly defined responsibilities make it easier to hold schools accountable for performance. *In schools of sufficient size head teachers should be the rule. Their responsibilities should include setting of objectives, developing plans to improve education practice as well as evaluate and help develop teaching skills. Head teachers should be required to acquire management skills in all cantons*. Efforts to define such minimum standards nationwide are underway.

The impact of socio-economic background on educational outcomes and attainment can be reduced

While cantonal school systems vary, with some cantons providing single-track compulsory schooling, most systems select pupils into tracks with different demands on pupils' academic performance. In most cantons first tracking occurs when pupils are 13 years old, although in a few this happens at the age of 11. In many cases parents appear to take the final decision about which track their children will enrol in. While the purpose of tracking is to provide education appropriate to students' abilities, socio-economic background and differences in cantonal procedure appear to play a determining role. Yet the tracking decision has a crucial influence on the probability to pursue university education later on and may limit the access of talented youth from low socio-economic background to higher education. *First tracking should be postponed to the age of 13, as foreseen in the HarmoS concordat, at least.*

Funding mechanisms for tertiary education could be improved further

Swiss universities rank highly internationally in terms of research output, thanks to wide-ranging autonomy and generous government funding. Over the past 10 years, the introduction of the universities of applied sciences, where the teaching contents are more practice-oriented compared to the more academic education in universities, have improved opportunities for graduates from the vocational upper secondary education track to obtain tertiary academic credentials. The increase in supply which will level off due to the maturing of the system has been absorbed by the labour market easily and with high match quality. It has been supplemented by large immigration of tertiary graduates which suggests that a larger supply of tertiary graduates could help the most productive firms to expand. Moreover, as workers age, labour market performance of tertiary graduates evolves considerably more favourably than for workers with intermediate training. As suggested by stronger wage growth over the life cycle of tertiary graduates and possibly a lower depreciation of acquired skills, a larger supply of tertiary graduates could have benefits for productivity performance in the context of demographic ageing.

Fees have been introduced in all of these institutions, although they finance a negligible share of education costs. However, few students receive financial support through government-sponsored loan schemes. An inter-cantonal agreement is in the process of being adopted and will set common standards for means tested support to students. If adopted, it will allow disbursement of one third of the financial support in the form of a loan. *While continued access to grants for students from the most disadvantaged backgrounds should be ensured, government-sponsored loan schemes with income-contingent repayments should be more widely introduced*. Such loans could improve access, especially in tertiary vocational

schools, for which fees are already onerous, while their payoff in terms of improved earnings and employment prospects is particularly high. They are particularly effective in raising access if they also cover living expenses. Since students obtain a large part of the benefits of their studies through higher subsequent earnings, *study fees at institutions offering tertiary academic education should be raised*. Empirical evidence indicates that raising study fees is compatible with widening access if accompanied by government-sponsored loan schemes. Moreover, such fees could help prevent the risk that the high budgetary cost of tertiary academic education dissuades cantons from widening access to pathways leading to university education when the economic benefit is significant.

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Chapter 1

Getting out of the crisis

As in most OECD countries, the global financial crisis pushed the Swiss economy into recession. However, despite the weight of financial intermediation in economic activity and significant losses of the large internationally active Swiss banks in the US subprime mortgage market, Switzerland has so far performed better than most OECD economies. This relatively benign course of events reflects the sectoral specialisation of manufacturing, the financial health of the domestically-oriented smaller banks, the absence of a housing cycle and a monetary stance that turned expansionary relatively early on. Nonetheless, the current recession is likely to lead to high unemployment part of which risks becoming persistent. Also, deflation risks rose as core inflation was getting closer to zero. In the medium-term, the fall-out of the global financial crisis for Switzerland could be substantial: scope for expansion of financial services may have diminished and the weakness of trend productivity growth appears to continue, denting the still significant lead of Switzerland's living standards vis-à-vis many other OECD countries. Furthermore, the impact of the global financial crisis on the government's finances will be substantial and lasting, while ageing-related spending pressures mount in the longer term.

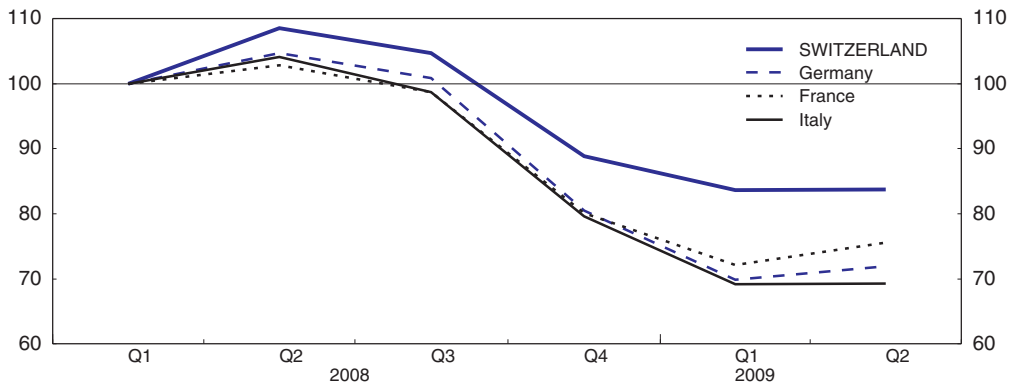
The recession in Switzerland is less deep than in main trading partners

The sectoral pattern of goods exports helped mitigate the trade shock

As with most OECD economies, Switzerland entered a recession in the course of 2008, following several years of growth in GDP which was stronger than in the euro area and which was accompanied by a marked expansion of employment (see the 2007 *OECD Economic Survey of Switzerland*). The recession was led by a decline in exports of goods and services (Figures 1.1 and 1.2) and reflected a sharp fall in world trade. The decline in exports was somewhat aggravated by the appreciation of the Swiss franc, but was nonetheless less marked than in main neighbouring trading partners. Final domestic demand also appears to have been more resilient. Industrial production fell by about 10% on aggregate when it reached its trough in the first quarter, about half the fall experienced by euro area countries. OECD projections foresee a recession of smaller magnitude than in the euro area, although the recovery is expected to be slow. According to the latest OECD projections activity is expected to contract by 1.9% in 2009 and will resume growth at a rate of 0.9% in 2010 with the unemployment rate rising to about 5% (Box 1.1).

Figure 1.1. **Exports of goods and services in the wake of the global financial crisis**

2008Q1 = 100[1]



1. Index calculated on the value of quarterly exports of goods and services measured in US dollars (national accounts basis).

Source: OECD, *OECD Economic Outlook n° 86 database.*

StatLink http://dx.doi.org/10.1787/747252540562

To a considerable extent, the relatively less unfavourable developments in trade reflect the sectoral composition of Swiss goods exports: pharmaceuticals and medical instruments' exports, which contribute 35% to the total, remained stable (year-on-year) in the first 6 months of 2009. The pharmaceuticals industry continued to make a strong positive contribution to gross manufacturing production, with the industry contributing around 20% to total manufacturing value added[1] (compared to about 3½ per cent in the euro area).

Box 1.1. **Short-term economic prospects – main indicators**

	2006	2007	2008	2009	2010	2011
	Current prices CHF billion	Percentage changes, volume (2000 prices)				
Private consumption	286.4	2.4	1.7	1.2	1.2	1.4
Government consumption	55.2	0.5	–0.1	2.3	1.1	0.8
Gross fixed capital formation	104.4	5.2	0.4	–2.9	1.1	2.1
Final domestic demand	446.0	2.8	1.1	0.4	1.2	1.5
Stockbuilding[1]	4.0	–1.3	–0.7	1.2	–1.1	0.0
Total domestic demand	450.0	1.3	0.4	1.7	0.0	1.5
Exports of goods and services	257.5	9.5	2.9	–12.5	3.4	6.2
Imports of goods and services	217.0	6.0	0.4	–8.2	2.1	6.3
Net exports[1]	40.5	2.4	1.4	–3.4	0.8	0.5
GDP at market prices	490.5	3.6	1.8	–1.9	0.9	1.9
GDP deflator	–	2.5	2.2	0.3	0.5	0.3
Memorandum items						
Consumer price index	–	0.7	2.4	–0.6	0.6	0.4
Private consumption deflator	–	1.3	2.2	0.1	0.7	0.4
Unemployment rate	–	3.6	3.5	4.3	4.9	4.8
General government financial balance[2]	–	1.6	1.6	–0.7	–1.3	–1.3
Current account balance[2]	–	10.0	2.3	8.7	10.2	10.9

1. Contributions to changes in real GDP (percentage of real GDP in previous year), actual amount in the first column.
2. As a percentage of GDP.

Source: OECD, *OECD Economic Outlook n° 86 database.*

This resilience of pharmaceuticals and medical instruments exports helped compensate for a drop in financial services exports. These exports – which amount to 4% of GDP – dropped by about 12% year-on-year in the second quarter of 2009 (by 25% since the peak before the financial crisis).[2] Net receipts from both goods and services trade declined by a similar magnitude, with the decline in services fully accounted for by financial intermediaries. Exports of investment goods and intermediate goods, such as chemicals and machinery, also suffered particularly large declines, but have a smaller weight.

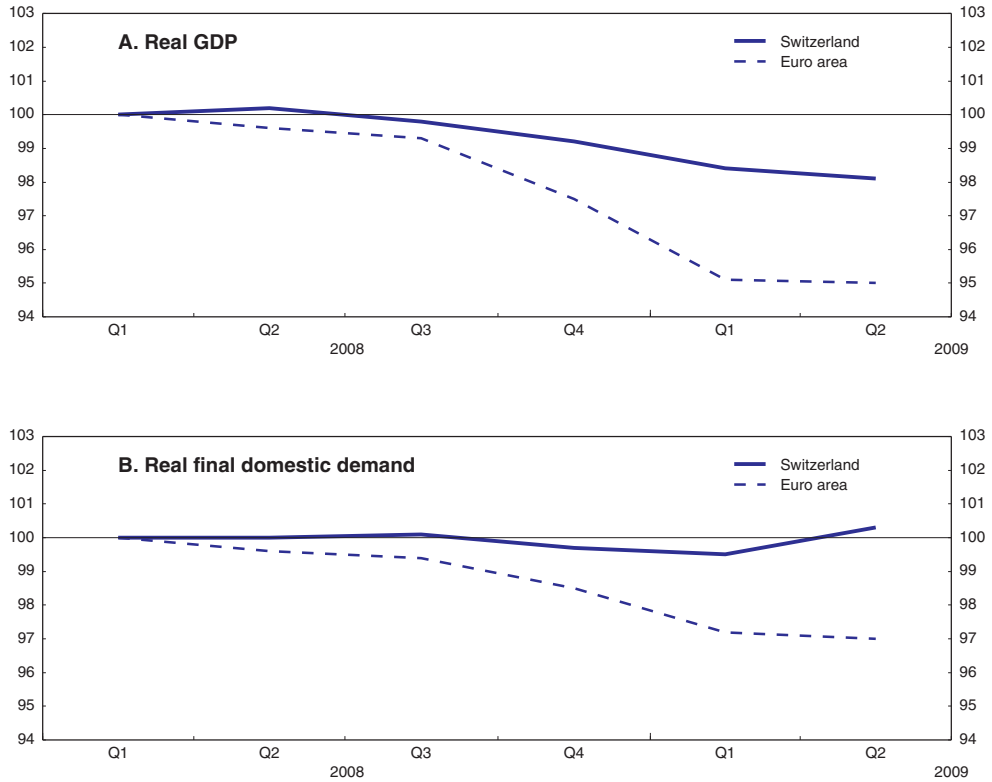
Falling commission income has contributed to the decline in economic activity…

The sharp decline in financial services – which contribute about 11 % to Swiss GDP – made a substantial negative contribution to GDP growth, though less in the second quarter of 2009 (Figure 1.3). This development has been particularly marked for banking services, which account for about 8% of GDP, and is thus far broadly in line with the decline observed in the previous recession in 2001.

40% of banking services value added reflects fees and commissions income, mostly in wealth management. In the past, fees and commission income accounted for virtually all cyclical variation of banking services' value added (OFS, 2007).[3] Banking services in Switzerland are strongly specialised in wealth management compared to the banking sectors in other OECD countries (Schriber, 2007). As in previous financial market cycles, fees and commission income has been affected by lower share prices, increasing risk aversion and declining stock market turnover. Indeed, reflecting the falling prices of

Figure 1.2. **Real GDP and final domestic demand in the wake of the global financial crisis**

Seasonally adjusted volumes, 2008Q1 = 100



Source: OECD, *OECD Economic Outlook n° 86 database.*

StatLink http://dx.doi.org/10.1787/747265726141

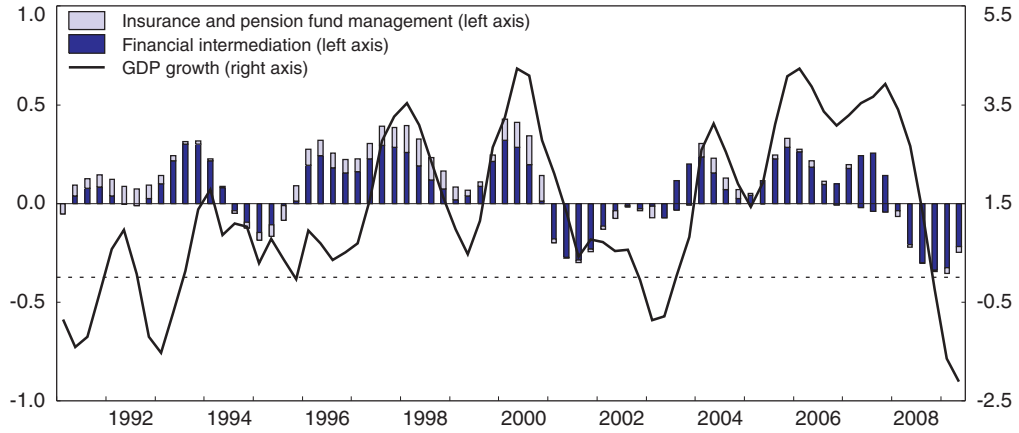
securities, financial wealth held in Swiss bank custody accounts diminished sharply in 2008, to about 8 times the value of Swiss GDP, and has remained stable since (SNB, 2009a). Banks' securities trading has also been subject to marked cyclical fluctuations and is likely to be particularly strongly affected by the financial crisis, as banks halved their trading books in the course of 2008 (SNB, 2009b). However, this activity has played a relatively minor role for banks in Switzerland, accounting for around 15% of value added before the crisis (Schriber, 2007).[4]

... but domestic credit conditions helped support domestic demand despite asset write-offs

According to estimates by Bloomberg (2008), the two big Swiss banks, UBS and CSG, belong to the financial institutions with the highest write downs and losses in 2008. Moreover, only part of the impact on equity of these losses were offset by private and government recapitalisation. The two banks also sharply reduced their foreign asset positions (Figure 1.4 and Chapter 3). By contrast, the other, smaller banks (including the cantonal banks owned by cantonal governments), which are much less exposed to foreign business, even expanded the value of their assets. Most of the expansion came from domestic assets.

Figure 1.3. **The contribution of financial-sector value-added to economic growth**

Year-on-year growth rate and growth contributions, at constant prices



Source: OECD, *OECD Economic Outlook n° 86 database*; State Secretariat for Economic Affairs (SECO).

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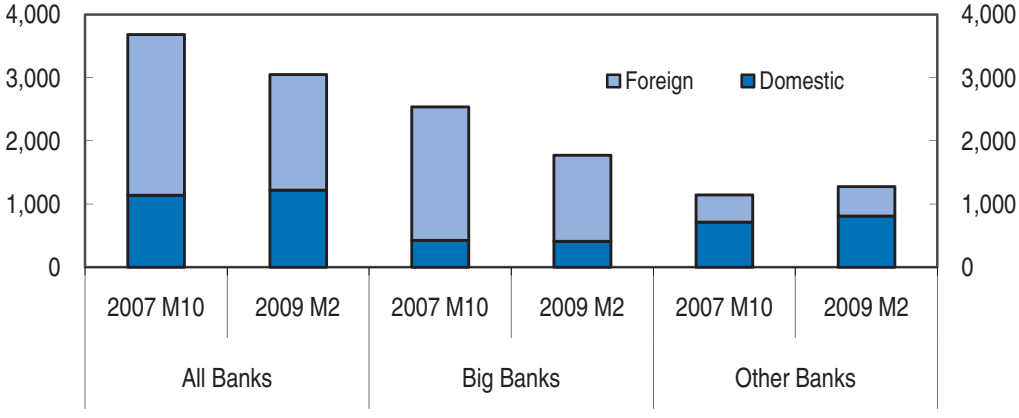
Figure 1.4. **Assets of banks**

In billions of CHF



Source: SNB.

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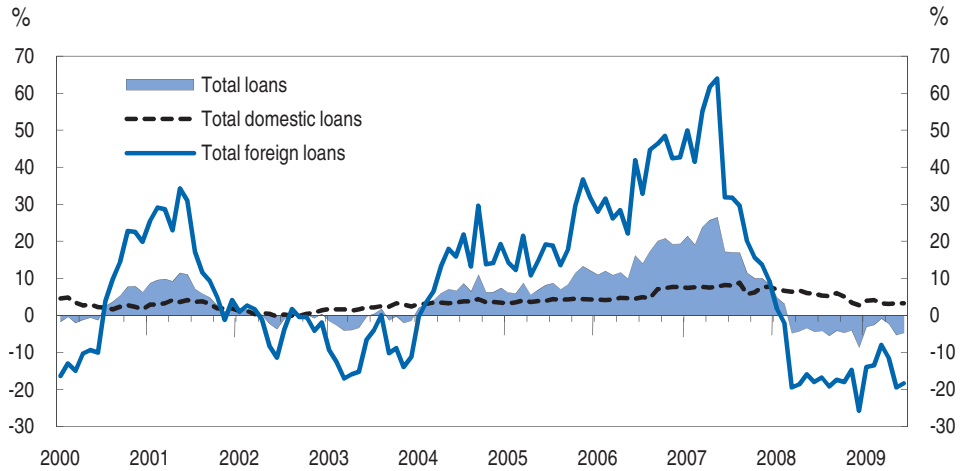
The asymmetric effect of the financial crisis on the big, internationally active banks, on the one hand, and the small domestically active banks, on the other hand, is reflected in credit growth (Figure 1.5). Three quarters of foreign lending is done by the two big banks, while the small banks account jointly for a higher share in the domestic market lending than the big banks' share of 36%. Foreign lending growth reversed abruptly towards the end of 2007, while domestic lending slowed down more modestly. The smaller banks attracted new clients and rising deposits throughout the crisis. The increase may be attributed to the move into safety (see Chapter 3). The increased funding allowed the small, domestically-oriented banks to regain their importance in supplying the domestic credit market, in particular in the market for corporate lending to bigger firms (*e.g.* NZZ, 2009a).

Switzerland has not suffered from a housing cycle. While the level of gross indebtedness of households in Switzerland is high in international comparison, amounting to about 120% of GDP in 2007 and consisting mostly of mortgages, it has

Figure 1.5. **Growth of lending by Swiss banks**

Year-on-year growth rates



Source: SNB, *Monthly Statistical Bulletin.*

StatLink http://dx.doi.org/10.1787/747364385437

remained stable over the past 10 years (SNB, 2007, 2005), as have house prices. Prudent regulatory standards concerning domestic mortgage lending, following the domestic housing market crisis in the early 1990s, have contributed to this stability (Chapter 3).

The impact of the sharp decline of stock prices on asset portfolios in the domestic second (compulsory) and third (voluntary) funded pillars of the pension system has been moderate, reflecting the modest weight of equity in pension fund portfolios. In the course of 2008, the pension funds in the second pillar (compulsory capitalised pension funds) suffered estimated losses in the value of portfolios of 11.7%,[5] pushing the coverage of future expected pension liabilities to 97.5% in funds for private sector workers (the shortfall amounts to about 3% of GDP). Pension funds are required to present plans showing how to restore coverage of future payment obligations this year, and these may include increases in contribution rates. These measures, which can be spread over a period of 7 years, are unlikely to have a substantial impact on consumer spending (OFAS, 2009). On the other hand, the deterioration of the financial situation of the pension funds reinforces the need to reform the regulated parameters governing pension payments, as recommended in the previous *OECD Economic Survey* (see Annex 1.A1), so as to avoid excessive risk taking by these funds.

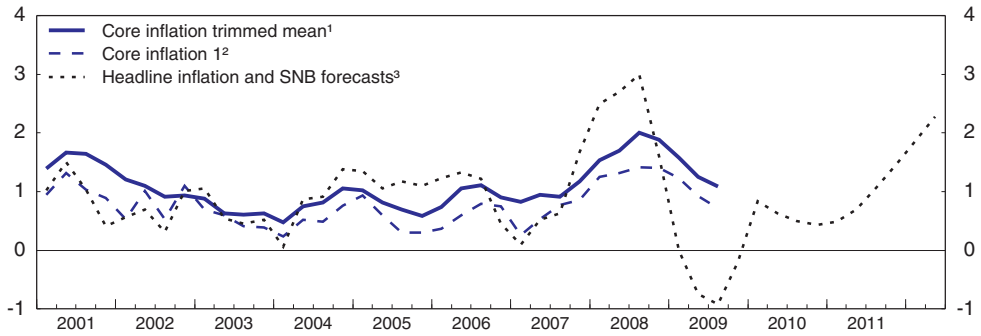
The recovery is expected to be slow and some risk of deflation remains

While indicators of business sentiment show clear signs of improvement, the recovery is expected to be slow and dependent on world trade prospects. Private consumption will be held back by higher unemployment than in the recent past, and there is a risk that fiscal policy may damp activity somewhat next year, as sub-national governments adhere to strict budgetary rules. Financial services are unlikely to return to buoyant growth rates seen prior to the crisis.

According to the inflation forecast by the SNB, inflation will increase slightly until mid-2011, but some risk of deflation will remain (Figure 1.6). Headline CPI was constant (m-o-m) in September, putting the y-o-y inflation at –0.9%. Core CPI (excluding energy, petrol, food, beverage and seasonal products) also slowed to 0.6% y-o-y in September, the

Figure 1.6. **Headline and core consumer price inflation, in per cent, inflation forecast by the Swiss National Bank**

Quarterly average, year-on-year change



1. The index, calculated by the SNB, excludes the goods with the strongest upward and downward variations (15% in either direction) from the national consumer price index.
2. Total index (calculated by the SFSO) excluding food, beverages, tobacco seasonal products, energy and fuels.
3. Headline inflation forecast of the SNB as of September 2009 with Libor at 0.25%.

Source: Swiss National Bank.

StatLink http://dx.doi.org/10.1787/747388028326

lowest level since mid-2007. With an expected persistent large output gap, weak labour market and weak import prices, core inflation may keep falling and could even reach negative territory, fuelling risks of deflation, if the recovery does not take hold as foreseen.

The crisis may have a long-lasting impact on the Swiss economy

The marked deterioration in the labour market could be persistent

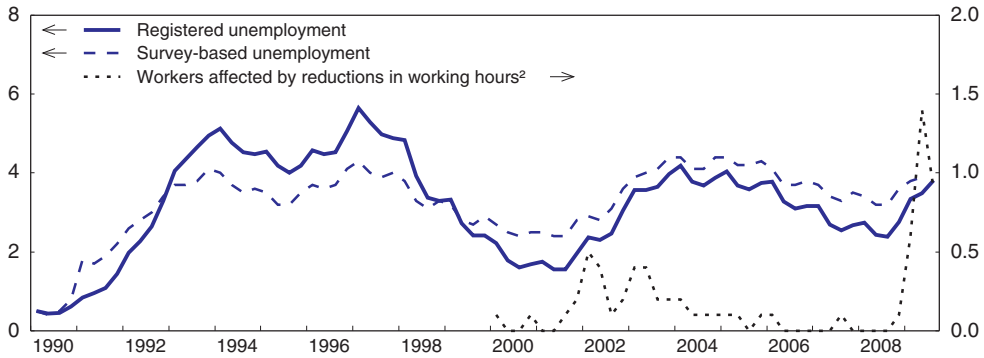
While the survey-based unemployment rate remains among the lowest in the OECD area, it has been rising and reached 4.1% in the second quarter of 2009. Moreover, over the past 20 years, the unemployment rate has edged upwards from a business cycle to the next (Figure 1.7). In the second quarter of 2009, employment declined by 0.3% year-on-year, while the labour force continued to expand, reflecting continued immigration, which started to fall only in the first months of 2009. Relatively large reductions in employment in some sectors, including through redundancies, notably in industry (–2.7%) and financial services (–0.9%), were partly offset by employment growth in some services sectors.

The sharp rise in the number of workers on the short-time work scheme slowed the rise in unemployment. Firms confronted with a sudden temporary drop in demand can reduce working hours of their staff with part of the resulting earnings shortfall compensated by payment of partial unemployment benefits. The unemployment insurance compensates the loss of earnings for 80% of the reduced hours, including social security payments, except old age pension contributions. In response to the impact of the recession on the labour market, the federal government temporarily reduced the copayment requirement on businesses substantially and extended the maximum duration of this scheme from 12 to 18 months. The government plans an extension to 24 months if it considers it necessary.

The rise in unemployment could be large by Swiss historic standards, with the unemployment rate perhaps reaching 5% at the end of 2010 (Box 1.1) and there is a risk that part of it could become persistent. In prolonged periods of relatively low capacity utilisation, firms could reduce the number of workers participating in short-time work

Figure 1.7. **Unemployment and short-time work**[1]

Quarterly data, not seasonally adjusted



1. In per cent of labour force.
2. 3rd quarter 2009 data for July only.

Source: OECD, *Main Economic Indicators database* and the State Secretariat for Economic Affairs (SECO).

StatLink http://dx.doi.org/10.1787/747388674142

schemes and the rise in unemployment could accelerate. Also, the average duration of unemployment spells has been unusually long in international comparison, for a country with low unemployment (OECD, 2007). Low unemployment inflow rates have helped to keep unemployment low in the past. The impact of large inflows into unemployment would be magnified proportionally by longer expected durations of unemployment spells. Moreover, a relatively long expected duration of unemployment spells would raise the time required to bring the unemployment rate back to pre-crisis levels once the shock to the unemployment inflow has subsided. Finally, as pointed out in the 2007 *OECD Economic Survey*, migration inflows, which have traditionally helped to cushion the impact of the business cycle on the labour market, have lost some of their marked procyclical behaviour. Changes in migration policy over the years have contributed to this development, including the free movement of workers with regard to EU countries applied from 2002 onwards and fully in force since 2007. By contrast, flows of cross-border workers appear to have maintained their procyclical behaviour. Overall, there appears to be the need to further increase the effectiveness of public employment services, including by strengthening financial incentives of the cantons to place the unemployed into jobs, as recommended in the 2007 *OECD Economic Survey* (Annex Table 1.A1).

A decomposition of the trend increase in unemployment over the past 20 years by age groups shows that the increase has disproportionately fallen on workers below the age of 24, reflecting increasing problems of workers who enter the labour market with lower secondary education and indicating a gradual deterioration of labour market entry conditions for young workers. A breakdown of all age categories by education attainment shows that, in absolute terms, most of the trend rise is accounted for by a rise in the unemployment rate of workers with intermediate vocational degrees.[6] This reflects the high and increasing demand for highly skilled workers in Switzerland.

Around 75% of 16 year-olds enter the labour market with an apprenticeship, which allows them to obtain an upper secondary vocational degree through mostly workplace-based education. Although there was no marked shortfall of apprenticeship supply as of June 2009, the substantial training outlays by firms have investment characteristics and the offer of places has been subject to strong cyclical influences in the past. Indeed during

the last downturn, between 2001 and 2004, the number of apprenticeships relative to the population of 16 year-olds dropped by 5 percentage points (Höckel *et al*., 2009). At present, demographic developments may be supporting the market, as shrinking cohorts of young school leavers reduce supply and induce forward-looking firms to sustain demand. Nonetheless, a dearth of supply could still arise, which would affect the stock of human capital of several age cohorts throughout their lifetime. A recent OECD report has proposed a number of measures to support the supply of apprentices should it decline, including the provision of more school-based education and subsidisation of idle production capacity for training purposes (Höckel *et al*., 2009).

Revenues arising from the financial sector could be durably affected

About 60% of banking services value added consists of indirectly measured services, which capture interest margins on lending and deposit taking. This component has shown little variation over past cycles (OFS, 2007). However, it has accounted for most of the trend growth in financial services over the past decade in volume terms. These revenues are closely related to the stocks of outstanding loans and deposits in bank balance sheets. In the current crisis, stocks of loans, especially to non-residents, have declined substantially (see above), contributing to reduction of bank balance sheets. Some lessons to be drawn from the global bank crisis are also likely to limit balance sheet growth in the future, as discussed in Chapter 3.

According to the Swiss Banking Association (2009), Swiss banks manage about 10% of global financial wealth under management (on- and offshore), of which half is managed by foreign branches and subsidiaries. Non-residents own 60% of asset portfolios in custody accounts managed by branches of banks in Switzerland. Of this share, institutional investors own more than half (Table 1.1). Non-resident individual and commercial account holders contribute about 20% of assets managed in such accounts (CHF 858 billion as of end-2008). In addition to wealth held in custody accounts, non-resident customers of Swiss banks hold claims on Swiss banks (*e.g.* in the form of savings accounts).[7] Estimates of the Swiss Banking Association suggest that the overall value of non-resident household wealth managed by branches of banks in Switzerland amounted to about USD 2 trillion (about CHF 2.3 trillion), equivalent to a market share of 27% in the world-wide off-shore management of private household wealth.[8] Nonetheless, domestic residents contribute a large share to total wealth managed in Switzerland. This can be explained by the exceptionally high level of financial wealth of Swiss households in international comparison, equivalent to 600% of GDP (about CHF 3 trillion in 2007). Close to one half of Swiss households' financial wealth is held in pension and insurance funds (SNB 2007).

Table 1.1. **Securities holdings in bank custody accounts**[1]

CHF billion

	Total	Private customers	Commercial customers	Institutional investors
Resident and non-resident custody account holders	4 012	1 176	398	2 438
Non-resident custody account holders	2 241	721	157	1 364

1. End of year 2008.
Source: Swiss National Bank (SNB), 2008.

In March 2009, the Swiss government endorsed the OECD standard of transparency and exchange of information in tax matters, which creates an obligation to exchange

information, including banking information that is foreseeably relevant to the correct enforcement of partner countries' tax laws. Since then, the Swiss government has removed its reservation to Article 26 of the OECD Model Tax Convention, has already revised its tax treaties with several OECD countries in the course of 2009 and is negotiating with several others. One or more of these treaties may be subjected to approval by referendum.

Several factors suggest that the impact of the adoption of the new standard on the contribution of wealth management services value added to overall economic activity may be modest. *First,* a significant share of wealth managed by Swiss banks appears to be owned by resident or institutional owners (Table 1.1), who are unlikely to seek wealth management services in Switzerland for the purpose of tax evasion. *Second,* many jurisdictions world-wide have reinforced co-operation in tax enforcement, limiting options to relocate funds brought to Switzerland for tax evasion purposes. *Third*, bank secrecy standards continue to convey advantages to holders of Swiss accounts for reasons unrelated to tax evasion.[9]

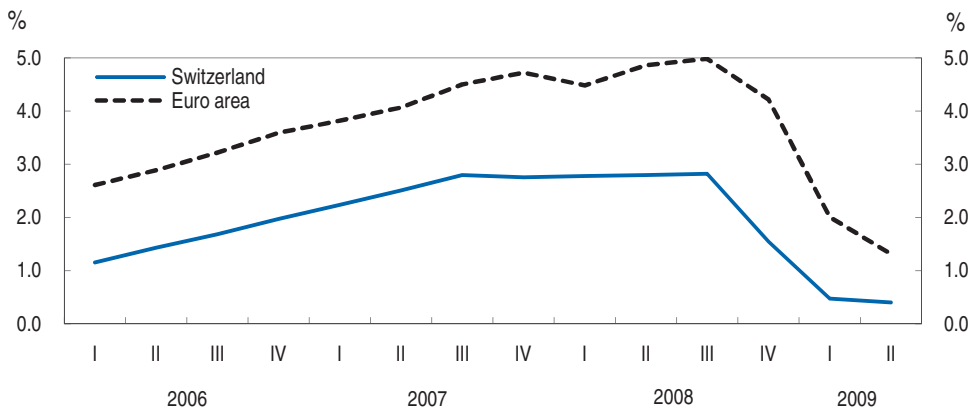
Macro-policy appropriately supported the economy but the timing of the exit strategy remains delicate

Monetary policy reacted swiftly to the external shock

Swiss Franc interbank interest rates remained broadly flat in the phase of financial turbulence that preceded the outbreak of the financial market crisis, notwithstanding increasing money market spreads throughout OECD currencies (Figure 1.8), avoiding restrictive monetary conditions shortly before the onset of recession. Moreover, in response to the international financial market crisis, the Swiss National Bank (SNB) lowered the target range for its policy rate (the three month Libor) from 2.25-3.25 % in October 2008 to 0-1% in December. Interest rates on weekly repurchase operations – the main monetary policy instrument – reached the zero lower bound (0.05%) in December. In order to maintain an expansionary monetary policy stance, the SNB took several measures to expand the monetary base, including through interventions in the foreign exchange market to avoid deflationary pressures that would result from the impact of an appreciation of the Swiss Franc. The effectiveness of Swiss monetary policy is analyzed in more detail in Chapter 2. More recently, the Swiss-Franc/euro exchange rate has remained almost constant. Nonetheless, the prices of

Figure 1.8. **Swiss Franc and euro 3-month Libor**

Quarterly averages



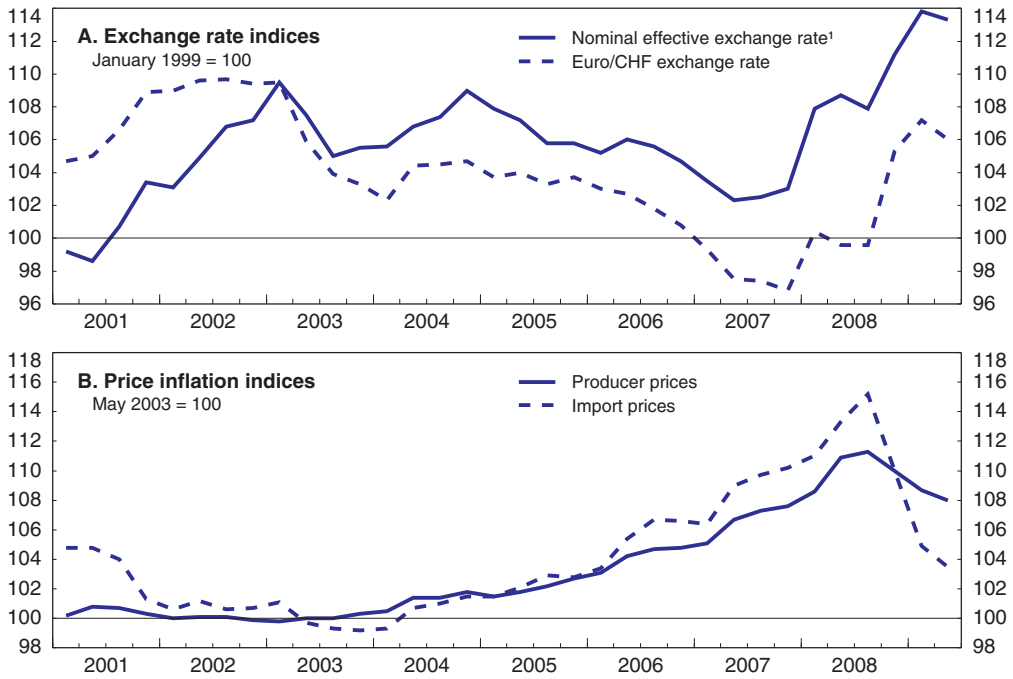
Source: OECD, *OECD Economic Outlook n° 86 database.*

StatLink http://dx.doi.org/10.1787/747461065427

imported goods kept falling, reflecting the build-up of excess capacity in main trading partners (Figure 1.9). As mentioned above, some deflationary risks persist and the timing of the exit strategy will be particularly delicate for the SNB (see Chapter 2).

Figure 1.9. **Nominal exchange rate and prices of imported goods and services**

Quarterly averages



1. *Vis-à-vis* 24 trading partners.

Source: SNB, *Monthly Statistical Bulletin*.

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Fiscal stimulus has been timely but its withdrawal should pay attention to deflationary risks

The expected expansionary fiscal policy in 2009 and 2010 is supporting the economy. On OECD projections, after a surplus of 1.6% in 2007 (latest historical figure available), the fiscal balance was projected to reach the same surplus in 2008, and a deficit of 0.7 and 1.3% of GDP in 2009 and 2010, respectively. The discretionary measures adopted by the federal and the cantonal governments as a reaction to the economic downturn are estimated to amount to about 0.7 % of GDP in 2009 and about 0.5% in 2010. The choice of stimulus measures (see Table 1.2) seems appropriate since measures focus on temporary infrastructure investment programmes and employment policies. Some modest tax measures – decided before the crisis and, hence, not summarized in the fiscal package table –, such as an increase in income tax deductions for families with children, are permanent and lead to further revenue shortfalls. Overall, most of the support of fiscal policy to the economy comes from automatic stabilisers. Higher benefit spending on account of higher unemployment is the main automatic stabiliser in government spending and is estimated to reach 0.5% of GDP in both years.

Compared to neighbouring European economies and more generally OECD economies, the Swiss fiscal stimulus was quite limited. For the average OECD country that implemented

Table 1.2. **Stimulus package in 2009 and 2010**[1]

In billions of+ CHF

	2009	2010
Total, *of which:*	3.7	2.5
Federal level	1.7	1.1
Expenditure measures	1.7	0.5
Road and railways infrastructure	0.3	0.1
Regional policy	0.1	
R&D, environment, rehabilitation	0.2	
Employment policies		0.3
Others	1.1	0.1
Revenue measures	0.0	0.7
Advanced repayment of the CO_2 tax		0.7
Cantonal and communes level	1.9	1.4
Expenditure measures	1.8	1.3
Revenue measures	0.1	0.1

1. The amount of fiscal measures differ from officially published estimates for two reasons: They refer to those expenditures only that are expected to affect the budget. Furthermore, only part of the total expenditures or revenues measures by cantons and communities are considered as explicit stimulus measures in response to the crisis (see also EFV, 2009 and NZZ, 2009b).

Source: SECO and OECD.

a stimulus package, the cumulated budget impact over the period 2008-10 amounts to about 2½ per cent of GDP, compared to roughly 1% for Switzerland. A bigger discretionary fiscal stimulus could have been envisaged in 2009 to have compensated for the relatively moderate impact of automatic stabilisers given the limited size of the government and to help support monetary policy in its efforts to fight deflationary pressures.

Discretionary support at the federal and sub-federal level has been *de facto* well-coordinated with a similar amount of fiscal stimulus both in 2009 and 2010 (Table 1.2). The Federal Council is in close contact with the Swiss Conferences of Cantonal Ministers of Economy and Finance to foster transparency regarding the adopted measures. However, no formal coordinating structure is in place. Since some cantons seem likely to withdraw their fiscal stimulus as soon as 2010, owing to stringent fiscal rules, an *ex-ante* fiscal co-ordination would help avoid any divergence in the direction of the fiscal stance, which could threaten the recovery and potentially increase deflationary pressures. To that aim, the authorities could institutionalize a co-operative arrangement between the sub-federal (at least the cantons) and the federal level. A key purpose of such an arrangement should also be to deal with medium and long-term fiscal sustainability issues.

In the coming years, corrective action is needed to achieve a balanced budget over the cycle…

Federal government budgets are required to comply *ex-ante* with the "debt-brake" rule (Box 1.2), which aims at balancing the federal budget over the cycle. However, outcomes may be worse *ex post* than allowed by the rule for two main reasons.[10] *First*, the actual tax elasticity may be significantly below the unit elasticity built into the rule. At least 10% of general government revenues (with a higher share at the sub-federal level) are related to financial market activity,[11] which has proven volatile in the past. Financial revenue's volatility may not be synchronised with the business cycle in the economy as a whole and may have wider amplitude than nominal GDP growth. At present, the compensation account could absorb some *ex post* decline in revenues without triggering procyclical

spending cuts; in 2008, it reached CHF 8.8 billion (1.5% of GDP). *Second*, the debt-brake rule uses real GDP to compute the expenditure ceiling. This introduces an element of pro-cyclicity since changes in inflation are correlated with changes in GDP. Although this element of pro-cyclicity should usually be moderate in normal times, it could become more pronounced in 2009 and the coming years if actual inflation significantly undershoots the long-term average, which is likely in 2009 as deflation is forecast. This would lead to a loss in revenues partially indexed to the price level, such as VAT, which will be considered as structural losses under the debt-brake rule. To avoid pro-cyclicity arising from long-term deviation of inflation, the authorities could consider estimating the expenditure limit by adding deviation of inflation from the long-term average in the debt-brake rule besides deviations from potential real GDP.

Besides the factors mentioned above, the government budgets are also likely to be adversely affected by deferred tax collection and diminished prospects for financial market activity, as well as facing the risks associated with unemployment persistence. The federal council has estimated that current budgetary policies would lead to a breach of the debt brake rule in the period 2011-13, with yearly structural deficits between CHF 2.5 and 4 billion. Consequently, corrective action is needed to achieve a balanced budget over the cycle.

... while structural reforms need to be pursued to ensure fiscal sustainability in the long-run

Long term sustainability issues are not the current priority in Switzerland. Although public opinion remains hesitant to accept measures to deal with significant ageing-related spending pressures, a recent report on long-term sustainability of public finance (Weber *et al.*, 2008) was a positive move to improve public awareness of the upcoming aging costs. This report uses a methodology which is close to the one used by the European Commission and applies it for the first time in Switzerland to all levels of government (including social security); the report projects a rise in public expenditures by 5 percentage points of GDP by 2050. Assuming no measures offsetting aging costs (which would mean abandoning the debt-brake rule), the debt-to-GDP ratio would reach 130% of GDP in 2050 compared to about 50% today.[12]

These long-term projections of public finances in Switzerland take account of the fiscal equalisation scheme between the cantons and the Federation (Weber *et al.*, 2008). The federal government is not only responsible for the federal budget but also for the budgets of the social security funds. Since the fiscal equalisations scheme assigns the responsibilities of the different government levels, no steps are taken to compensate for the differences in the ageing burden between government levels. Consequently, a larger share of the ageing burden will fall on the federal level since, out of the increase in public expenditure by 5% of GDP, almost 3% will arise from old-age insurance costs. However, a still significant part, over 2% of GDP arising from health and long-term care costs, has to be borne by the Cantons.

Without structural reforms to reduce aging costs, governments will need to cut other public expenditure significantly or raise taxes to abide by the debt-brake rule (see Box 1.2) and similar budgetary rules in many cantons. The debt-brake rule, by targeting a balanced structural deficit, actually requires the *nominal* debt level to remain constant. To achieve this at the horizon of 2050 at the level of the general government, federal and cantonal governments would need to increase taxes or decrease expenditure by 2% of GDP immediately and permanently, based on sustainability gap estimates done by Weber *et al.*

(2008).[13] With a less ambitious target of only stabilizing the debt-to-GDP ratio at its current level, the required immediate adjustment of the fiscal balance is still of about 1½ point of GDP (Weber *et al.*, 2008). The federal government should stick to the debt-brake rule, which will reduce the debt to GDP ratio. It should also adopt reforms to reduce the increase in ageing costs such as pension and health.

Box 1.2. **Main features of the debt brake rule**

The purpose of the debt brake rule is to maintain a balanced structural budget at the federal level while allowing for cyclical developments. It sets a ceiling for expenditure, which cannot surpass cyclically-adjusted revenue. While federal revenues fluctuate with the cycle, the debt brake rule prevents these fluctuations from being transmitted to expenditure. The rule can be summarized by the following formula:

$$\text{Expenditure cap}_{t+1} = E^t(\text{total revenue}_{t+1})^* \, E^t(\text{trend GDP}_{t+1}/\text{actual GDP}_{t+1}) + A_{t+1}$$

where E^t (total revenue$_{t+1}$) represents the revenue estimate at period *t* for year *t*+1, E^t (trend GDP$_{t+1}$/actual GDP$_{t+1}$) is the factor that denotes the estimate at period *t* for the cyclical position of the economy at *t*+1 and A_{t+1} is an adjustment factor that takes account of past deviations of budget out-turns from the norm laid down by the rule. Under this mechanism, discrepancies between actual expenditure and the cap are booked in a compensation account. In the event of an excessive cumulated deficit on this account, *i.e.* exceeding 6% of expenditure (0.6% of GDP), the authorities have to reduce the balance to below 6% within three years.*

The rule covers ordinary expenditures and revenues but not *extraordinary* expenditures such as spending due to unforeseen events or which accrue only in a certain year. In order to avoid increasing debt due to such extraordinary expenditures, a supplement to the debt brake rule was approved by the parliament in spring 2009 and will be applied from 2010 onwards. According to this rule, discrepancies in extraordinary revenues and expenditures will be recorded in a parallel account, the so-called amortization account, and an excessive deficit in the amortization account has to be compensated through the recourse to the ordinary budget within six years.

The Federal Council is required to present a budget that meets the debt brake rule. The spending ceiling can be breached only under exceptional circumstances and only with a qualified majority in both chambers of parliament.

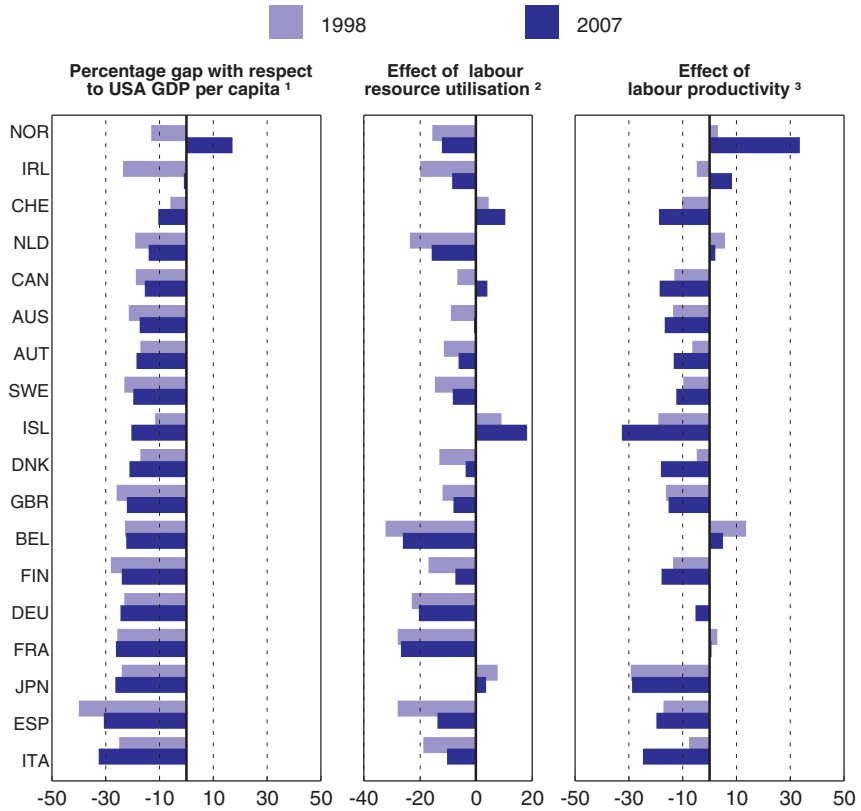
* See OECD (2002), EFV (2004) and Danninger 2002 for more information on the debt brake rule.

Public finances remain subject to contingent liabilities, amounting to 6% of GDP, resulting from the exposure of the Swiss National Bank (SNB) to depreciated assets transferred from UBS, the country's largest bank, to a dedicated fund, although current valuations of these assets do not at present indicate any losses to the public sector. The large size of several financial intermediaries' balance sheets relative to GDP – about 600% of GDP in the case of the two largest banks – and their systemic importance imply that a failure of one of them could potentially be very costly. Capital markets have become sensitive about the link of default risk of financial intermediaries and risk *premia* on government debt. There is some indication that this perceived link is particularly close in the case of Switzerland, as illustrated below in Chapter 3.

Productivity performance remains disappointing

A relatively modest level of productivity per hour worked has detracted from the high level of per capita income in Switzerland, although it remains one of the highest among OECD countries. Moreover, the widening productivity gap *vis-à-vis* best performing countries has caused the Swiss lead to diminish somewhat over the past decade (Figure 1.10). As noted in previous *OECD Economic Surveys*, the relative weakening of Switzerland's position in terms of GDP per hour worked can be attributed to lower trend productivity growth.[14] Moreover, there is no indication of a reversal in this trend in recent years.

Figure 1.10. **Decomposition of GDP per capita in PPP terms**



1. Based on current purchasing power parities and current prices.
2. Labour resource utilisation is measured as total number of hours worked divided by population.
3. Labour productivity is measured as GDP per hour worked.

Source: OECD, data derived from *Annual National Accounts database* and *Productivity database*.

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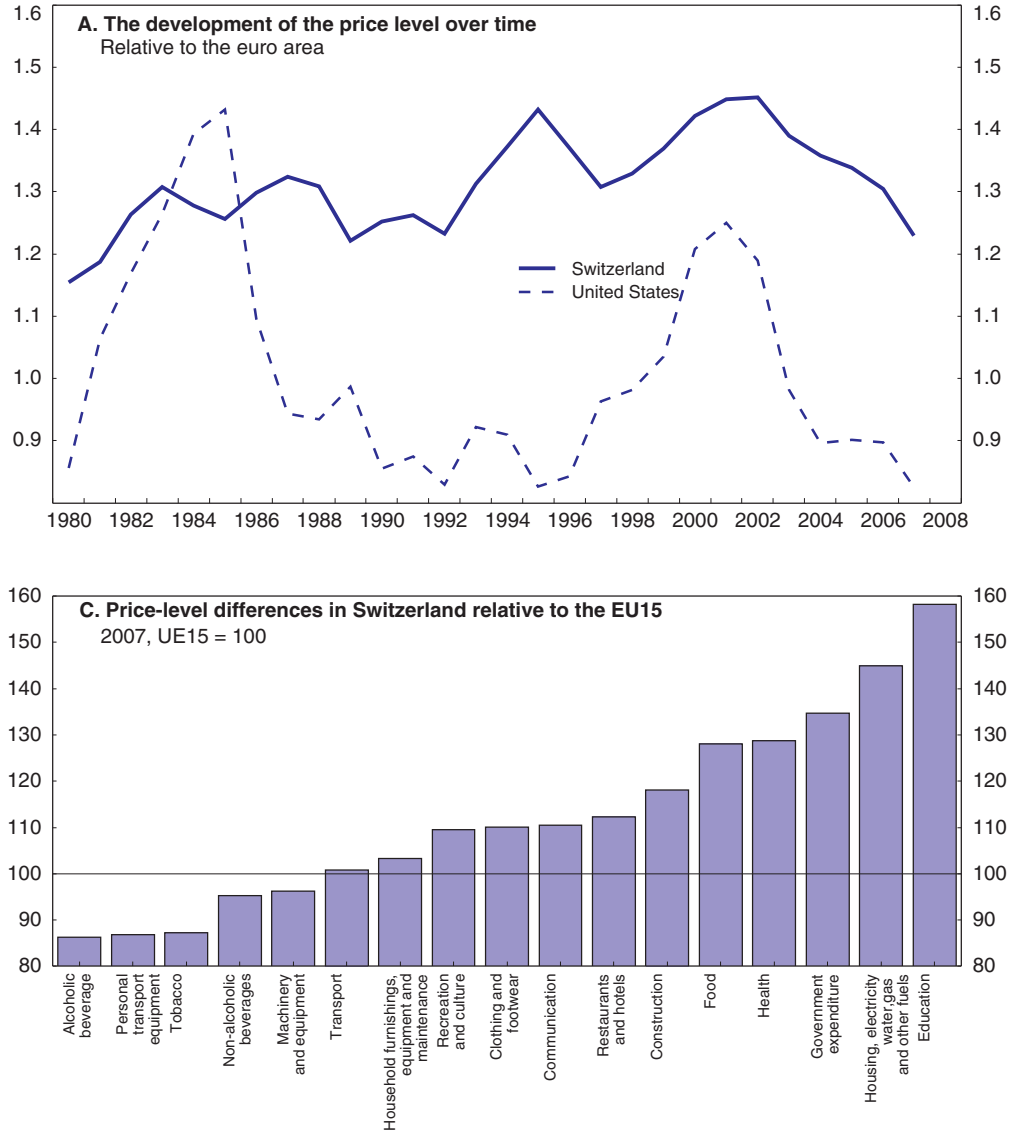
As argued in previous *OECD Economic Surveys*, the high price level for goods and services relative to other high income countries, despite relatively modest taxation of goods and services consumed domestically, indicates that productivity is low in service sectors that are not open to international competition. The decline of the relative price level in 2007 (Figure 1.11) is likely to reflect, to a considerable extent, a temporary depreciation of the Swiss Franc exchange rates, which reversed in 2008 as carry trade

unwound (Chapter 2). Regarding non-tradable services, housing services are amongst the most expensive relative to an average of European Union countries (Figure 1.11). Owing to the large the share of housing services spending in household income the contribution of housing services to the overall high cost of living is substantial.

Figure 1.11. **The price level remains high**



Source: OECD, *Annual National Accounts database*, *OECD Productivity database*, and *Eurostat database*.

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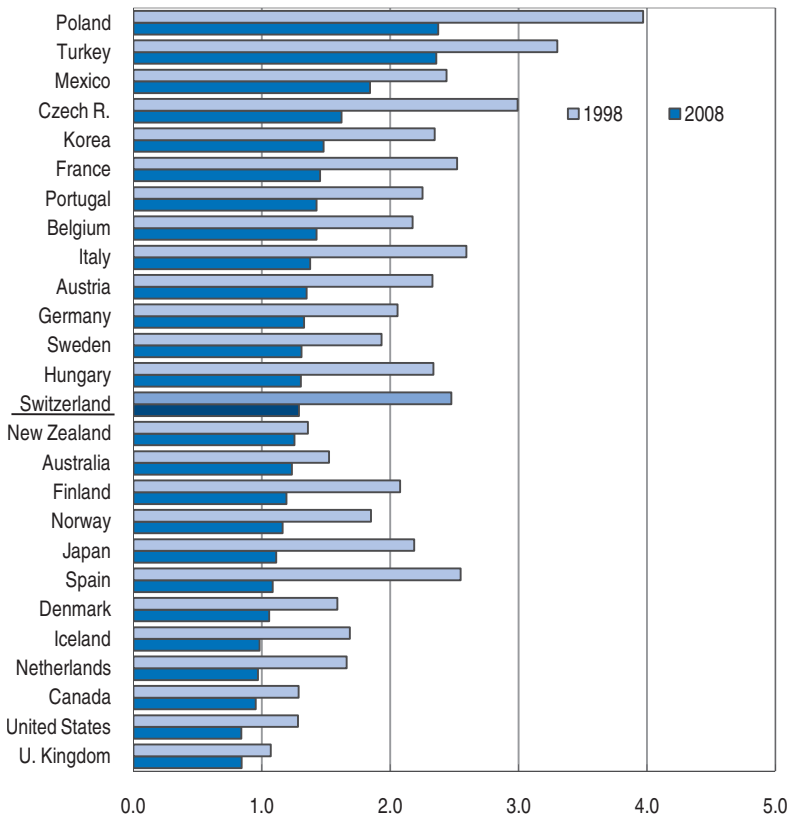
Product market regulation is still in need of reform

Evidence across OECD countries shows that product market regulation has a substantial impact on productivity performance. Switzerland has made progress in eliminating barriers to competition in the regulation of product markets over the past decade (Figure 1.12), although significant gaps with respect to best practice remain. In

international comparison, progress has been particularly marked in reducing administrative costs on businesses. The gaps to best practice have also declined in general competition law, although shortcomings remain especially in enforcement. Progress in reducing other barriers to competition within the domain of economic regulation has been less rapid, however, and the gaps with respect to best practice are particularly marked in network industries, especially in telecommunications, energy and postal services. Government ownership is widespread in all of these sectors, including in activities that are, in principle, amenable to market entry, undermining competition. Moreover, some regulators lack powers and independence, and regulatory frameworks suffer from severe shortcomings (OECD, 2007). Over the past two years, steps have been taken to reduce these gaps only in postal services (Annex 1.A1). A highly protected domestic agricultural sector also contributes to low productivity and high prices and entails substantial costs for the tax payers, owing to one of the highest levels of subsidisation in the OECD. Progress in removing the barriers to exposing domestic agricultural production to international competition is slow (OECD, 2007 and Table Annex 1.A1). Nonetheless, Switzerland's overall stance of product market regulation does not compare very unfavourably with many other high-income OECD countries. Chapter 5 investigates the role education policy could play in improving productivity performance.

Figure 1.12. **Product market regulation indicator**

Indicator scale of 0-6 from least to most restrictive, 2008



Source: OECD, *PMR Indicators database*, 2009.

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Box 1.3. **Recommendations on getting out of the crisis**

- To reduce the risk of deflationary pressures arising from a too rapid exit from accommodative fiscal policy, notably at the Cantons' level, an *ex-ante* fiscal co-ordination would help avoid any divergence in the direction of the fiscal stimulus. To that aim, the authorities could institutionalize a co-operative arrangement between the sub-federal (at least the cantons) and the federal level.
- The government should stick to the debt-brake rule, which will reduce the debt to GDP ratio. It should also adopt structural reforms to reduce the increase of ageing spending, such as a reform of health care funding mechanisms and the first pillar of the pension system.

Notes

1. The value added share is only available for the chemicals industry as a whole, including pharmaceuticals, and amounted to 24% in 2007. However, export statistics, which provide a more detailed breakdown, suggest that most of the chemical industry value added is accounted for by pharmaceuticals production.
2. To a large extent, these exports consist of commission income earned on management of asset portfolios (SNB, 2009a).
3. These financial services are directly measured in the national accounts.
4. These figures were however calculated before the revision of measurement of financial intermediation services in 2007 (OFS, 2007).
5. This number excludes funds for government workers benefitting from a government guarantee and in some public enterprises which were only partially funded already before the crisis. See OFAS, 2009.
6. Unemployment data by educational attainment are only published from 1996 onwards. The increase in the unemployment rate among workers with lower secondary educational attainment is the biggest, but this group is relatively small so contributes less to the overall change in the unemployment rate since 1996.
7. These claims amounted to about CHF 740 billion end-2007. They include accounts held at foreign branches of domestic banks, whereas security holdings in custody accounts include those held at domestic branches of banks.
8. Quoted in *Tages-Anzeiger* (2009). See also Swiss Banking Association (2009).
9. Cocca (2009) reaches similar conclusions. He argues, however, that a tax amnesty scheme could lead to a significant repatriation of off-shore wealth managed in Switzerland.
10. A third, more minor factor, could also be mentioned: a downward revision of GDP *ex post* could lead to a significant downward revision of potential GDP as estimated in the debt-brake rule (see F. Bodmer, 2005). The problem lies in the last observation when using the HP-filter to estimate the potential GDP. Variations in the last observation can lead to large movement in the trend (see Bruchez, 2003).
11. These revenues include taxes on labour income in the sector but exclude revenues from the federal withholding tax, stamp duties and revenues from taxation of dividends paid to domestic residents. The share of tax revenues in the Confederation, the cantons and the municipalities generated by financial sector activity reached 13% in 2006 (2% of GDP), according to estimates from the Federal Department of Finance, 5 percentage points more than in 2002. Most of the increase resulted from corporate income tax paid by banks, which reached about 1% of GDP in 2006.
12. In order to generate the expenditure and revenue projections that are needed to compute the fiscal gap, the report uses two sets of assumptions: As concerns the macroeconomic variables, the projections assume *i)* an annual productivity growth rate of 1%, *ii)* long-term real interest rates of 2%, *iii)* an inflation rate of 1.5%. The second set of assumptions concerns the future development of those components of the social security system that are most affected by demographic change. Unless revenues or expenditures are projected to follow nominal GDP growth – which is for

instance the case for revenues and for spending on education – they are constructed based on age and gender specific demographic projections until 2050 computed by the Federal Statistical Office. In general, expenditure developments are based on the parameter settings of the tax and pension system as of 2005. The projections do take into account the 5th revision of disability insurance, though, through a 15% reduction in admissions as compared to the previous situation.

13. These estimates are based on the assumption that budgetary corrections would be introduced in 2010 already. With corrective action undertaken in 2030 only, the government would need to increase taxes or decrease expenditure by 4.7% of GDP permanently in order to hold the nominal debt level constant and by 3.3% in order to stabilise the debt-to-GDP ratio.

14. See *e.g.* OECD (2007). Another potential source of changes in cross-country relative productivity levels are changes in the relative prices of goods produced in each country.

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ANNEX 1.A1

Progress in structural reform

Recommendations in previous *Survey*	Action taken since September 2007
A. COMPETITION	
Apply the prohibition principle to all hard-core cartels. Raise ComCo's resources and ensure its independence by excluding members that represent economic interests.	The evaluation of cartel legislation identified the composition of ComCo as a point of possible reform.
Consider introducing criminal sanctions to punish people responsible for anti competitive behaviour.	Criminal sanctions are subject of two formal proposals by Parliament.
Strengthen the independence of sector regulators.	In the electricity market, the independent sector regulator took up its work on 1 January 2008 (ElCom). Federal Council has submitted new legislation to Parliament which would create an independent sector regulator.
Privatise government-owned stakes of firms operating in potentially competitive market segments of network industries.	None.
Harmonise procurement rules across cantons, lower threshold values for public tendering, improve the accountability of procurement actions and benchmark public procurement costs at lower levels of government.	Public consultation on a procurement act covering all levels of government remained inconclusive.
Apply the "Cassis de Dijon" principle with as narrow a list of exemptions as possible.	Parliament decided to introduce the "Cassis de Dijon" principle and thus eliminating remaining technical barriers for over 80% of the imports from the EU through a revision of the law on technical barriers to trade.
In the electricity sector, improve vertical separation requirements, introduce ownership separation between generation and transmission operations and prevent the acquisition of further stakes in low-voltage distribution networks by the vertically integrated incumbents owning high-volatage networks (Überlandwerke).	None since the approval of the new regulatory framework in 2007, in force since October 2008.
Strengthen the powers of the electricity market regulator. Introduce price caps and benchmark regulation as well as regulatory accounting rules for the determination of network access prices.	None.
In telecommunications, eliminate restrictions on local loop access. Do not subject bitstream access to time limitations and make line-sharing available to competitors. Ensure collocation on transparent terms. *ex ante* regulation should be applied to access conditions to the local loop as well as to interconnection charges.	None.
In railways, make tendering of regional passenger services compulsory, ensure non-discriminatory access to rolling stock and allow competitors to propose investment projects. Investment decisions should be based on an independent cost-benefit assessment.	A reform project that would introduce tendering of regional passenger services on a broader basis is in public consultation.
In postal services, assess net cost of universal service obligations independently from the incumbent and fund them through the budget. Eliminate restrictive personnel rules and administrative privileges applying to the incumbent. Abolish sector-specific regulation regarding the fixing of pay and working conditions. Subject all services in which La Poste Suisse has a dominant market position to price regulation based on price caps.	Cost of universal service obligations are assessed by an independent auditing company. The Federal Council has submitted new legislation to Parliament which would transform Swiss Post into a limited liability company (majority owned by the Swiss Confederation) and apply price caps to the universal service letter segment. In other segments usual competition law applies.

Recommendations in previous *Survey*	Action taken since September 2007
In agriculture, remove impediments to structural change in land law. Reduce protection against imports and accelerate the replacement of subsidies by direct income support tied to individual incumbent farmers. Eliminate collusive actions among producers.	Further reduction of 30% in budgetary expenditures for market price support (direct payments instead). Milk production quotas have been abolished. The threshold price for imported animal feed was reduced significantly. All remaining export subsidies for agricultural commodities are to be eliminated by January 2010.
B. INNOVATION	
Reform the bankruptcy law to reduce the prescription period and facilitate the use of the "concordat" procedure.	A public consultation on a reform of bankruptcy legislation took place. At the core of legislation is facilitation of the concordat procedure.
Give public funding for research a high priority. Intensify co-operation in international research.	In the financial plan 2008-2011 education, research and innovation was granted high priority as funding shall increase by 4.5% per year until 2015. Co-operation agreements on research were accomplished with South Africa, Japan, South Korea, Brazil and Chile.
Increase private funding of university research.	Traditionally the commission for technology and innovation requires partial private funding for projects sponsored by CTI. Financial means for CTI were increased. The proposed reform of the higher education landscape (HFKG) requires institutions to acquire reasonable amounts of third party financing.
C. LABOUR MARKET	
Improve the integration of foreign workers in the labour market. Harmonise the rules on the lengths of residency for naturalisation. Consider introducing asymmetric penalties on employers for hiring illegal workers.	The federal law to combat illicit work entered into force in January 2008. The law obliges cantons to set up control organs and implements tougher penalties.
Increase the involvement of the Confederation in the provision of childcare services. Provide support through targeted subsidies or tax breaks, and allocate at least part of subsidies to parents instead of to providers.	An extension of the Federal government co-funding programme (2003-2011) for the development of care facilities for young children has been proposed.
Condition any increase in child benefits on the exercise of an activity or the use of childcare.	A new tax law foresees that parents utilizing external childcare shall be granted further tax allowances.
Lower the maximum duration of unemployment benefits.	A partial reform, approval by Parliament pending, scheduled to come into force in January 2011 will tie the duration of benefits to the duration of contributions made. Furthermore incentives to pick up work shall be strengthened and integration measures improved.
Introduce incentives for prolonging work after the standard retirement age.	Incentives for prolonging work after retirement will be introduced by the 11th revision of the old age insurance scheme and the 2nd revision of the professional pension scheme.
Provide students from non-EU countries graduating in Switzerland more time to find a job in Switzerland.	A parliamentary initiative aims at simplifying access to the Swiss labour market. A first draft law is currently in the consultation process.
D. EDUCATION	
Improve the supply of language teaching of adults by introducing a standard certification system. Strengthen the incentives for foreigners to enrol in language courses.	Switzerland relies on international certificates. The Office for Migration can grant subsidies to foreigners enrolling in language courses.
Develop pre-school education services and encourage and promote access by the foreign population to such services.	An agreement among cantons (HarmoS concordat) is planned to make pre-school education compulsory starting at the age of 4.
Improve the ability of teachers to teach heterogeneous classes. In the German speaking part of the country, oblige teachers to use the standard language of instruction (German) and not the local dialect.	Nearly all cantons in the German speaking part require primary school teachers to use High German.
Improve assignment to special needs classes.	According to a new inter-cantonal Concordat, integrated education should be preferred to the separation of pupils in special needs classes or schools. It has been ratified in six cantons and is scheduled to become law in 2011, if at least 10 cantons approve it.
Step up the development of non-selective educational models in the lower secondary cycle.	If the HarmoS concordat is approved, tracking will take place at a later age (13) in some cantons.
Improve the system for recognising immigrants' qualifications, and implement plans to validate skills acquired through experience.	Validation will be subject of a forthcoming law on lifelong learning legislation.
Pursue the reform of the university system, including the specialisation and profile building of universities, the introduction of a standard education subsidy per student and the development of quality assessments. Consider a rise in tuition fees while developing a system of loans with income-contingent repayments.	The proposed reform of the higher education (HFKG) aims to increase coordination and quality of the Swiss higher education system. It implements an independent system of accreditation and transparent financing. Particularly in high cost areas capacities shall be bundled in special centres of competence.

Recommendations in previous *Survey*	Action taken since September 2007
E. FISCAL FRAMEWORK	
Regularly set medium-term spending priorities. Complete the Examination of Tasks Programme. Prepare long-term fiscal sustainability reports, and complement them by developing alternative scenarios.	The Examination of Tasks Programme is pursued. The Federal Department of Finance published a sustainability report. Scenarios regarding health care spending were published.
Develop a framework to incorporate spending classified as extraordinary expenditure in the federal budget into the debt brake rule.	The so called complementary rule is planned to enter into force on 1 January 2010.
Benchmark the cantons' and communes' employment and civil servants' salaries for each area of spending.	None.
Reduce the possibilities for participants in some activation policies to re-qualify for unemployment benefit receipt. Link disbursement of federal funds to cantonal job placement services to placement performance.	The possibilities for repeated unemployment benefit receipt will be reduced by the partial reform of the UI, pending in Parliament.
F. TAX SYSTEM	
Reduce the double taxation of dividends, but avoid treating small investors differently.	A tax reform adopted in 2008 reduces or eliminates the double taxation for investors owning at least 10% of the capital of a company.
Replace the progressive tax on corporate income in some cantons by a flat rate tax on profits. Remove stamp duties on issuance of equity and housing market transactions.	Many cantons have switched from a progressive to a flat rate tax on profits. The elimination of stamp duties on equity issuance is planned. A public consultation is being prepared.
Introduce a moderate capital gains tax for private households' holdings of equity stocks.	None.
Make sure that the reform of the taxation of married couples improves work incentives for married women.	A rise in tax allowances for 2nd earners has been in force since 1.1 2008. A further revision of family taxation adopted by Parliament includes a new allowance for child care expenses, thereby improving work incentives for married women.
Reduce the number and breadth of exemptions and reduced rates in the VAT.	The administrative costs for businesses from VAT rules will be reduced from January 2010. The reduction in the number of rates and exemptions was postponed by Parliament.
Remove the exemption from the CO_2 tax on energy-intensive firms in a gradual manner. Allocate emission permits to firms via an auction.	None until 2012. Several policy options for the post-Kyoto regime are currently being evaluated.
G. HEALTH CARE	
Do away with the mixed hospital funding system, assigning the entire role of collective coverage to insurance companies, offsetting the redistributional effects through appropriate flanking measures.	The proposal that only insurances should finance hospitals was rejected by 64% of Swiss citizens in 2008.
Remove the obligation for pharmacists to inform the prescribing doctor whenever a branded product is replaced by a lower-priced generic. Require that patients pay the full difference in the price of a branded product and lower-priced generic. Eliminate cantonal policies that allow practicing doctors to dispense drugs.	None since previous *Survey*.
Reform the risk compensation mechanism so as to include diagnostic information for the determination of risk-compensation payments among health insurers. Improve incentives for insurees to enrol in managed-care programmes. Allow greater freedom for insurers to contract with providers. Consider allowing profits to be made in the basic insurance market.	Parliament decided in December 2007 to include stays in hospitals and nursing homes in the risk compensation mechanism. Greater incentives for insurees and providers to enrol in managed care organisations as well as selective contracting and higher co-insurance are under consideration in Parliament.
H. OLD-AGE AND DISABILITY INSURANCE PROGRAMMES	
Consider indexing the retirement age in the first-pillar system to changes in average life expectancy. Deal with any remaining lack of sustainability through a combination of adjustments to contribution rates, benefits and required years of contributions.	None.
Adopt a centralised approach to the regulation of private pension funds, and allow them to set the conversion rate. Index the minimum interest rate to realised market returns. Reassess the generosity of tax incentives for the occupational schemes.	Supervision was overhauled, although no centralised regulatory approach was adopted. Minimum interest rates are adjusted regularly to realised market returns.
Reduce the marginal effective tax rates on labour income of disability insurance beneficiaries. Regularly test their work capacities during the first few years of receipt, and randomly thereafter.	None since the fifth revision of the invalidity insurance system which requires regular testing of work capacities approved in 2007 took effect.

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Chapter 2

Swiss monetary policy in the current crisis and beyond[1]

Decisive action by the Swiss National Bank (SNB) since the outbreak of the crisis has supported financial stability and economic activity. A distinct monetary framework that directly targets the three-month interbank market rate (the Swiss franc Libor) has also helped support domestic credit conditions by limiting the rise in money market spreads compared to other currency areas since the onset of financial market turbulence. With the deepening of the crisis and growing deflationary pressures, the SNB turned to unconventional measures to provide further stimulus, including exchange rate interventions. The sizeable lending activity of Swiss banks in foreign currencies raises the demand for liquidity in foreign currency at times of crisis. It must be ensured that this demand can be met, for example by continued co-operation with other central banks on swap arrangements. Carry trade in Swiss francs has followed the global financial market cycle and has influenced recent exchange rate developments which played a determining role in monetary policy when it was constrained by interest rates reaching zero.

The current crisis has put the monetary policy strategy and instruments of central banks to a test. The Swiss National Bank (SNB) is no exception. The SNB's primary goal is to ensure price stability, while taking into account the business cycle (Box 2.1). Its first challenge at the outset of the crisis was to maintain financial stability through restoring the proper functioning of money markets. As the financial crisis spread to the real economy and economic recession became a major concern, the SNB started lowering interest rates aggressively until overnight rates reached zero. Unconventional monetary policy measures were then employed. An exit strategy consistent with the price stability objective will move to the top of the policy agenda once the economic recovery takes hold.

Box 2.1. **Main goals and responsibilities of the Swiss National Bank (SNB)**

The SNB primary goal is to ensure price stability, while taking due account of cyclical developments of the economy. The SNB equates it with a rise in the national consumer price index of less than 2% per annum. The SNB has a statutory mandate to participate in international monetary co-operation. Its tasks also include securing the supply of sufficient money market and currency liquidity as well as overseeing systemically important payment and securities settlement systems. To contribute to financial market stability, the SNB analyses sources of risk in the financial system. In doing so, it co-operates with the Swiss Financial Market Supervisory Authority. It also has a mandate to inject liquidity in the domestic financial system when this is necessary to prevent systemic crises. Its lender of last resort function is however not regulated so as to limit the resulting moral hazard of market participants.

This chapter is divided into two sections. The first assesses how effective the SNB has been in maintaining financial stability and supporting growth since the outset of the crisis, in particular through its original targeting of the interbank market rate. It also analyzes how monetary policy has responded to the new challenge of deflationary pressures through unconventional measures and how the SNB could improve these measures while preparing for the exit strategy. The second section is devoted to the international role of the Swiss franc and the strong foreign currency exposure of the financial sector.

The SNB has effectively supported financial stability and economic activity

The SNB acted decisively from the outset of the financial crisis

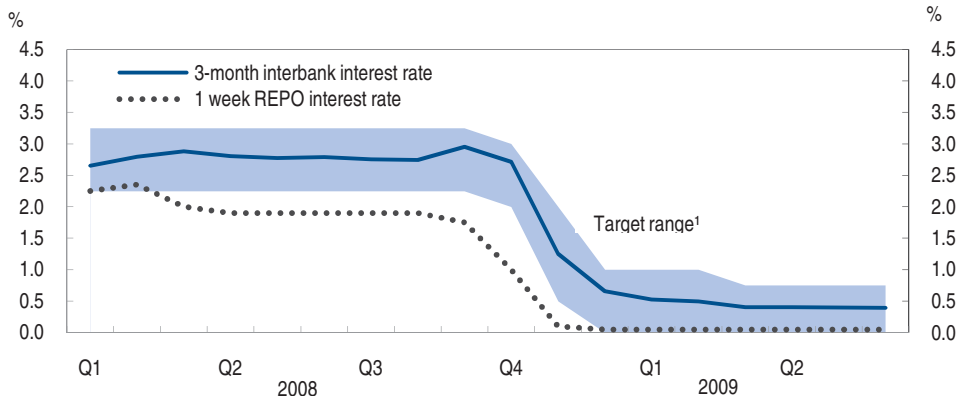
The outbreak of the crisis is usually dated to the beginning of August 2007 when the loss of confidence in structured finance products led banks to become reluctant to lend to each other on the interbank market at maturities longer than a few days. On 9 August, the SNB together with the European Central Bank (ECB) was the first central bank to react by initiating a phase of more frequent and larger liquidity provision at repo auctions and to lengthen their maturity. From November 2007, following dollar liquidity shortages among

European banks, the Federal Reserve (Fed), the ECB, and the SNB engaged in a concerted action by introducing swap lines between the Fed on the one hand and the ECB and the SNB on the other hand. On 17 December, the SNB conducted a repurchase auction in foreign currency for the first time.

Interbank market turbulences peaked in autumn 2008 after Lehman Brothers failed. On 16 October, the SNB announced an emergency agreement with UBS to transfer up to USD 60 billion of its illiquid assets to a separate entity, mostly funded by the SNB in the form of a loan (Chapter 3). As was the case with other central banks, the SNB increasingly became the primary supplier of liquidity to the financial system. The increased demand for Swiss francs by foreign banks put considerable strains on the Swiss franc interbank market and made it increasingly difficult for the SNB to steer the three-month Libor (see below). To address this issue, a new foreign exchange swap facility was established on 20 October. Through this facility, the SNB provides the ECB with Swiss francs in exchange for Euros. Similar agreements have been put in operation with the National Bank of Poland and the Central Bank of Hungary.

In autumn 2008 the SNB reacted to the strongly worsening state of the economy by rapidly lowering its interest target range for the Libor from 2.25%-3.25% on October 8 to 0-1% on 11 December in four steps (see Figure 2.1).

Figure 2.1. **Swiss monetary policy since January 2008**



1. At the end of month, except for the November upper limit (start of month).

Source: Swiss National Bank, *Monthly Statistical Bulletin*.

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The SNB's main policy instrument to steer the Libor are weekly repo transactions (see Box 2.2). The one-week repo rates dropped to 0.1% on 21 November, leaving little room for a further reduction in the weekly rate. Nonetheless, the Swiss franc Libor dropped from 1.3% to 0.45% between 21 November and 12 March 2009. The SNB introduced several extraordinary measures that may have contributed to the further lowering of Libor rates. It extended the maturity of its repo transactions and conducted auctions at terms of up to one year, using a fixed rate and full allotment procedure. Second, it communicated to market participants its intention to bring Libor rates down further and thereby tried to affect market expectations. Finally, to counter the strong demand for Swiss francs and ease upward pressure on the money market rates, the SNB concluded, swap agreements with the European Central Bank, the National Bank of Poland, and the Central Bank of Hungary, as mentioned previously. With the deepening of recession, the SNB warned about risks of deflation. Ultimately, it resorted to unconventional measures (see below).

Box 2.2. **Monetary policy strategy implementation**

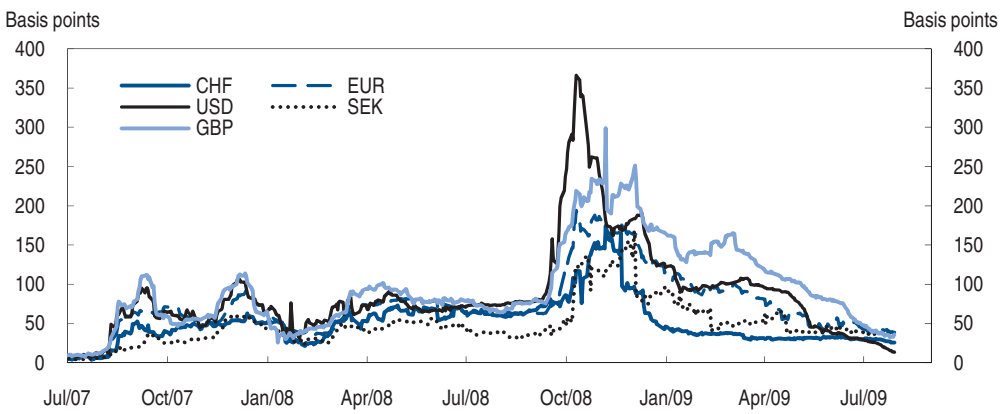
The SNB undertakes quarterly economic and monetary assessments at which it reviews its monetary policy. If circumstances so require, it also adjusts the Libor target range in between these quarterly assessments as it did several times in 2008 following the intensification of the crisis. It publishes a quarterly forecast of consumer price inflation for a period of three years. It serves as the main indicator for the interest rate decision. The forecast is based on a scenario for global economic developments and on the assumption that the policy rate will remain constant over the forecasting period.

The SNB implements its monetary policy by fixing a target range for the three-month Libor, a reference rate for unsecured lending in the interbank market. It is a trimmed mean of the rates charged by twelve leading banks and is published daily by the British Bankers' Association. As a rule, this range extends over one percentage point, and the SNB generally aims to keep the Libor in the middle of the range. The need for some degree to respond to temporary high-frequency shocks (*e.g.* to the exchange rate) without having to announce a change in monetary policy motivated the choice of this operational target. In normal times the SNB steers the three-month LIBOR through repurchase operations with maturities from 1 day to several weeks (Jordan and Kugler, 2004).

The direct targeting of the Libor has helped keeping interbank rates relatively low

Interbank markets have played a significant role in transmitting falling prices for structured financial products to deteriorating liquidity conditions, generating concerns about a credit crunch in many OECD countries. The magnitude of the stress within interbank markets during the current crisis can be measured by the spread between the three-month Libor rate and three-month overnight indexed swap (OIS) rate. This spread gives an indication of the premium market participants expect to earn on interbank loans (the Libor rate) over expected average risk-free overnight interest rates (OIS rate) over the same period.[2] Compared with the euro, the British pound, and the US dollar, the Swiss franc spread has remained relatively low from the onset of international financial market turbulence in July 2007 to April 2009 (Figure 2.2). Of the currencies compared, only Swedish Krona spreads have stayed at a comparable level to Swiss spreads.

Figure 2.2. **3-month Libor – OIS rate spreads**



Source: Bloomberg, British Bankers' Association, Datastream.

StatLink http://dx.doi.org/10.1787/747600177830

Differences in the spread between the three-month Libor and OIS rates across countries could, in principle, be the result of differences in perceptions of insolvency risk among the banks dealing in each interbank market. Such perceptions can be measured with the credit default swap rates (CDS).[3] CDS rates of the banks included in each panel used to measure interbank rates in each currency have moved very closely together since the outset of the financial crisis.[4] Hence, the cross-country variation in Libor-OIS spreads cannot be explained by differences in perceptions of solvency risk between the banks dealing in each interbank market represented in Figure 2.2.

The differences in the spreads may have been influenced by monetary policy, via its impact on liquidity risk. In the case of Switzerland, the direct targeting of the Libor may have reduced the fluctuations in the Libor and reduced uncertainty about future availability and cost of interbank funding, lowering the *premia* risk-averse participants require.[5] In particular, since the targeting of the Libor rate represents a commitment on behalf of the central bank to lean against market forces in the interbank market when, for example, liquidity in the market dries up (which would drive the Libor rate up), banks may be induced to hoard less liquidity and be more willing to lend it on in the interbank market, as lending banks concerns about their own and counterparties' future liquidity is reduced by this commitment. Table 2.1 presents a measure of volatility of interbank interest rates for a country sample from 1 August 2007 to 14 September 2008.[6] The evidence in the table suggests that countries with low volatility in the Libor (Sweden, Switzerland) – and hence, lower uncertainty – experienced lower spreads in the interbank market, as shown in Figure 2.2. In the case of Switzerland, it is likely that the targeting of the Libor rate helped keep its volatility low.

Table 2.1. **Libor volatilities**

	Euro	Swedish korona	**Swiss franc**	British pound	United States dollar
Libor 3 month volatility	0.18	0.11	**0.05**	0.21	0.18

Source: Bloomberg, British Bankers Association, own calculations.

The Libor plays a central role for the refinancing of major banks and companies, and serves as reference for the rates of credit and derivatives contracts, including in the retail mortgage market.[7] Thus, reduced uncertainty about current and future three month funding costs may have had knock-on effects on domestic credit markets, making banks less reluctant to lend.

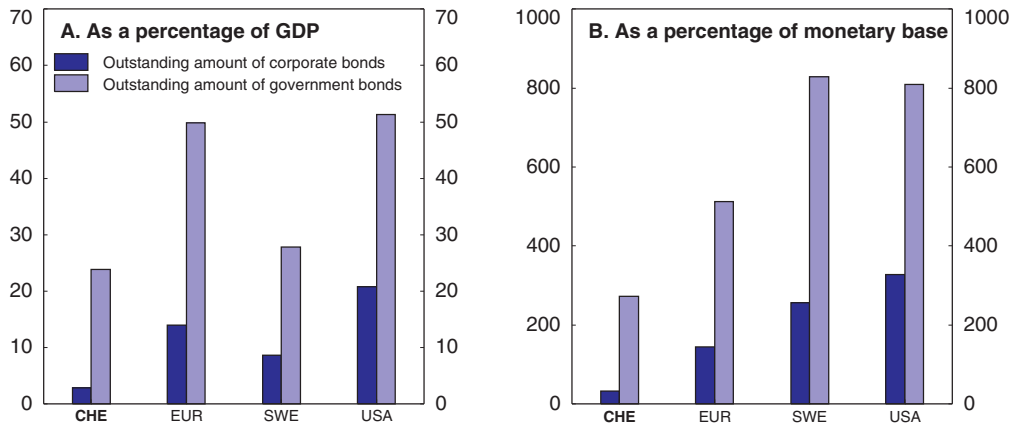
In early 2009 the economic situation and outlook worsened further and deflationary risks increased sharply. Against this background, the SNB narrowed the three-month Libor target to 0-0.75% at its assessment of 12 March 2009 and stated it would "use all means at its disposal" to lower it to 0.25%. With short-term interest rates almost at zero, the SNB announced three unconventional monetary policy measures to achieve further relaxation in monetary conditions. The further extension of longer-term repurchase transactions with banks, the purchase of private Swiss franc bonds and the purchase of foreign currency against the Swiss franc.

The long-term repo operations target the liquidity shortage in the banking system and are aimed at reducing longer-term interbank lending rates, which are important for credit transmission. Following the announcement, the three-month Libor rate dropped from 45 to 40 basis points reflecting the fact that expected risk-free overnight rates were already close to 0 over the same period.

The purchase of private bonds targets at the reduction of specific credit risk *premia* in capital markets. In contrast to long-term repo operations that are aimed at a general easing of longer term interest rates, independently of the risks of underlying assets, the purchase of private sector bonds affects credit risk spreads of specific assets. However, the effectiveness of these measures depends on the degree of substitutability of demand between the different types of bonds (with a high degree of substitutability reducing effectiveness) as well as the importance of the targeted capital markets in corporate financing. Purchases of government bonds would represent an alternative, but such measures could only affect term, not risk, *premia*. As can be seen from Figure 2.3, corporate and government debt markets have less depth than in other countries. The SNB also intervened in the market for bonds covered by mortgages. The covered bonds market is slightly larger than the corporate bond market but still rather small, accounting for about of 8.9% GDP.[8] The limited depth of debt markets may limit the provision of additional stimuli. In the case of corporate bond markets it might also aggravate the problem of allocative distortions of a central bank's purchase of privately issued securities.

Figure 2.3. **Depth of domestic corporate and government bond markets**

As of September 2008



Source: National central banks.

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The unsterilized purchase of foreign exchange was introduced to prevent an appreciation of the Swiss franc against the Euro and to limit the deflationary pressures from falling prices, in domestic currency terms, of imported goods and services, as well as from a severe downturn in exports. The SNB has emphasized that its foreign exchange interventions were not aimed at a competitive devaluation. Indeed, in the context of a global recession, such a devaluation could have a particularly undesirable adverse effect on activity in other countries. Moreover, the interventions in the foreign exchange market were aimed at fulfilling the price stability objective so did not signal a change in the

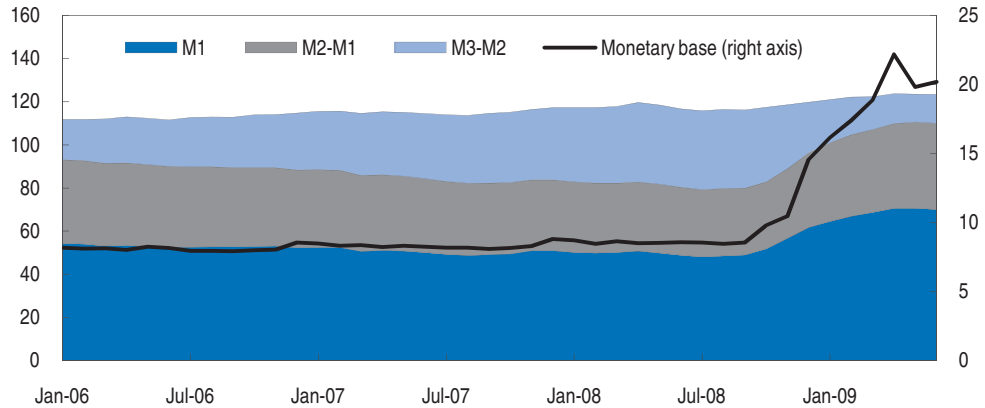
monetary policy framework. The effectiveness of this policy in preventing deflation may also be limited if trading partners are themselves subject to deflation risk. Given the limitations to foreign exchange interventions and the limited depth of the Swiss franc bond market, the SNB may consider alternative measures to alleviate deflation risk.

The appropriate timing for the exit strategy will be crucial

The extraordinary measures undertaken by the SNB throughout the crisis are reflected in a massive increase in the SNB's balance sheet. The balance sheet and the monetary base doubled in size between September 2008 and June 2009. The increase is mainly a consequence of the tenfold increase in reserve holdings in addition to about 15% growth of currency in circulation. With growth rates of 40% and 35% over the same period, Switzerland's narrow money aggregates M1 and M2 have also increased considerably (Figure 2.4). The broad money aggregate M3 has however expanded slowly, so far, although the SNB noted in its assessment from September 2009 that growth accelerated.[9]

Figure 2.4. **Money aggregates in Switzerland**

As a percentage of GDP, 2008



Source: SNB, *Monthly Statistical Bulletin*; OECD, *OECD Economic Outlook No. 85 database.*

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As financial conditions improve, excessive risk aversion may abate and banks may become more willing to use their excess reserve holdings to increase lending, leading to a marked increase in broader money. To the extent that this could fuel inflationary pressure once the economy recovers, the SNB needs to be able to withdraw liquidity, which raises the question of an appropriate exit strategy. On the other hand, a premature tightening would jeopardise economic recovery. In this respect, a number of issues need to be addressed, such as the right sequencing, timing and speed, and availability of tools for the phasing out of the unconventional monetary policy. Also, given the unprecedented nature of the size and the scope of the exit, it is important that the SNB effectively communicates its exit strategy.

The SNB states that the exit must occur when "tensions in money and capital markets recede" and when "the advent of a sustained recovery led to increased medium-term inflationary risks" (Jordan, 2009b). The determination of inflationary risks is complicated given the unconventional measures in place, and it is not clear what a "normal" mode of operation of money and credit markets should look like after this crisis. Money market spreads might have become too depressed before the crisis in August 2007 and they might now be above their

appropriate level, the long-term equilibrium is hard to determine (IMF, 2008a). The right sequence of an exit strategy raises the issue of when to unwind unconventional monetary policy accommodation and raise policy rates again (Bini Smaghi, 2009).

Part of the exit will be achieved in a nearly autonomous manner. In particular, many of liquidity-providing programmes are expected to run their course over time, as improving financial conditions lead to less use of those programs and the previously built positions mature. Indeed, provided that the pace of economic recovery is expected to be slow, the SNB can take time for the exit to complete: premature withdrawal of liquidity is even riskier. However, to the extent that the economic recovery turns out to be quicker than expected and/or when the recovery is judged to be firmly established, more active exit may become warranted that would require some deliberate actions on the part of the SNB.

The international role of the large Swiss banks and of the Swiss franc influence policy-making

Carry-trade has been a major driver of exchange rates development of the Swiss franc

The prolonged depreciation of the Swiss franc until the outbreak of financial market turbulence in September 2007 has been mainly attributed to the build up of "carry trade" positions in Swiss franc, the funding currency (Box 2.3). The depreciation is likely to have contributed to Switzerland strong export-led growth in this period (see the 2007 *Economic Survey*).[10] Following the outbreak of the crisis, the abrupt unwinding of these positions resulted in a high demand for Swiss francs, leading to a sharp appreciation.[11]

Box 2.3. **What explains carry trade?**

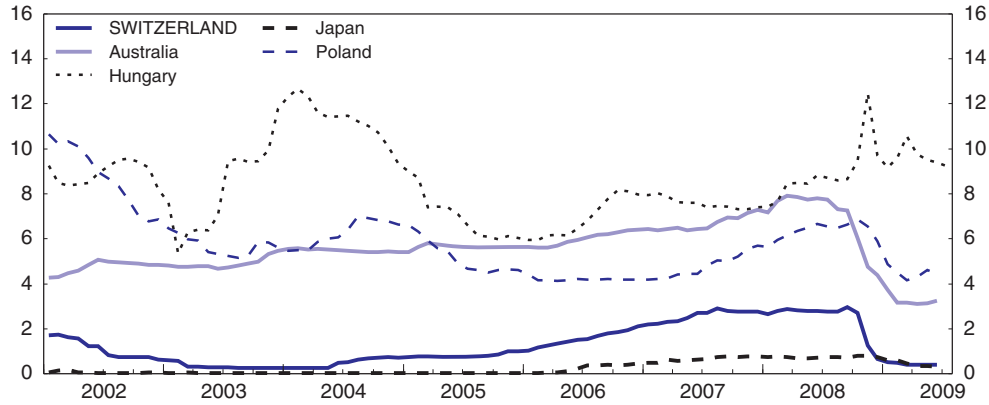
Carry trades are a leveraged form of investment and refers to an investor borrowing in a low-interest-rate currency (the "funding" currency) and lending the resulting amount in the high-interest-rate currency (the "target" currency). For such a strategy to be profitable, deviations from the Uncovered Parity Condition (UIP) are necessary. According to the UIP condition the difference between interest rates reflects the rate at which investors expect the target currency to depreciate against the funding currency. On average the overall returns from the funds lent in the target currency are equal to the returns from lending in a funding currency. While evidence confirms that the UIP holds in the medium run, in the short run exchange rates seem to move in the opposite direction (which is the so-called "forward discount premium puzzle"), thus creating scope for short run profits, although these positions imply high risk.

Positions taken while "carry trade" is built up will tend to depreciate the funding currency. This depreciation tends to make carry trade profitable for some time if interest rates do not change. Hence, there is a risk that a carry-trade feeds on itself, creating a speculative bubble. This is particularly the case if the depreciation has a limited impact on inflation, and hence on policy rates set by the Central Bank.

The Japanese yen and the Swiss franc have been cited as the main funding currencies. Japan has had the lowest interest rates in the world since the adoption of the zero interest policy in 1998. Switzerland also had very low interest rate constantly below 1% between March 2003 and March 2006 (Figure 2.5). Australia, Hungary and Poland, which have been widely cited as target currencies for carry trade, have been maintaining considerably higher interest rates.

Figure 2.5. **Interest rate developments**

3-months duration, per cent



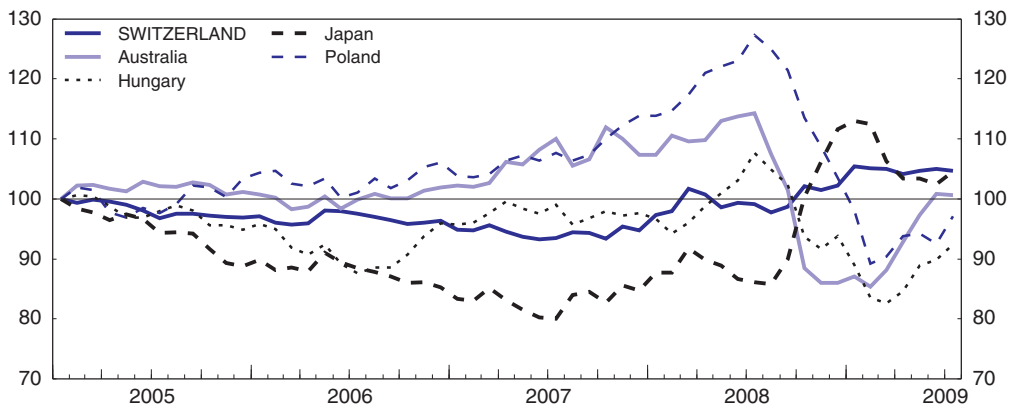
Source: National central banks.

StatLink http://dx.doi.org/10.1787/747632188737

While direct evidence on the extent of carry trade is not available, indirect evidence is provided by the opposite developments in the effective nominal exchange rates of funding and target currencies (Figure 2.6). After the financial crisis emerged in August 2007, the Japanese Yen and the Swiss franc started appreciating. These movements suggest that carry trade positions accumulated before the crisis were progressively unwound.

Figure 2.6. **Nominal effective exchange rates**

January 2005 = 100



Source: BIS; Nominal effective exchange rates: broad indices.

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As mentioned, the strong appreciation contributed to risk of deflation. Moreover, banks which had lent in Swiss francs outside Switzerland required liquidity in Swiss francs, putting upward pressure on the interest rates in the Swiss franc interbank market.[12] Both the foreign exchange market intervention, and the swap agreements which provided Swiss franc liquidity via various foreign central banks, eased this pressure.

Monetary policy needs to take account of the build-up of financial market imbalances

One of the debates arising from the global financial crisis is whether monetary policy needs to lean more strongly against the credit cycle in upswing periods in order to avoid the build-up of financial market imbalances, even if inflationary pressures are not apparent (*e.g.* White, 2009). There is considerable evidence that Phillips-curves flattened in pre-crisis years, in part owing to the increased credibility of inflation objectives (see *e.g.* Pain *et al.,* 2006). As a result of flatter Phillips curves, the impact of low policy rates in periods of expansion of lending and economic activity may not make itself manifest in consumer price inflation forecasts which guide monetary policy, but through other imbalances, such as asset bubbles. In Switzerland, for example during the economic expansion that preceded the crisis, *ex-ante* real policy rates peaked below 2%.[13] While low interest rates did not generate strong growth of lending domestically, they appear to have contributed to carry trade.

Monetary policy at all times takes into account the impact of exchange rate movements on inflation over the inflation forecast horizon. However, in the build-up phase of carry trade, monetary policy was not constrained to resort to exchange rate policy, particularly so since price stability was not threatened over the forecast period, giving some room for the mutually reinforcing build-up of carry trade positions and the depreciation of the Swiss franc. By contrast, in the wind-down phase, monetary policy was more constrained in its instruments and exchange rate interventions had to be utilized to counteract deflationary pressures. Maintaining a symmetric policy response with respect to upward and downward pressures on the exchange rate is important in order to prevent the risk of strengthening the self-propagating behaviour of carry trade. Otherwise, speculators could expect that their losses in the wind-down phase would be limited if they anticipated that the central bank only intervenes to limit currency appreciation. Such expectations could eventually fuel a new speculative bubble of carry trade positions.

The SNB elaborates its inflation forecast with a portfolio of econometric models and indicators, which incorporates credit and money supply growth. Nonetheless, further investigation could be useful as to whether monetary policy should help prevent strong credit growth from contributing to financial market imbalances even when such credit growth does not appear to lead to inflationary pressures over the forecast horizon. Indeed, a number of episodes of strong expansion of lending and economic activity which were followed by severe financial crises and recessions were not accompanied by rising inflation (White, 2009). The SNB should further examine whether its current policy framework already takes sufficient account of the potential costs of asset imbalances. It has been argued that it may be difficult for monetary policy to mitigate such imbalances as bubbles in asset prices are difficult to identify. Moreover if leaning against asset market booms were to become an additional objective of monetary policy, the inflation rate deemed consistent with price stability could be undershot during such a boom. On the other hand, a policy of leaning against excessive asset market booms could be based on a broad assessment of developments in lending volumes as well as asset prices, relative to historic trends, so may not require identification of specific asset price bubbles. Undershooting of inflation targets may carry little risk in periods of credit expansion as they are typically characterised by vigorous expansion of economic activity (see White, 2009, and references therein, for a discussion of these arguments).

The foreign currency exposure of Swiss banks requires appropriate instruments to preserve the SNB's role of lender of last resort

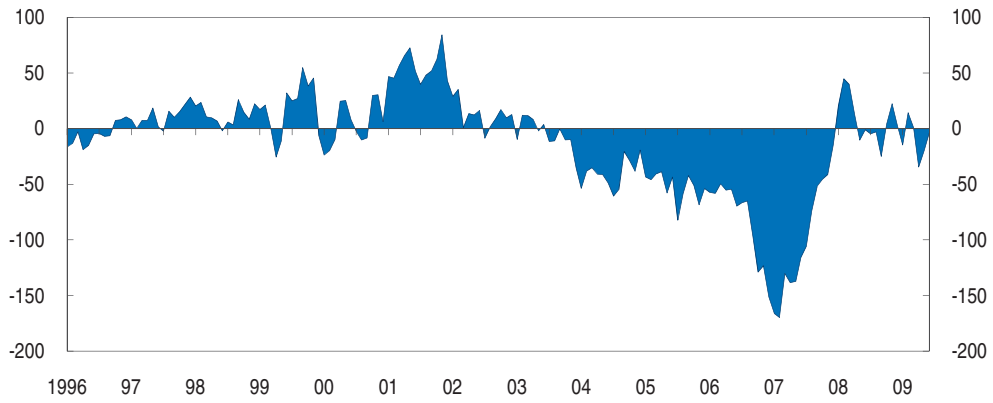
Owing to the maturity mismatch that characterises bank balance sheets, with assets having more long-term maturities, any bank is potentially vulnerable to a run by its creditors, generating a liquidity crisis. Perceptions that such a crisis may occur can make banks more vulnerable. Hence central banks have assumed the role of lender of last resort. However, their capability to supply liquidity in foreign currency is limited.

Bank exposure to foreign currencies, especially US Dollar, is large

More than half of Swiss banks' assets are denominated in foreign currency, mostly in US dollar (Chapter 3). A drying-up of the foreign currency market could challenge the capability of the SNB to provide enough liquidity. This point is reinforced by the large size of the Swiss banking sector relative to the size of the economy. The net position towards banks in US dollars increased dramatically since 2002, peaking in mid-2007 (Figure 2.7). The funding via customers and money market instruments was by far too low to offset the gap between assets and liabilities in US dollar. This gap may be understood as measuring the extent to which big Swiss banks potentially had to rely on foreign exchange swaps (BIS Quarterly March 2009).

Figure 2.7. **Foreign net liability position in US dollars**

Big 2 Swiss banks, billions of CHF



Source: SNB, *Monthly Bulletin of Banking Statistics*.

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Risk of these exposures emanated from the potential inability to roll-over the foreign exchange swaps, which tend to be short-term. To honour their swap arrangements, banks were forced to sell US dollar assets prematurely. With a declining and increasingly illiquid market for these assets, their sale became increasingly difficult and was associated with high losses. As the crisis intensified, US banks worried about their counterparties' financial soundness and were uncertain about their own liquidity needs. This made the banks increasingly reluctant to provide US dollars via foreign exchange swaps.[14] The problem was particular severe for those European banks which do not have direct access to the Federal Reserve's auction facilities.[15]

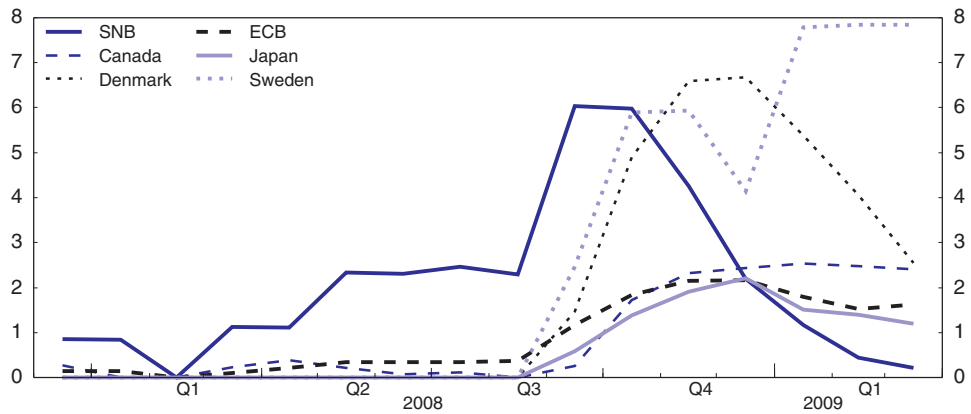
The disruption in foreign money markets required the SNB to step in

To address the difficulties in the foreign exchange market the Fed and the SNB concluded a US dollar-Swiss franc swap agreement. The Fed engaged in a similar agreement with the ECB and other central banks. The agreement initial maximum limit for the provision of US dollar was lifted in mid-October 2008. The SNB provided US dollars obtained through the swap agreement to its counter-parties in repo operations. All counterparties (including foreign banks) providing the collateral according to the general SNB rules had access to this facility.

The scale of the foreign currency liquidity provision in Switzerland through dollar repurchase operations offered to commercial banks was relatively large in the early phase of financial market turbulence, reaching 6.5% of GDP in October 2008, but dropping subsequently (Figure 2.8).[16] However, these figures do not include the loan of USD 26.6 billion (about 5% of GDP) provided by the SNB to a fund ("StabFund") set up to purchase toxic assets from UBS. Thus, the stock of foreign currency support would reach about 5% of GDP at the end of the first quarter 2009, among the highest of the countries compared in Figure 2.8.

Figure 2.8. **Foreign currency provision by central banks**

As a percentage of GDP, 2008



Source: National central banks; BIS; International Monetary Fund.

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The relatively fast reduction in foreign currency provision through dollar repurchase operations may indicate that Swiss banks were no longer in large need of such funds or were able to mobilize funds in different ways. The two large banks (UBS, and Credit Suisse, CS), which conduct most of the foreign operations of Swiss banks, have access to the liquidity lines of the US Fed, as they are both primary dealers. In fact, according to the BIS (March 2009), US dollar liabilities booked by European banks' offices (including borrowing from the Federal Reserve) increased during the crisis and various European banks channelled funds *via* inter-office transfers to their parent companies. Indeed, supply of foreign currency was more important for other banks, which do not have the privileged access to the Fed's facilities. On average 14 banks (including foreign banks with access to the SNB's facilities) participated in the auctions until mid-October 2008 (which marked the peak in outstanding US dollars provided by the SNB).The appreciation of the Swiss franc

may also have helped Swiss banks to acquire US dollar liquidity. However, the provision of foreign currency liquidity by foreign central banks remains conditional on their monetary policy objectives, and the pattern of Swiss franc appreciation at times of crisis cannot be taken for granted (Chapter 3).

The SNB role as a lender of last resort may be challenged

In the long run, the large exposure of domestic banks to assets and liabilities in foreign currency could again be associated with a disruption of liquidity in foreign currency. Central banks have traditionally resorted to three ways of providing foreign currency to commercial banks: the provision of its foreign currency reserves, the direct borrowing of foreign exchange in the market and the exchange of national currency against foreign currency directly with foreign central banks.

The first option would require that the SNB could ensure a high enough reserve level to provide foreign reserves when needed. Given the extraordinary extent of foreign assets it is however impossible to cover the entire stock. The second option, the direct borrowing in the market, may not ease currency pressures (as the central bank would demand foreign currency).

The third option, the swap between central banks, is the most attractive because of its low chance of interfering negatively with the foreign exchange market. Another reason which makes swap agreements preferable is the signal they provide to markets. The mechanism demonstrates the willingness of policy makers to act promptly (BIS 2008). Consequently, a co-operation of the SNB with other central banks on swaps arrangements to provide liquidity in foreign currency should be continued as needed. This should help avoid liquidity issues in foreign currency. However, it may generate moral hazard in the banks' management of foreign currency liquidity. In view of the extraordinary size of the foreign activities of the two big Swiss banks, effective regulation of liquidity risks is particularly important for Switzerland (Chapter 3).

Box 2.4. **Recommendations on monetary policy**

- As the economy recovers the SNB should withdraw excess liquidity in order not to jeopardize price stability over the medium term. At the same time, it must not act too soon, for otherwise the recovery could be put at risk. The strategy with respect to the withdrawal of excess liquidity must be clearly communicated.
- The SNB should further examine whether its current policy framework already takes sufficient account of the potential costs of asset imbalances.

Notes

1. Salvatore Dell'Erba, Simone Meier, Pascal Towbin and Sebastian Weber contributed research and drafting to Chapter 2.
2. Libor rates are the benchmark used for interest rates that banks charge to each other on unsecured loans in major currencies worldwide. They are calculated by the British Bankers' Association (BBA) as an average rate from quotes contributed by a panel of banks that varies across currencies. OIS contracts are agreements between two counterparties to exchange at maturity the difference between an agreed fixed rate (the OIS rate) and the average of the overnight interest rates over the period. OIS rates therefore provide a measure of expected future overnight rates that approximate risk free interest rates.

3. See *e.g.* Michaud and Upper (2008), CDSs are bilateral insurance contracts against credit risks. The protection buyer pays a fixed fee (premium) expressed in basis points. If a certain pre-specified "credit or default event" occurs, the protection seller covers the occurred losses. The CDS rate for a specific bank should reflect the credit risk premia that a lender would demand for a loan given to this specific bank.
4. Similar changes in CDS rates for various currencies are in fact not too surprising since the banks that participate in the various Libor panels are similar.
5. Other policy settings, such as the strictness of collateral requirements in monetary operations, may also play a role.
6. For each period with an unchanged policy rate a separate mean of the OIS swap rate and the LIBOR is computed. The mean is defined as the average of the corresponding daily interest rate during the period. The volatility is calculated as the standard deviation with respect to this varying mean.
7. See SNB (1999), IMF (2008a) and Jordan, Ranaldo and Söderlind (2009).
8. Sorg (2009), estimates the overall size of the covered bond market to 47.5 billion CHF at the end of 2007.
9. In the euro area, by contrast, the relationship between the various monetary aggregates has remained stable.
10. The increase in the current account surplus within this period is mainly attributable to an increase of net exports in service and net investment income, while the goods trade surplus has remained stable around at 1.5% of GDP. For a detailed analysis of the Swiss current account surplus, see *e.g.* Jarret and Letremy (2008).
11. Other explanations consistent with the depreciating trend are the substantial sale of gold by the SNB started in 2005, and the diminished role of the Swiss franc as a reserve currency after the inception of the Euro (see IMF, 2008a).
12. Swiss banks have rather low exposure to these markets (SNB, *Monthly Bulletin on Banking Statistics*, April 2009). Most lending has been done by other European banks often using the Swiss franc as a funding currency.
13. Assuming inflation expectations around 1%, consistent with the definition of price stability and long-term historic inflation performance.
14. Even though many transactions are done via clearing houses or with the provision of collateral a significant part of FX swaps is done in an uncollateralized way (see *BIS*, *Quarterly Review* Sept. 2008). Hence, counter-party risk does still play an important role.
15. The problem was heightened by the difference in the time zones. European banks were asking for US dollar liquidity in early office times in the US, when US banks were still unsure about their own liquidity needs and therefore unwilling to engage in trades. This made the rollover of US dollar liabilities increasingly costly since markets did not provide sufficient liquidity at normal conditions.
16. The data for the foreign currency provision comes from the respective central banks. In the case of the ECB the outstanding foreign currency provision is constructed by cumulating the allotments taking account of the different maturity horizons. This includes both the US dollar and the Swiss franc swaps. For other countries the newly introduced items in the balance sheets were used: for Sweden "Claims on resident in foreign currency", for Canada "Loans and receivables – Securities purchased under resale agreement", for Japan "US dollar funds-supplying operations against pooled collateral" and for Denmark "Other Lending – Banks in Currency". For the SNB the item "claims form USD repo transactions" was used.

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Chapter 3

Containing the systemic risks from exceptionally large financial institutions

The Swiss financial system has weathered the international financial crisis despite the severe losses of its two largest banks and a considerable loss of one of its insurance companies, in part because the authorities moved quickly when the crisis broke in the fall of 2008. However the comparatively large magnitude of the losses of its two largest banks in relation to capital has underscored the systemic risks to the economy posed by the institutions' large size relative to Swiss GDP and their extensive cross-border and cross-currency activities. While the Swiss financial regulatory apparatus has been greatly improved during this decade, further steps need to be taken to better contain the systemic risks. Prudential standards for the two largest Swiss banks will need to be above the average maintained by their peers in other countries. Macro-prudential oversight needs to be further strengthened and broadened. The existing co-operative arrangements with financial authorities in other countries need to be expanded for the largest Swiss banks and insurance companies and for crisis management in the event of future problems.

The strains that hit the Swiss financial system in the wake of the international financial crisis in 2007 have been contained for the present. The capital positions of the two major banks, UBS and *Credit Suisse Group* (CSG) have been buttressed from private and public sources and the banks are undertaking internal reforms to remedy the serious weaknesses in their risk assessment and management that their losses have revealed. The repercussions of their problems on the remainder of the Swiss financial system have been limited, due in part to the timely actions of the Swiss authorities. Significant risks remain in the near-term, particularly if turmoil were to return to international financial markets or the economic downturn were to worsen or is more prolonged than now expected.

The crisis has underscored the considerable systemic risks to the Swiss economy posed by the exceptionally large size, in relation to GDP, of its major financial institutions, particularly the two biggest banks (Big-2), and their extensive cross-border financial activities (Box 3.1). Although the losses of the two major banks were not exceptional in absolute terms, they were very large in relation to their capital and in relation to the overall economy. The Swiss financial authorities have taken important steps over the past two years to improve oversight of the largest financial institutions and to strengthen prudential norms. As discussed in this chapter, containing the systemic risks posed by these institutions will also require greater emphasis on macro-prudential oversight and enhanced co-operative arrangements with financial authorities in other countries.

Origins of the Swiss financial crisis and its repercussions

Strains on the Swiss financial system began to be felt in 2007 as the credit quality of United States collateralised debt obligations (CDOs) based on sub-prime mortgages steadily deteriorated and the effects spilled over to major interbank markets. Strains on Swiss markets were comparatively moderate until the fourth quarter of 2007 when the first major announcements of write downs by the two largest banks revealed higher exposures to the afflicted assets than previously expected by financial markets.[1] Pressures mounted further during 2008 in the wake of several more major financial institution failures in the United Kingdom and the United States and announcements of further write downs and losses by the Swiss Big-2 and other international banks. Tensions reached a crescendo following the failure of Lehman Brothers in September 2008. Although financial market conditions have improved noticeably since then, they remain strained and vulnerable to further shocks.

The losses from write downs, mainly from CDOs, of the Big-2 Swiss banks have turned out to be very large, particularly for UBS which took cumulative write downs of USD 53.1 billion through the second quarter of 2009[2] (Table 3.3). The Big-2 losses were not exceptional compared to those of major US banks, three of which each took write downs nearly twice as great as those of UBS. The UBS write downs were larger than for any major EU bank, although those of CSG were more in line with those of the worst affected in the United Kingdom and Germany. However the UBS write down was exceptional in relation to

Box 3.1. **Distinctive features of the Swiss financial system**

The Swiss financial system is characterized by several distinctive features that have an important bearing on the risks it poses to the domestic economy (Table 3.1). First, the banking system is large. Swiss bank financial assets were nearly 7 times the level of GDP at the end of 2007, compared to about five times GDP at the beginning of this decade, and were still nearly six times GDP at the end of 2008 despite considerable downsizing of bank portfolios during the present crisis (Table 3.2). The Swiss ratio is substantially higher than that of other OECD countries except for Iceland prior to the crisis in 2007. The Swiss insurance sector is also quite large. Banking and insurance business are major contributors to domestic economic activity, accounting for nearly 11% of GDP and 5% of total employment. Value added from wealth management commissions alone contributed nearly 4% of Swiss GDP.

Table 3.1. **Financial system profile**

	Number of institutions	Total assets	Assets as % of 2008 GDP
		(CHF billion, 2008)	
Banks	324	3 124	587.2
Big-2	2	1 890	355.3
Cantonal banks	24	389	73.1
Regional and savings banks	76	88	16.5
Raiffeisen bank	1	132	24.8
Foreign owned or branches	130	356	66.9
Private banks	14	41	7.7
Other banks[1]	77	228	42.9
Insurance companies[2]	114	881	165.6
Life	24	287	53.9
General	90	594	111.7
Pension funds[2]	2 543	605	113.7
World-wide assets of major Swiss financial institutions, 2008[3]			
	CHF billion, 2008		% of 2008 GDP
UBS	2 015		378.8
CSG	1 170		219.9
Swiss Re	225		42.3
Zurich financial services	307		57.7
Foreign currency assets and liabilities as per cent of total assets/liabilities	Per cent for end-2008		
All Swiss banks[3]	Assets		Liabilities
All currencies	71		71
Denominated in USD	27		28
Denominated in euros	13		14

1. Trading banks, stock exchange banks, and other banks.
2. Figures for end-2007.
3. Consolidated level (including subsidiaries abroad).
4. Swiss booked assets only.

Source: Swiss National Bank, *Monthly Report on Banking Statistics*; *Annual Reports* of UBS and CSG for 2008, IMF 2009a.

The large size of the financial system reflects the presence of several very large internationally focused institutions that make Switzerland a major international financial centre. Domestically booked assets of Switzerland's two largest banks, UBS and Credit Suisse Group (CSG) account for about 60% of total Swiss bank assets or over 3½ times Swiss GDP at the end of 2008 while their total

Box 3.1. **Distinctive features of the Swiss financial system** *(cont.)*

Table 3.2. **Banks' assets relative to GDP, per cent**[1]

	Euro area	Iceland[2]	Iceland	Switzerland[3]	Switzerland[4]	United Kingdom
1998	231				512	294
1999	243				553	285
2000	247				499	322
2001	250				512	335
2002	249				514	338
2003	253	172			508	365
2004	263	320			550	392
2005	281	528			614	441
2006	294	726			661	474
2007	318	878	750	705	681	497
2008	331			595	587	548

1. Data for the assets of domestically registered banks (excluding foreign subsidiaries' assets) except where indicated otherwise.
2. Consolidated assets of the three largest banks in Iceland; data include foreign subsidiaries' assets.
3. Consolidated total assets of the two largest banks in Switzerland; data include foreign subsidiaries' assets.
4. The series has a break in 2006 due to changes in the number of banks included in the series' reference panel.

Sources: SNB, *Monthly Bulletin of Banking Statistics*; Central Bank of Iceland, *Accounts of the credit system*; Bank of England, *Monetary financial institutions' balance sheets*; European Central Bank, *Monetary and Financial Institutions balance sheets* (2009).

worldwide assets (including those of subsidiaries) were 6 times GDP. The Big-2 are among the world's largest international banks, ranking 5th and 27th respectively in terms of total assets at the end of 2008. Their focus is on wealth and asset management and investment banking conducted through an extensive network of foreign branches and subsidiaries predominately located in Europe and North America. Interbank and other wholesale financial markets supply most of their funding. Switzerland's role as an international banking centre is also manifest in an extensive presence of foreign banks at the end of 2008. The insurance sector is likewise dominated by two very large internationally focused institutions, Swiss Reinsurance (Swiss Re) and Zurich Financial Services (ZFS), two-thirds of whose *premia* arise from foreign business. Swiss Re alone accounts for nearly 15% of global reinsurance *premia*, and Switzerland ranks only behind the United States and Germany in the scale of its reinsurance business.

Switzerland's prominence as an international finance centre goes beyond its largest institutions. Swiss domiciled institutions account for an estimated two-thirds of cross-border wealth management (IMF 2007a). This wealth management is carried out through an extensive network of private banks organized as partnerships and by foreign banks in Switzerland as well as the Big-2. Switzerland is also a major player in the international hedge fund business, ranking second to the US as a market for such funds. Hedge funds have grown very rapidly in Switzerland since the beginning of this decade, from 39 funds registered domestically in 2001 to 256 at the end of 2007 (IMF 2007a). The Big-2 have been extensively involved in hedge fund activities and their exposures have been closely monitored by the Swiss banking authorities.

The international orientation of the largest Swiss financial institutions and large presence of foreign banks has led to a comparatively high level of foreign-currency denominated assets and liabilities relative to the overall size of the financial system and in relation to Swiss GDP. Foreign currency denominated instruments – predominately interbank and other wholesale – accounted for nearly 60% of total Swiss banking system liabilities in December 2008, more than 3 times GDP, and nearly 80% of liabilities to banks. This concentration makes the Swiss financial system and economy particularly vulnerable to liquidity shortages in foreign currency.

Box 3.1. **Distinctive features of the Swiss financial system** *(cont.)*

Most of the other Swiss financial institutions are primarily focused on domestic lending and other activities. The 24 cantonal banks play a major role in lending to domestic businesses and households, and together with the other domestic banks account for nearly two-thirds of domestic lending. The domestic banks engage mainly in traditional mortgage and commercial lending: securities and other trading activities as well as foreign currency holdings are limited. Deposits account for a much larger portion of funding of the domestic banks (about one-quarter of total liabilities) compared to the Big-2. Apart from the three largest, Swiss insurance companies are likewise focused on domestic customers.

Several features of the Swiss financial regulatory system are also distinctive. As in other countries, major segments of the financial system have until recently been subject to separate financial regulators. Cantonal authorities play a key role as owners of the Cantonal banks, whose liabilities are guaranteed by the cantonal government and which are subject to mandates on their local lending. Cantonal authorities also have a key role in pension fund regulation. Switzerland's regulatory system is also distinctive in the importance of self-regulatory bodies, such as the Swiss Bankers Association, and in its reliance on external auditors to conduct examinations of financial institutions.

Table 3.3. **Writedowns of sub-prime and related assets by major international banks**

	Cumulative loss from Q2 2007 through Q2 2009 (billion USD)	Loss as per cent of total assets or end-2008	Loss as per cent of Tier 1 capital for end-2008
Swiss banks			
UBS	53.1	2.8	182.6
CSG	17.7	1.6	59.2
United States banks			
Citibank Group	101.8	5.3	85.5
Wachovia Bank	101.9		234.3
Merrill Lynch Bank	56.0	90.6	1 302.3
Bank of America	99.3	5.5	82.1
Washington Mutual	45.3		374.4
JP Morgan Chase	41.2	1.9	30.3
Wells Fargo Bank	22.9	1.7	26.5
United Kingdom banks			
HSBC	42.2	1.7	44.4
RBC	31.4	0.9	31.1
Barclays Bank	19.9	0.7	36.9
Other European banks			
Deutsche Bank	18.8	0.6	43.7
BNP Paribas	14.1	0.5	24.3
Bayerische Landesbank	16.4	2.8	104.5
ING	15.8	0.9	35.4
Memorandum:			
Write downs by major Swiss insurance companies (through Q1 2009)	USD billion		
Total	9.7		
Swiss Re	6.4		
Zurich Financial Services	2.9		

Source: Banker, Top 1000 World Banks 2009, June 2009; *International Monetary Fund Country Report – Switzerland*; *Annual Reports* of UBS and CSG (for Tier 1 capital figures).

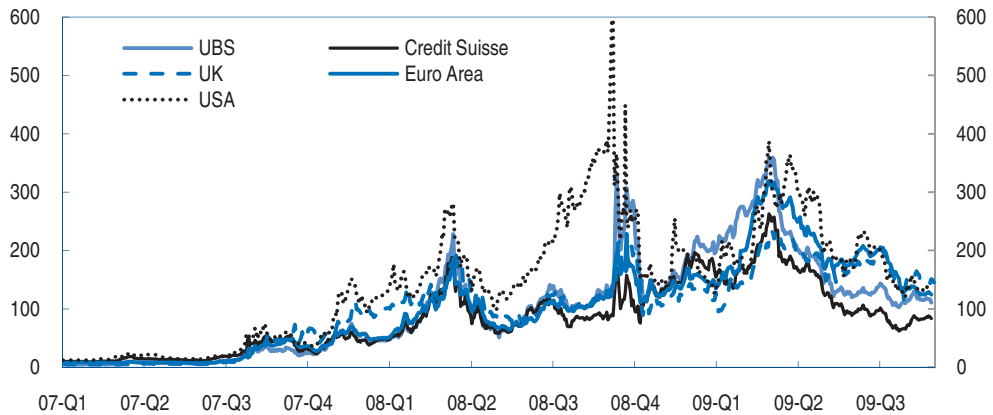
its capital: by this standard, UBS losses were greater than for any surviving United States financial institution and well above the ratios for any other EU bank. For CSG they were, by this standard, closer to the ones of other European banks.

The international orientation of the largest Swiss financial institutions and large presence of foreign banks has led to a comparatively high level of foreign-currency denominated assets and liabilities relative to the overall size of the financial system and in relation to Swiss GDP. Foreign currency denominated instruments – predominately interbank and other wholesale – accounted for nearly 60% of total Swiss banking system liabilities in December 2008, more than 3 times GDP, and nearly 80% of liabilities to banks. This concentration makes the Swiss financial system and economy particularly vulnerable to liquidity shortages in foreign currency.

The Swiss bank write downs were also larger as a ratio to GDP than for any other OECD country except Iceland. The losses of Swiss Reinsurance from its exposure to sub-prime mortgages and credit default swaps (CDS) were also relatively large compared to most other international insurers, although much smaller in absolute terms than those of the Big-2.

Market assessments are broadly consistent with the severity of the write downs. Measured by credit default swap rates (CDSR), UBS has until recently been viewed as among the most at-risk of major European banks, although somewhat less risky than the worst-affected US banks for much of the crisis (Figure 3.1). The perceived risk of CSG has remained noticeably below that of UBS throughout the crisis and is now lower than the average of the US and European banks. Both banks have undergone several downgrades by the major credit rating agencies since the beginning of the crisis. Overall ratings for UBS are among the lowest of the major banks hardest hit by the crisis, although those for CSG are somewhat better.[3]

Figure 3.1. **Bank credit default swap rates**[1]



1. Bank credit default swap prices for individual countries refer to the simple average with respect to their main banks.

Source: Datastream.

StatLink http://dx.doi.org/10.1787/747741871164

Weakness in internal controls was a contributor but not the fundamental cause of the write downs

Weaknesses in the internal risk management of the Big-2 were a significant proximate factor behind their heavy losses on sub-prime and other securitized assets. A UBS special report to its stockholders issued in March 2008 and a subsequent report of the Swiss

Federal Banking Commission (SFBC) cited serious weaknesses in internal reporting of risk exposures to sub-prime assets to senior management, inadequate control of the bank's trading inventory of securitized assets, and insufficient attention by senior officials to the risks entailed by the rapid growth of the overall balance sheet (UBS, 2008a; SFBC, 2008). Such weaknesses were hardly unique to the Big-2 and do not appear to have been exceptional in relation to the other major United States and EU banks that suffered most heavily. While better internal controls probably would have reduced the losses somewhat, the internal idiosyncratic weaknesses of the Big-2 were not the fundamental problem.

The basic source of the Big-2 losses was their adoption of a strategy (in their investment banking component) involving pursuit of rapid growth in revenues through the trading of complex structured instruments based on mortgages and other assets whose individual risk was supposed to be hedged through diversification. Profits were driven by highly leveraged financing of the trading through borrowing in shorter-term markets. This strategy was shared by the major international bank peers of the Big-2 in the US and the European Union (EU) and began to develop during the 1990s although it became much more aggressive during this decade. The Big-2 along with Swiss Reinsurance began to increase their emphasis on this strategy earlier in this decade in order to augment the profits they were receiving from their traditional (and generally more conservative) wealth management and other core businesses.[4]

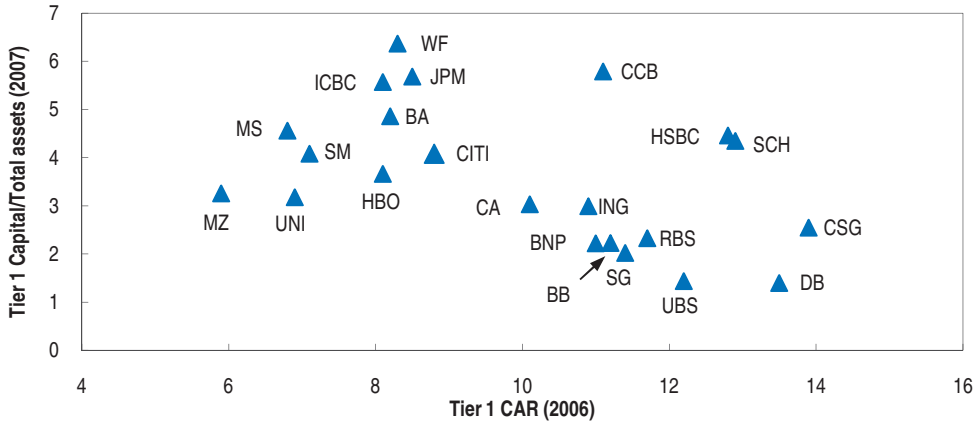
The Big-2 also shared the weaknesses of other major international banks in seriously underestimating the risks entailed by their activities in the structured instruments business. The probability of credit deterioration in the assets underlying the structured instruments was understated, the ease with which the banks would be able to reduce their risk exposure in times of market turmoil was overstated, and too much reliance was given to ratings of the major credit rating agencies. These misperceptions were widely shared, by market analysts outside the banks as well as among financial supervisory authorities in Switzerland, the rest of Europe, and the United States.

The Big-2 did go further than most banks in leveraging their balance sheets to boost revenue. The average ratio of Tier 1 capital to book-value assets for the Big-2 fell from nearly 7% in 1995 to just above 4% in 2000 and dropped further to about 2% in 2005-2006. The UBS ratio of tier 1 capital to total assets at the end of 2007 was the lowest of any major European bank except for Deustche bank and well below the levels of the major United States banks; while the CSG ratio was also relatively low[5] (Figure 3.2).

Despite their comparatively high leverage, the Big-2 were (and largely remain) relatively well capitalized on a risk-adjusted basis. The tier 1 CAR of CSG and UBS were among the highest of major international banks before the crisis. Two of the other banks taking the largest write downs, Citigroup and Royal Bank of Scotland, also had comparatively high CAR. The combination of high CAR with high leverage is characteristic of those banks which most aggressively grew their leveraged trading activities in complex structured instruments.[6] The high CAR encouraged a sense of confidence that risks were being contained, but the low ratios of capital to book-value assets proved to be the better measure of vulnerability during the crisis.

Other Swiss financial institutions have experienced adverse consequences from the international financial crisis, but in most cases these were moderate. Swiss Re recorded substantial write downs, amounting to nearly 3% of its total assets (mainly) from its exposure to sub-prime mortgage related instruments and credit default swaps and was

Figure 3.2. **Leverage and capital adequacy ratios of major international banks**[1]



1. Banks' acronyms are the following: BA, Bank of America Corp.; BB, Barclays Bank; BNP, BNP Paribas; CA, Crédit Agricole Group; CCB, China Construction Bank; CITI, Citigroup; CSG, Credit Suisse Group; DB, Deutsche Bank; HBO, HBOS; HSBC, HSBC holdings; ICBC; ING, Ing Bank; JPM, JP Morgan Chase and Co.; MS, Mitsubishi UFJ Financial Group; MZ, Mizuho Financial Group; RBS, Royal Bank of Scotland; SCH, Santander Central Hispano; SG, Société Générale; SM, Sumitomo Mitsui Financial Group; UBS; UNI, Unicredit; WF, Wells Fargo and Co.

Source: Banker Magazine; Euromoney.

StatLink http://dx.doi.org/10.1787/747764342222

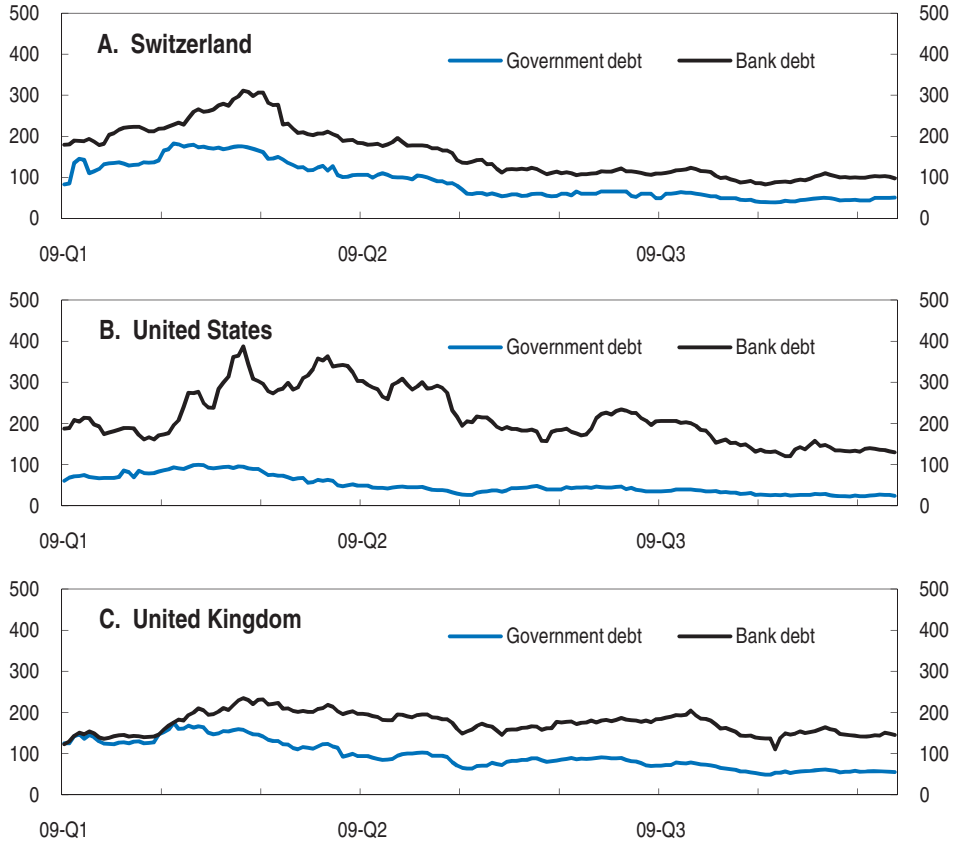
forced to seek a capital infusion from an outside investor (Berkshire-Hathaway fund). Neither its losses nor those of the other major Swiss insurers have posed significant systemic risks by themselves. However they probably added to market concerns over the Swiss financial system and economy and increased the potential costs to the Swiss government in the event that a broader financial rescue was to be become necessary.

The problems of the major Swiss financial institutions have led to a significant increase in market assessments of Switzerland's sovereign risk. The risk premium on Swiss sovereign debt – as measured by the credit default swap rate (CDRS) on government debt – rose sharply along with those of other affected economies during the surges in 2008 and early 2009 although it has since fallen back below that of the United Kingdom (Figure 3.3). Movements in the Swiss bank and sovereign CDRS have been closely synchronised, more so than for the United States or the United Kingdom, and the difference between sovereign default swap rates and bank debt default swap rates has been smaller. This pattern suggests that the financial institutions' problems are perceived to be more closely linked to Swiss sovereign risks than for other countries. The reliability of the CDS Market as an indicator for the sovereign risk of Switzerland may be questioned. The CDS market for Swiss bonds is not transparent, because their prices are negotiated between the parties concerned ("over-the-counter market"), as is generally the case for CDS contracts, so price discovery may be unreliable. For small euro area countries, differences in interest rates on government debt from different countries are tracked quite closely by corresponding differences in the CDS prices, suggesting that CDS prices on government debt may reflect how investors price their perceptions of risk of government debt even in small countries.[7]

Spillovers from the Big-2 problems to the rest of the Swiss financial system were limited

The cantonal and other domestically oriented Swiss banks seem to have been little affected directly by the international turmoil and Big-2 problems although they have been affected indirectly through the downturn in the Swiss economy. Domestic banks received

Figure 3.3. **CDS prices for government and bank debt**[1]



1. All series start from January, 16th 2009, date from which data on Swiss government sovereign debt are available. Bank credit default swap prices for individual countries refer to the simple average with respect to their main banks.

Source: Datastream.

StatLink http://dx.doi.org/10.1787/747782854052

substantial inflows of funds from the Big-2 banks in 2008, although these were subsequently relent back to the Big-2, facilitated by measures taken by the SNB noted below. Non-performing loans of cantonal and the regional and savings banks have not risen appreciably. While their profits have fallen, they remained positive through 2008 (Table 3.4) (SNB, 2009a). The portfolios of insurance companies have fallen markedly in value as a result of the decline in asset prices on international and domestic markets, although their immediate ability to meet their obligations has not been impaired. Coverage ratios of pension funds' assets to the discounted value of future obligations have fallen. As discussed in Chapter 1, the authorities have mandated remedial actions that will restore coverage ratios to more normal levels in the near-term.

A number of factors help explain the relatively limited damage experienced by Swiss domestic financial institutions and markets. The relatively early decision (October 2008) to transfer toxic assets from UBS to a dedicated fund also helped restore confidence. Real estate markets in Switzerland did not go through the marked cycle in the years prior to the crisis that occurred in the United States, the United Kingdom and a number of other European countries. Swiss housing prices rose only moderately, at an annual average rate of 4.2% over 2000-2006, and have continued to rise since then. The stringent mortgage

Table 3.4. **Bank soundness indictators**[1, 2]

		2006	2007	2008	Q1 2009	Q2 2009
Total CAR						
Big-2		12.4	10.7	12.6		
Cantonal banks		15.1	15.7	15.6		
Regional and savings banks		13.7	13.,7	14.5		
Raiffeisen banks		16.5	18.7	18.8		
Leverage[3] %						
Big-2		2.5	2.5	3		
Cantonal banks		8	8.1	7.5		
Regional and savings banks		8	8	7.8		
Raiffeisen banks		8.4	8.7	8.8		
Gross profits (CHF million)		29 912	24 218	8 612		
Big-2		15 068	6 925	–4 586		
Cantonal banks		4 265	4 277	3 646		
Regional and savings banks		908	915	793		
Raiffeisen banks		981	964	883		
Memoranda:						
Total CAR	UBS	15	12,7	15	14.7	17.1
	CSG	18.4	14,5	17.9	18.7	20
Leverage ratio	UBS			2.5[4]	2.6	3.5
	CSG			3.1[4]	3.8	4
Net profits	UBS	11 527	–5 247	–21 292	–1 854	–1 402
	CSG	11 367	7 760	–7 687	2 006	1 571

1. Figures for the Big-2 aggregates and other bank groups are from the SNB. Figures for UBS and CSG are for the consolidated worldwide group as reported in the banks' annual and quarterly reports. The SNB definitions for the Big-2 are not strictly comparable with the worldwide data reported by the individual banks.
2. Figures for 2007 onward are based on Basel II standards. The ratios under the Basel I definitions were 12.3 and 12.7 respectively for 2007 and 2008 for UBS and 12.9 for 2007 for CSG (2008 Basel I figure not available).
3. Tier 1 capital as ratio to total assets. UBS and CSG figures based on adjusted assets, excluding domestic lending and other adjustments.
4. Figure for end-2008.

Source: SNB Financial Stability Report, 2007 and 2008; *Annual Reports* of UBS and CSG for 2007 and 2008; *Quarter Report* of UBS for Q2 2009; *Financial Release* of CSG for A2 2009.

lending standards adopted by Swiss domestic banks after the severe real estate market downturn in the early 1990s have largely been maintained both before the present turmoil and after (SNB 2009a). As a result, Swiss domestic banks have experienced little deterioration in the quality of their mortgage loan portfolios or losses from defaults. Domestic banks' concentration on traditional lending and limited trading activities has insulated them from the direct impacts of the declining financial market prices.[8]

The comparative robustness of the Swiss franc as the crisis unfolded also helped in containing the spillovers from the problems of the largest financial institutions and in preventing a much greater meltdown such as that experienced by Iceland. The franc appreciated against the dollar during the latter half of 2007 (although it changed much less *versus* the euro) and again in the first quarter of 2008 following the Lehman Brothers failure. The Swiss franc's traditional status as a "safe-haven" currency probably contributed to its robustness, although there are indications that carry trade also played a role (see Chapter 2). Other factors, notably Switzerland's long record of macroeconomic stability, current account surpluses, fiscal prudence, and the previously high reputation of its major financial institutions were probably as least as important. The fact that the banking problems were widespread and not simply confined to Switzerland may also have helped avoid downward pressures on the franc. None of these factors can be expected to provide any guarantee

against a currency crisis, in the future, however. There were some indications before the crisis that the decline in the role of the Swiss franc as a reserve currency and the advent of the euro might have eroded its safe haven status (IMF, 2007d).

… due in no small part to effective actions taken by the financial regulators and the SNB

Measures taken by the Swiss banking authorities and SNB since the crisis began have played a critical role in limiting its impact on the domestic economy, notably through significant easing of monetary policy as well as injections of dollar liquidity. These actions were essential to ensuring that Swiss financial institutions could obtain the dollars needed to fulfill their obligations (Chapter 2). The SNB also played a key role in alleviating pressures on the Big-2 banks resulting from the outflow of funds by brokering the issue by the Big-2 of mortgage backed ("covered") bonds to domestic banks.

These actions, along with statements by the Swiss authorities that further measures, including direct government guarantees of bank obligations, would be taken if necessary helped to stabilize confidence in the overall financial system and probably to calm concerns over the viability of the Big-2. The actions may well have raised longer-term moral hazard that will have to be addressed at some point, but the immediate systemic risks posed by the Big-2 were, at that point appropriately, the overriding consideration. Moreover, the regulator moved quickly after the outbreak of the crisis to bolster prudential capital requirements on the large banks (see below).

The support measures for UBS announced by Swiss authorities (the SNB, Swiss Federal Banking Commission, and Swiss Federal Government jointly) in October 2008 have insulated UBS from further losses on a significant portion of its most impaired assets while preserving its capital (Box 3.2) .[9] The original shareholders of UBS paid an up-front cost of 10% of the value of the assets transferred. The Bank had to pay a significant risk premium on the notes purchased by the Swiss Federal Government. The risk of the assets held by the Stability Fund is shared between UBS and the SNB and both share in the gains if the assets rise in value. The agreement also provided for assessment of the acquisition prices for the assets by an independent panel of experts. These prices were established quite close to the valuation on the UBS trading book at the end of September 2008.

The agreement had the advantage of decisively removing a large portion of the impaired assets that were undermining confidence in the viability of UBS. A notable feature of the scheme is that it limited moral hazard by making incumbent shareholders bear part of the losses while at the same time ensuring that such losses born by shareholders would not weaken the capital base of the bank. The maximum losses to be born by incumbent shareholders amount to the initial 10% as well as any SNB profits from exercising its option to acquire UBS shares in case there are further losses (about another 5% of the assets transferred at a share price of USD 20). Greater up-front costs could have been imposed on UBS shareholders, which would have further limited moral hazard on future shareholders. This would have required a larger stake in UBS from the Swiss government. The offer to transfer toxic assets out of UBS' balance sheet without public intervention in the bank's management exposed the public sector to incentives of the bank to sell only assets for which it could expect to make a profit at the expense of the public sector. The "all or nothing" rule for transfer of assets within designated categories helped to limit these adverse selection risks to some extent. The provisions making incumbent shareholders bear part of the losses that may build up in StabFund, as noted above, also

Box 3.2. **Terms of the support package for UBS**

Under the agreement announced on October 16, 2008 (SNB, 2008b), a special investment vehicle (the SNB Stability Fund- StabFund) was created to acquire up to CHF 60 billion of sub-prime and other seriously impaired structured assets from UBS. Designated categories of assets were defined, with UBS required to either transfer all assets within a given category to the fund or to retain the entirety on its books. The vehicle was financed in part by equity provided by UBS equal to 10% of the value of the assets acquired and which was subsequently written down. The remainder was agreed to be financed by a non-recourse US dollar loan from the SNB at an interest rate of 250 basis points above the one-month LIBOR. (Given that the assets acquired were denominated in dollars, the SNB initially funded its loan by borrowing on its swap line with the United States Federal Reserve, and later by issuing Swiss National Bank notes denominated in dollars). The Fund has a maximum life of 8 years (extendable to 12 years), allowing for considerable time to sell the assets in more favourable market conditions.

The other component of the arrangement was a purchase by the Swiss Federal Government of CHF 6 billion (0.1% of GDP) in mandatory convertible notes issued by UBS. Together with the write down and transfer of the UBS equity injected into the fund, the plan – as originally conceived – effectively restored UBS capital to its original level and gave the federal government the option to claim an ownership stake in the bank of 9.3%. The injection represents 13.6% and 5.6% of UBS market capitalization at the end of 2008 and at the end of 2007 respectively. The notes carried an interest rate of 12.5%. The notes had to be converted into equity no later than 30 months after the original sale, although the government was given the option to sell the notes before conversion.

The UBS potential loss is thus capped at its 10% contribution of the value of the assets required. Moreover the SNB will receive partial compensation in the form of UBS shares (up to 100 million units) in case its loan is not fully repaid upon termination of the Fund. Moreover, the SNB is entitled to the first CHF 1 billion of the value of the fund at maturity above the loan amount, with gains above that amount shared equally between SNB and UBS.

Changes in accounting rules toward the end of 2008 allowed UBS to transfer a portion of the assets originally designated to be acquired by the StabFund (mainly assets based on United States student loans) from the trading book to the bank book. This transfer provided a less expensive means to UBS of eliminating future market risk from the assets although, as noted in the text, it leaves the bank with residual credit risk on the assets. The remaining assets transferred to the fund amounted to just under CHF 38 billion.

reduced these adverse selection incentives. The costs of the package so far have been mixed. In August the Swiss government sold its stake in UBS for a profit of CHF 1.2 billion. The assets in the StabFund have fallen below the original equity by about CHF 600 million, but this loss would be more than offset if the SNB exercised its option to acquire shares (as of September 2009). By contrast, losses have been incurred by the public sectors in the United States, the United Kingdom and Sweden (OECD, 2009b).

Conditions have improved but the financial system is likely to remain vulnerable for some time

Financial strains have eased noticeably since their peak in the first quarter of 2009 as markets have become somewhat more optimistic about the prospects of the major international banks, including the Big-2. Financial conditions of the Big-2 and the major insurers have improved noticeably since mid 2008 (Table 4.4). Substantial capital injections

from private and other sources, amounting to nearly USD 28 billion for UBS (excluding the capital from the Swiss government) and about USD 12 billion for CSG, have restored their overall CAR to above pre-crisis levels. Both banks have been reducing their exposure to their most risky assets and shrinking their trading activities. This has led to a substantial drop in their total assets that largely accounts for the decline in the total assets of Swiss banks relative to GDP in 2008. Lower interbank lending also contributed, while exchange rate effects played a minor role. The downsizing of balance sheets continued in the first 6 months of 2009. Declining assets along with additional equity injections have also led to significant improvement in leverage ratios, particularly for CSG. After recording a first net loss in the first quarter of 2008, profits of CSG have been positive since the first quarter 2009. Swiss Re has also improved profitability. UBS continued to record net losses but these fell noticeably in the first quarter of 2009. Profits have been depressed by the write-offs and other charges on impaired assets. The improvements are reflected in the two banks' credit default swap rates, which by the end of the second quarter of 2009 had fallen by about one-third from the peaks they reached in the first quarter.

Significant risks to the Swiss financial system are likely to remain for some time, however. Despite the write downs and downsizing of their trading portfolios, the largest financial institutions, particularly the Big-2 banks, retain sizeable trading risk exposures, particularly in their off-balance sheet activities and their exposures to certain emerging market economies. The USD 21 billion of UBS holdings of United States originated securities transferred from the trading book to the banking book earlier this year is still vulnerable to credit losses should those securities become further impaired. Market observers continue to be wary about the prospects of the Big-2. The Big-2 and other Swiss banks also faced uncertainties about their wealth and asset management business engendered by the intensified controversy over Swiss bank secrecy rules. UBS reported outflows from its wealth and asset management divisions of CHF 39.4 billion in the second quarter of 2009.[10] These appear to have been offset by inflows to other Swiss wealth managers.

The decline in the portfolio values of insurance companies and pension funds, although not critical now, poses risks if asset prices were to fall further. A number of life insurance companies experienced large and as yet largely unrealized losses in 2008 from rising credit spreads, higher liquidity premiums, lower interest rates and increased market volatility. For 25 to 30% of Swiss pension funds assets were estimated to be worth less than the present value of their future obligations (less than 100 per cent coverage ratio) as of September 2009, although the funds' ability to meet obligations in the short and medium-term has not been impaired.[11]

Although projections for major economies have been revised upwards in recent months, risks could increase if the current global economic downturn were to prove longer or more severe, than now projected.[12] A prolonged period of negative profits would erode the progress made by the Big-2 in buttressing their capital margins. Swiss banks that have been little affected so far could come under greater strain if the downturn were to lead to an acceleration in business bankruptcies and defaults on mortgage and consumer credit.

Bolstering prudential standards to help contain systemic risk

The global financial crisis has revealed major weaknesses in international norms and practices for financial regulation, including gaps in regulatory coverage, pervasive underestimation of the true risks of complex financial products, and inadequate attention

to liquidity needs in times of market tension. In retrospect, too little attention was paid to interdependencies among markets; regulators tended to focus too much on individual institutions; and assessments of systemic risks through stress tests turned out to be insufficiently stringent (Bailey *et al.*, 2008; Brunnermeir *et al.*, 2009; FSA, 2009).

The fact that the crisis itself and its subsequent extent were unanticipated further underscores these weaknesses. The sophisticated internal models used by financial institutions failed to detect the risks they were incurring, in part because they were overly reliant on assessments by outside credit rating agencies and in part because they assumed that positions could be unwound in times of turmoil much more easily than turned out to be the case. While concerns were widely expressed about the growing resort to increasingly complex and opaque instruments and the overall rise in leverage, country supervisory authorities and the major international financial authorities continued to believe up to the onset of the crisis that the largest banks and other financial institutions were sufficiently robust to any likely shocks that might hit the system.[13]

Remedying the weaknesses to prevent future crises will require further changes in prudential norms and supervisory oversight. As discussed in the following sections, financial supervisors need to give greater attention to macro prudential oversight of the financial system as a whole and to develop more effective cross-border co-operative arrangements.

Switzerland needs to continue its efforts towards prudential norms that take account of the systemic risk from the largest institutions

The need to better contain systemic risks is the key priority for Swiss financial reforms over the next several years. The greatest systemic risks are posed by the Big-2. So long as they retain their present size and form, these institutions are individually and collectively "too-big-to-fail" because of the costs their failure would impose on the economy. For example, Switzerland's largest bank is much larger in relation to GDP (328 %) than is the case with the largest bank in virtually any other OECD country and its failure even in isolation would pose systemic risk.[14] The costs of rescuing one or more of the institutions in the event of failure would at least severely strain the fiscal resources of the Swiss government and in a worst case could exceed its capacity.

The potential for an accompanying currency crisis under such (or milder) circumstances adds to the risk. Both the likelihood of a currency crisis and the damage it would cause to the economy are magnified by the comparatively large foreign currency assets and liabilities of the largest financial institutions in relation to the overall financial system and Swiss GDP. While financial institutions normally limit their foreign currency exposures by largely matching assets and liabilities in a given currency, they are still vulnerable to substantial losses in the event of serious disruption to market liquidity. The net demand for foreign currency that could arise in such circumstances could exceed the capacity of the resources available to the SNB to supply. The net foreign asset position resulting from Switzerland's history of current account surpluses does not guarantee adequate access to foreign currency in the event of a liquidity crisis. Moreover, while assessments about public finances, which have been prudently managed, can spillover to exchange rate developments, such assessments may, in future, themselves be influenced by the perceived risk of any needed government interventions to rescue banks, as Figure 3.3 illustrates. Should such perceived risks rise in the future, risk *premia* in domestic interest rates could thus emerge, transmitting a crisis in one of the large, internationally active intermediaries to the domestic economy, and possibly to the exchange rate.

The "too-big-to-fail" status of the largest institutions means that moral hazard is large and inevitable and cannot, even with the best of governance structures, be expected to be fully internalized by the institutions themselves. The challenge facing the Swiss authorities is all the greater in view of the complex cross-border structure of the largest institutions, which as experience during the crisis has underscored, may be beyond the capacity of individual country regulators alone to oversee.

The systemic risks posed by other Swiss financial institutions are less than those of the Big-2 but not negligible. Failure of one of the major insurers might not undermine the stability of the overall financial system but it may cause strains in domestic financial markets and could require substantial government financial support to ensure that the company's liabilities could be paid. A more general deterioration in the financial soundness of the domestic banks, insurance companies, or pension funds would almost certainly require substantial government assistance and, at least in the case of the banks, could adversely affect credit availability to the overall economy.

Given the systemic risks of the largest Swiss institutions capital-asset ratios (CAR) and other prudential standards for the Big-2 should be at least as stringent as those maintained by their soundest international peers and thus above minimum or average industry standards.

Capital requirements need to be more stringent and responsive to the risk cycle…

The Basel capital adequacy rules are currently under review with consideration being given to changes in the minimum ratios along with revisions to the definition of capital and risk weights on certain assets (BCBS, 2009). Individual country regulations will need to adapt over time to the changes agreed upon by the Basel Committee on Banking Supervision (BCBS), although some country regulatory authorities, notably the Swiss Financial Market Supervisory Authority (FINMA) and the United Kingdom Financial Services Authority (FSA), have already announced some steps.

An international consensus has emerged on at least two points. First, the minimum capital ratios need to be substantially higher than the levels (8% and 4% respectively for total and tier 1 capital) presently specified under the Basel accords (FSA, 2009a; de Larosière, 2009; Geneva, 2008; see also Hildebrand, 2009). There is less agreement at this point as to how much the ratios should be increased, in part because this will depend on the changes that are made in the definition of capital and asset risk weights. The ratios maintained by the largest international banks before the crisis, including those which have suffered most severely, suggests that their minimum CAR should be at least 50% greater than the current Basel standard. The United Kingdom Financial Services Authority (FSA) has recommended that the Tier 1 ratio be increased by as much as two-fold and that this ratio, rather than the total CAR, be given primary emphasis for systemically important banks[15] (FSA, 2009a; see also Brunnermeister *et al.*, 2008).

There is also general agreement that capital requirements should be specified so that capital cushions rise during market expansions (when risks have tended to be underestimated) and are allowed to fall back during contractions (DeLarosierre, 2009; FSA 2009a; Group of 30, 2009). Pro-cyclical capital requirements would help to ameliorate the tendency of fixed CAR requirements to magnify balance sheet expansion during market upswings, when declining risk indicators free up capital for further investment, while adding to contractionary pressures during market downturns when increased risk induces banks to shed assets to maintain CAR (Brunnermeister *et al.*, 2008; FSA, 2009a).

The revised capital requirements announced by FINMA officials in June 2009 represent an important step toward achieving prudential norms that better reflect systemic as well as individual risks. Under FINMA's implementation of the BIS standard, starting no earlier than 2013, the Big-2 will be required to maintain minimum overall CAR of at least 50% above the Swiss implementation of the current BIS minimum (that is, at least 12%) at all times. This ratio must be increased to two times the BIS minimum (no less than 16%) in "good-times", defined as two successive years in which a bank's profits are at least equal to the "industry standard". As with the prior rules, Tier 1 capital must make up the bulk of overall capital and its dominance will be further increased by the revised FINMA definition of permissible capital, which excludes subordinated debt, scheduled to take effect sometime after 2013 (FINMA, 2009b).

Several considerations suggest that implementation of the new standards could be accelerated and that higher minima may ultimately be needed. The Big-2 now have overall capital ratios above the lower minimum on the basis of the Basel II definitions. The new minimum is roughly at the median of the capital ratios of the largest 25 international banks in the OECD area in terms of assets at the end of 2008 and slightly below the average (12.7).[16] It is also noticeably below the CAR ratios of the Swiss domestic banking segments. Imposing a lower CAR than will be needed in the longer-term while the Big-2 are still vulnerable to further losses is reasonable.

As argued earlier, the appropriate minimum CAR for the Big-2 should ultimately place it toward the top of those maintained by its industry peers. The ratios maintained before the crisis suggest that this is likely to turn out to be closer to the two times the current Basel minimum now mandated for "good times". Once the Big-2 have reliably recovered, the higher ratio should be maintained as the primary standard. The minimum may need to be raised further if the tightening of prudential standards in other countries leads to a further rise in CAR of other major international banks. The adequacy of the current capital requirements for domestically oriented banks also should be reassessed once the revised stress tests that are being developed are implemented (see next section).

The new requirements establish a rudimentary mechanism for varying the capital standard but this could be improved. As indicated earlier, the rationale for pro-cyclical CAR rules is to establish capital cushions that vary with the cycle in markets. The profit criterion specified in the new rules is not a very good measure of this cycle and could have perverse effects. If applied literally, for example, it could lead to relaxation of capital requirements if a bank underperformed the industry due to its own weaknesses. A preferable approach would be to specify a range of variation for the CAR over the cycle. The minimum CAR would be at the top of the range during market upswings and allowed to fall toward the lower end of the range during contractions. Conditions specifying the position of the CAR within the range would be determined by an objective rule incorporating indicators of the market cycle (for example average credit expansion by international banks relative to trend). The rule might also incorporate further indicators of systemic risks to the Swiss financial system (for example, the size of a bank's assets relative to Swiss GDP). Consideration should also be given to raising the present lower bound if this approach is taken, since 150% of the BIS minimum may not be adequate for the Big-2 even in market downturns.

The alternative option would be to require banks to build up a separate buffer of capital-eligible assets during market upswings that could be drawn down in downswings.

The minimum CAR would then remain constant at the desired average over the cycle. The "dynamic provisioning" system that has been used in Spain is one example of how such a buffer could be implemented. As with the first option, rules need to be developed to determine the average size of the buffer and its variations. Given the importance market observers often attach to the CAR, this second approach may be marginally preferable to the first since it would limit the risk that fluctuations in the published CAR will be misinterpreted by markets.[17]

... and backed up by a leverage ratio

The problems of sustaining highly leveraged balance sheets that occurred during the crisis strongly suggests that CAR, however refined their calculation, do not provide sufficient protection against risks, especially those arising in extreme circumstances. A minimum leverage ratio – defined as the ratio of capital to the (risk-unadjusted) value of total assets – can be viewed as a "backstop" when, as is virtually inevitable, the risk measures underlying CAR calculations are imperfect (FSA, 2009a; Brunnermeister, 2008). It also limits banks incentives to exploit their superior knowledge of their operations by under-reporting their risks to supervisors and the markets (Blum, 2008). Leverage ratios were widely used prior to the 1980s but were largely displaced by the Basel capital standards because they took inadequate account of differences in risks across asset types and of off-balance sheet exposures. However the experience in the United States and Canada, which have maintained leverage limits, suggests that they can be useful supplements to CAR (Box 3.3).

Box 3.3. **Leverage limits in the United States and Canada**

Although leverage ratios were replaced in most OECD countries by the Basel CARs, they have been retained in the United States and Canada. Commercial banks in the United States are required by the Federal Deposit Insurance Commission to maintain a ratio of Tier 1 capital to assets of at least 5% to qualify as well-capitalised' and thereby free of restrictions on the terms they can offer on their deposits. The ratio is applied at the consolidated group (bank holding company) level. Investment banks, which are regulated by the United States Securities and Exchange Commission, are exempt from the ratio. Canadian banks are required to maintain a ratio of total capital to assets (including off-balance sheet) of 5%, although exceptions are allowed in special cases (World Bank, 2009).

The largest United States commercial banks maintained substantially higher leverage (capital to assets) ratios in the run up to the present crisis than banks in Europe. However the capital to assets ratios of investment banks such as Lehman Brothers and Goldman Sachs fell to levels more comparable to those of European banks.

The case for a prudential leverage ratio in Switzerland is especially strong given the exceptionally high ratios the Big-2 maintained before the crisis The SNB has recommended that the ratio of capital to assets for the largest banks should be no less than 5% in "good" times (SNB, 2009a). Under the package of measures announced by FINMA on 16 October 2008, the Big-2 banks will be subject to a minimum ratio of total capital to assets (including derivatives) of 3% at the group consolidated level and 4% for individual units, effective no earlier than 2013. Domestic lending and certain other domestic claims are excluded from the assets used to calculate the ratio.[18]

The new rule should prevent the extreme leverage attained prior to the crisis, particularly as the Swiss authorities expect the Big-2 in practice to maintain leverage ratios significantly above the minimum in good times (SNB, 2009a). Nevertheless, several considerations argue for imposing a somewhat higher floor. First, the specified group-level minimum is only modestly above the level the Big-2 maintained before the crisis and is below the ratio maintained by a significant number of international banks including the two large Swiss banks. Moreover, the Big-2 now have leverage ratios above the minimum proposed. They should be able to meet higher standards in the future.

Equally important, the exclusion of domestic lending from the ratio is inconsistent with its underlying rationale, as FINMA authorities have acknowledged (FINMA, 2009b). Excluding domestic lending could also create confusion in comparing the proposed ratio with the more conventional measures likely to be adopted by other countries. The exclusion also seems unnecessary: domestic lending accounts for a modest portion of total assets (slightly less than 20% for CSG and 10% for UBS). Accordingly, their inclusion would not greatly lower the stated leverage ratios.[19] Together these considerations recommend setting a higher group ratio, of at least 4%, and including domestic lending in the assets used for the calculation. Consideration should also be given to imposing the leverage ratios somewhat earlier than now scheduled, or at least to phasing them in. On the other hand, a prudent aspect of the newly introduced rules is that all assets acquired through investment banking are to be fully included in the leverage ratio.

Improvement in liquidity management and oversight is equally critical

Inadequate liquidity management was a key factor in magnifying the systemic risks that emerged during the crisis. The widely traded short-term instruments that seemed to provide an ample liquidity buffer turned out to be of at best limited protection when the markets for these instruments became paralysed by uncertainty over the financial soundness of the major participants and their counterparties. The elaborate models and other methods used by the financial institutions and their regulators severely overestimated the adequacy of the liquidity provisions, in large part because they were based on disturbances to individual institutions and failed to take adequate account of a generalised deterioration in market liquidity (Baily *et al.,* 2008; Brunnermeister *et al*., 2009).

It is now acknowledged that liquidity oversight and management need to be given higher priority and that the tools used by financial institutions and supervisory authorities to assess the adequacy of liquidity buffers need to be substantially revised and strengthened (De Larosière, 2009; Group of 30, 2009; FSA, 2009a). Principles and options for stronger liquidity guidelines have recently been advanced by a number of financial regulatory bodies and associations (BCBS, 2008; CEBS, 2008; IIF, 2007). The BCBS is currently developing revised prudential guidelines for liquidity, based on the principles enunciated in the Committee's 2008 paper on the subject (BCBS, 2008). The reports agree on the need to improve banks' internal accountability and systems for assessing and managing liquidity risks. They also call for financial supervisors to strengthen their oversight of these systems and to take a more active role in independently assessing liquidity risks, both to the overall financial system and to the soundness of individual institutions.

The reports stress several principles for better liquidity regulation for the largest financial institutions (CEBS, 2009; BCBS, 2008):

- The adequacy of liquidity buffers needs to be calibrated to the results of realistic "stress tests" approved by supervisors and carried out with the banks. The scenarios for the

tests should include an "idiosyncratic" interruption in external funding for the individual institution only, a generalised severe impairment in access to funding from several key markets, and combination of the two. The tests need to incorporate all the main risks to liquidity, including risks from off-balance sheet instruments and cross-currency exposures.

- Liquidity buffers should consist of cash and other assets that can be expected to remain highly liquid even in periods of heightened market stress and which are eligible as collateral at central bank lending facilities (ECBS, 2009).
- Individual banks need to develop detailed contingency funding plans for emergencies.
- National supervisory authorities need to strengthen co-operative cross-border arrangements for dealing with severe liquidity stress.

The Swiss authorities have intended for some time to strengthen liquidity oversight but implementation was delayed due to demands posed by adherence to Basel II and by the financial crisis (IMF, 2007a). The authorities have worked effectively with the Big-2 in coping with their liquidity strains and through their interventions in the financial markets over the past two years. However the crisis, and the possibility of renewed market turmoil, have underscored the need to improve the framework for liquidity regulation and oversight as soon as possible. Containing the liquidity risks posed by foreign currency denominated instruments is particularly urgent.

The revised framework for the Big-2 introduced by FINMA and the SNB earlier in 2009, which will become operational in 2010, is an important step toward these goals. The new framework incorporates the basic principles enunciated by the BCBS in 2008. Liquidity needs of each of the Big-2 will be evaluated under scenarios specified by the authorities that incorporate both market wide and bank specific disturbances. Each bank is required to evaluate the impact of the scenarios on its liquidity flows, based on "conservative" assumptions (agreed upon with the supervisory authorities) about its internal control systems and must demonstrate its ability to generate sufficient liquidity for at least one month during a time of market distress. The new framework particularly improves on its predecessor in considering liquidity needs arising from off-balance sheet as well as balance sheet exposures and by focusing on "severe" rather than milder disturbances (SNB, 2009). The authorities also plan to reform liquidity management for the domestic banks at some future point. The framework for the domestic banks and other smaller financial institutions need not be nearly as elaborate as that applied to the Big-2 or largest insurance companies. For example, smaller institutions might simply be required to maintain a "standardised" liquidity buffer of suitable assets rather than one based on internal modelling, as has been suggested for the United Kingdom (FSA, 2009a).

The systemic importance of the largest Swiss financial institutions and the large size of their foreign currency assets and liabilities suggest that further options beyond those that emerge as international norms may need to be considered. For example, there have been suggestions that systemically important banks be subject to a minimum ratio of those liabilities likely to be most sustainable over the economic cycle to their assets (FSA, 2009a). The qualified liabilities would include the most stable components of their deposits and marketable obligations, but would exclude money market funds and most wholesale funding sources. Such a "core liquidity ratio", which is analogous to the deposit to loan ratios that were more widely used by regulators in the past, would "backstop" the liquidity buffers determined by liquidity stress tests. It would further restrain the tendency toward

excessive leverage during market upswings. There is some evidence that Canadian banks' comparatively high reliance on depository funding may have contributed to their comparative resilience during the crisis (Ratnovski and Huang, 2009).

Even if an overall core liquidity ratio is not deemed appropriate for the Big-2, consideration should be given to imposing analogous limits on each of the major foreign currency components of their portfolios. This would provide a form of "self-insurance" against a sudden deterioration in access to foreign exchange markets, particularly if the resulting need for foreign currency were to prove greater than anticipated by the liquidity stress tests. Such a limit also would help to limit the amount of emergency foreign currency demands on the SNB in the event of a crisis.

Steps also need to be taken to improve financial institution governance and incentives for risk-taking

In addition to strengthening prudential norms, financial supervisors need to ensure that the weaknesses revealed by the crisis in financial institutions capacity and incentives to control risks are remedied. As a number of recent reports have stressed (De Larosière, 2008, FSA 2009a; Geneva, 2008; SNB 2008b) internal risk controls and reporting need to be strengthened by raising the accountability of senior officers and boards of directors, strengthening the independence of the risk management function within the bank, and by reducing reliance on external risk assessments by credit agencies. Equally important is the revision of performance-based compensation schemes that have encouraged excessive risk-taking. These need to be more firmly based on long-term firm performance, calibrated to the risks involved, and more transparent to shareholders (De Larosière, 2009; FINMA 2009).

Some promising steps have been taken by the Big-2 banks, with the encouragement of FINMA, to strengthen risk control. The largest bank has buttressed its high-level risk oversight capability by creating an Executive Committee to monitor capital utilisation and risk in each major business line and a dedicated risk committee of the Board of Directors (UBS, 2008b). Risk control monitoring functions have been merged into a single unit responsible for monitoring all major risks across the group's divisions.

FINMA is among the first national financial authorities to take concrete steps toward developing prudential rules for compensation that better encourage prudent risk-taking which apply both to banks and insurance companies. A draft circular was published in June 2009 which is due to come into effect in January 2010. The circular requires that performance based compensation systems be sustainable based on a firm's longer-term performance and take account of the risks incurred (FINMA, 2009). Financial institutions are strongly encouraged to implement deferred compensation arrangements that are subject to downside as well as upside variations depending on the firm's performance. In the circular it is noted that certain tax and labour law issues may result; some of these may require further consideration or clarification by the Swiss legislator or courts.[20] The circular specifies the responsibility of the board of directors for ensuring that compensation principles are implemented and requires it to publish a separate report on compensation so that shareholders are adequately informed. In addition, the circular requires involvement of internal control bodies in procedures in respect of the design and operation of the compensation system. UBS is required to adhere to elements of the guidelines beginning in 2009. For all other major financial institutions covered by the circular the disclosure requirements apply as of the reporting year 2010. Compliance with

all elements of the circular is expected of covered financial institutions as of January 2011. The extent to which the principles can be further developed will depend on how far other countries go in reforming their compensation schemes. FINMA has indicated that it is willing to consider strengthening its compensation principles if they were to fall below any agreed international standards. FINMA has indicated that it may loosen its principles if the major financial centers do not implement the principles for sound compensation practices developed by the Financial Stability Board.

Strengthening the supervisory framework and institutions

The Swiss regulatory framework has been considerably strengthened and modernised during this decade and its standards and practices were well aligned with international norms before the crisis (Box 3.4). However, the international financial crisis has revealed serious weaknesses in the capacity of financial supervisors in general to contain systemic risks that need to be addressed throughout the OECD. These include inadequate monitoring and assessment of risks to the financial system as a whole; excessive reliance by regulators on the judgements of financial institutions and markets even when warning signs of problems arose; and limited ability to oversee the cross-border activities of large complex institutions.

While Switzerland has done much in recent years to strengthen its regulatory system, the recent crisis suggests some basic principles for strengthening future financial supervision in Switzerland:

- Macro-prudential regulation needs to be given greater emphasis, based on strengthened monitoring and assessment of risks to the overall financial system and economy. Financial supervisory authorities and the authorities responsible for macroeconomic stability will need to co-operate to contain systemic risks, as they have in the past, but the arrangements may need to be further elaborated.
- Financial supervisors need to take a more pro-active approach to oversight, particularly of the largest systemically important institutions. This includes more independent analysis by regulators and greater scrutiny of the accuracy of financial institutions' internal models and controls. Resort to more direct controls on the size or activities of very large institutions may be necessary in cases where their systemic risks cannot otherwise be adequately controlled.

FINMA provides a solid foundation for strengthened regulation

Creation of the Swiss Financial Market Supervisory Authority represents a major step forward toward integrated and more consistent regulation and supervision. Care has been taken to ensure that FINMA has the independence, powers, and capacities to carry out its responsibilities. FINMA is not dependent on appropriations from the Federal Government since it is financed by fees on the institutions subject to its jurisdiction.[21] The Authority enjoys some flexibility in deviating from federal government scales in recruiting and setting staff salaries although it is not completely autonomous in this area.

Overall, FINMA has legal and institutional independence at least equal to that of its predecessor agencies. Its formal independence is comparable to that of the United States Federal Reserve if somewhat less explicit in legal terms. Financial regulatory agencies are particularly vulnerable to undue influence ("capture") from those they regulate in part because of the large differential between their staff salaries and those of the financial

Box 3.4. **Recent reforms to the Swiss regulatory framework**

Major changes in the Swiss financial regulation over the past five years have resulted in a more coherent, streamlined, and effective financial supervisory apparatus. While the earlier basic laws governing the major segments of the financial system remain in force, there have been some important changes in specific areas.

The key change was the creation of the Swiss Financial Market Supervisory Authority (FINMA), which began in January 2009. FINMA provides an integrated structure to regulate and supervise the financial markets and major financial institution segments similar to the Financial Services Authority of the United Kingdom. It merges three prior regulatory bodies, the Swiss Federal Banking Commission, the Federal Office of Private Insurance, and the Anti-Money Laundering Control Authority. FINMA is also responsible for regulating the stock exchanges, securities dealers, and other financial intermediaries including hedge funds registered in Switzerland. FINMA is structured as a public corporation financed through fees on the institutions it oversees. The FINMA Board of Directors, which is appointed by the Swiss Federal government, is responsible for setting the strategic goals of the Authority and approving major decisions. The Board appoints the Authority's director, subject to approval by the government. Although legally accountable to it and required to report regularly on its activities to the Swiss legislature, FINMA's independence is guaranteed by the legislation.

Consistent with traditional Swiss regulatory practice, FINMA relies on external auditors, to a larger extent on the banking side, to conduct on-site inspections of most banks and other institutions under its jurisdiction. The auditors provide reports on their findings that are reviewed by FINMA staff. However a special regime has been introduced for closer oversight of the Big-2, with FINMA staff more directly involved in on-site inspections and entailing regular meetings between FINMA officials and senior management of the Big-2.

Insurance regulation has undergone major changes, first with the adoption in 2004 of comprehensive legislation to revise and update the framework. This replaced the prior regulatory approach based on product supervision with one based on risk-based supervision and solvency requirements. The framework was further strengthened in 2006 with the institution of the Insurance Supervisory Law (ISL) to provide, among other things, for better protection of the insured and against insolvency. The ISL extends insurance regulation to groups and conglomerates, expands its scope to corporate governance, risk management, internal controls, and market conduct of insurers, and broadens the insurance regulator's enforcement powers. Standards for corporate governance, risk management, and internal controls are specified and monitored under the Swiss Quality Assessment and related efforts. The ISL also mandates the Swiss Solvency Test (SST), a risk based procedure for assessing the resources needed by an insurance company to meet its commitments in adverse circumstances, which is recognized internationally as an industry standard (IMF, 2007c). A revised version of the test incorporating market risks became mandatory for the largest insurance companies at the beginning of 2006 and for smaller companies in 2008.

institutions (OECD, 2009b). Resistance from regulated institutions and their industry associations can make it difficult to impose regulations that are sufficiently stringent to meet macro-prudential requirements. Financial regulators limited resources can also lead them to become overly reliant on the judgements of the institutions they oversee.

FINMA's broader financial responsibilities may help to reduce its vulnerability to undue influence from particular financial segments. Basing prudential standards to the extent practical on pre-announced and publically known rules rather than discretion

would further help. Personnel and other policies to ensure strong internal accountability and encourage recruitment and retention of skilled staff are essential to sustain FINMA's independence and objectivity. FINMA's independence also depends on effective oversight to ensure the objectivity of the external auditors used for examinations. This could be further strengthened by expanding the pool of qualified auditors, if and when feasible, and periodically rotating their assignments among the financial institutions. Establishing joint responsibility with the SNB for prudential norms of the greatest systemic importance, as discussed below, could make it easier to overcome resistance from regulated institutions.

FINMA has the legal and regulatory powers, instruments, and enforcement tools of the agencies whose functions it has assumed. It has sole responsibility for issuing regulations and other decrees governing licensing of institutions, prudential regulations, and qualifications of senior officials, and shares responsibility with the major exchanges for rules governing issuance and trading. It can intervene to force corrective actions in financial institutions that fail to meet basic regulatory standards and to close failing institutions. Its powers in this area have been further strengthened by the recent amendment to Swiss law governing bankruptcies of banks and securities firms. Overall FINMA's powers appear comparable to those of financial authorities in other OECD countries and consistent with international best practices in most respects (IMF, 2007a). The agency's enforcement capabilities would be further improved if it were given the authority to impose administrative fines for serious violations of its rules.[22]

The establishment of FINMA has not formally altered the "dual character" of Swiss regulation in its comparative reliance on external auditors for examinations (to a larger extent on the banking side) and the participation of industry self-regulatory authorities in certain areas. FINMA is responsible for mandating qualifications and other rules governing the self-regulatory bodies and has recently issued a circular detailing such rules. As with the SFBC, FINMA applies a special oversight regime to the Big-2, involving much closer and direct oversight than for other financial institutions subject to its jurisdiction. Staff from the FINMA division responsible for the Big-2 participate in on-site examinations (including offices in other countries), meet regularly with senior officials of each bank, and review a wide range of information from all the major control and business areas. Events have demonstrated the importance of this close oversight, not only to manage crises but to contain risks outside of a crisis. A comparable oversight regime needs to be maintained for the largest insurance companies, while taking into account the differences between banking and insurance and the specific risks of each.

The demands on FINMA have increased considerably as a result of the crisis. The ongoing efforts to monitor and contain risks in the near-term while upgrading and extending regulatory capabilities will continue to pose heavy, and possibly even greater, demands. It is essential that the financial supervisor have sufficient resources to effectively carry out its responsibilities and that these resources be increased as needed. FINMA's current staff and resources do not appear to be overly generous compared to those of regulators in other countries, given the scale of its financial system. The Authority plans to increase its staff, now about 320, to 355 (13%) as suitable qualified recruits become available. However, given the possibility that the demands on the authority will increase by even more, staff and other resource needs will need to be reviewed regularly. The Authority may need further flexibility in setting its compensation policies in order to be able to attract and retain the highly qualified staff needed for its effective functioning.

Macro-prudential oversight needs to be broadened

The vulnerability of the Swiss economy to distress of its major financial institutions makes macro-prudential regulation and oversight especially important. The basic goal of such regulation is to "... limit the distress of the financial system as a whole in order to protect the overall economy from significant losses in real output..." (De Larosière, 2009). The key elements of macro-prudential regulation are (OECD, 2009b): establishment of effective means for information exchange and co-operation between financial regulators and the authorities responsible for macro stability, most importantly the central bank; institution of early-warning mechanisms to signal the need for crisis prevention and preparation; and means to translate changes in macro-prudential risk into changes in prudential norms such as capital and liquidity requirements.

A basic framework for macro-prudential oversight has been established that makes the SNB and FINMA jointly responsible for its execution. The current division of responsibility is specified in a 2007 memorandum of understanding (MOU) between the SNB and the Swiss Federal Banking Commission, and which now applies to FINMA (SFBC, 2007). Under its terms, the SNB is responsible for monitoring developments in the banking system as a whole as they affect the overall economy and the conduct of monetary policy and for oversight of the interbank and securities clearing systems. FINMA is exclusively responsible for setting prudential standards.

The MOU specifically provides for the sharing of information on macro risks, risk exposures of the banks as a whole and their major segments, and their capital adequacy. It also provides for periodic joint discussion at a senior level of financial risks to the economy and actions to deal with them.[23] Such discussions take place regularly and were intensified during the recent financial crisis. Further initiatives for better co-operation are under consideration. Pursuant to its responsibilities, the SNB publishes an annual report on financial stability summarising major financial developments and their macroeconomic context and providing an assessment of the main risks.

The current framework has been a valuable resource for collaboration and effective action during the present crisis. Recent prudential actions taken by FINMA, including the new CAR and leverage requirements, were developed in close consultation with the SNB, whose public endorsement probably helped to bolster their credibility. Still, the framework needs to be elaborated in three areas.

First, the framework should be explicitly broadened to include all the major financial segments, including insurance companies and pension funds. This change is consistent with FINMA's status as an integrated regulator of the main financial segments and would facilitate sharing of a broader set of information concerning their conditions than is provided for in the existing framework. The framework needs to include monitoring of exposures among the major segments of the financial system, including the pension funds. FINMA has intensified its oversight of the exposures of domestic insurance companies to the Swiss banks. Direct insurance companies are subject to a limit with respect to counterparty risk exposure to individual banks of 5% but aggregate risk exposure of direct and reinsurance businesses concerning the Big-2 – including exposures through insurance claims, such as against their default – are not currently being specifically monitored in this manner. Consideration should be given to measuring the aggregate exposure of individual insurers, including both direct insurers and reinsurers, to one or

more of the banks, particularly to the Big-2, and ensuring that insurance companies have appropriate limits. Such limits could help prevent that any potential risks emanating from the two large banks spread to the insurance sector.

Second, a more formal decision mechanism to link assessments of macro-financial risks to macro-prudential instruments should be established. Prudential standards with important systemic implications, such as the CAR for the Big-2 and rules for determining cyclical variations in capital requirements, need to be based both on the circumstances of Swiss financial institutions and the macro risks they pose. Consideration should be given to extending the informal consultation arrangements between the SNB and FINMA. In conformity with its legal mandate to contribute to financial sector stability, the SNB should lead, together with FINMA, which should remain the enacting body, the elaboration of macro-prudential standards and make its views public.

Third, system-wide stress tests of the ability of financial institutions to withstand both financial and macro-economic shocks are a critical tool in macro-prudential oversight but the experience of the past two years shows that they need to be improved. The SNB has developed a sophisticated framework for "top-down" stress tests for the banking sector as a whole that evaluate the effects on banks' financial performance of various external and internal financial and macroeconomic disturbances. The disturbances are chosen based on historical experience and current economic conditions (see SNB, 2008a). These tests have proved useful in identifying potential vulnerabilities of the banking system and its major components. However, as in other countries, the tests greatly overstated the resilience of the financial system in the run up to the crisis. This is partly because they did not anticipate the precipitous declines in credit quality and interruption in market liquidity that were critical in the crisis. In retrospect, however, the "adverse" scenarios examined turned out to be overly mild.[24] Insufficient attention was given to more severe scenarios that, while very unlikely, would cause great damage if they were to occur.

The Swiss authorities acknowledge the need to improve the stress testing framework and FINMA plans to develop "building-block" tests at the institutional level to supplement the SNB's top-down tests. The framework also needs to be broadened to explicitly incorporate other major components of the financial system, including insurance companies and pension funds. To the extent possible, the top-down tests need to be more forward-looking and include the types of disturbances underlying the international financial crisis, including a severe decline in liquidity in key markets. The impact of a sudden deterioration in financial soundness of one or more of the major financial institutions should probably be included among the tests.

Several issues concerning smaller financial institutions should be addressed

In addition to the measures being taken for the largest institutions, several steps to strengthen the current regulatory framework for other segments would further help to contain financial risks.

The recent change in the deposit insurance system is an important step toward closing the gap between Switzerland's guarantees and those of other countries that has heightened the vulnerability, particularly of domestic banks, to deposit flight. The maximum amount guaranteed under the new arrangement, CHF 100 000 (about USD 92 000), is closer to the norm in other European countries than the previous ceiling. However a large gap remains with several important countries that have also recently

increased their maxima, notably the United States (where the limit is now USD 250 000) and Germany (where there is no maximum) (Schich, 2008). The guarantee applies to deposits held at all banks domiciled in Switzerland, including deposits in foreign currency or owed to foreigners, with the total amount guaranteed amounting to 60% of 2008 GDP. Domestic banks other than those owned by the cantons (which have provided their own guarantees) are likely to benefit most from the new arrangement. The Big-2 probably benefit less since their "too-big-to-fail" status already provides some assurance to their depositors.

The guarantee system remains unfunded, although it has been somewhat strengthened by a requirement that banks hold liquid assets, which must be issued by Swiss creditors, amounting to at least 125% of the amount insured. As the authorities have acknowledged (DFF, 2009), this *ex post* funding has significant disadvantages. It could result in delays in repaying deposits and impose costs on the government in the event of generalised banking distress since the banks may not be able to provide the funds required (Schich, 2008; OECD, 2009b). In September 2009, the Swiss authorities issued a draft of a new proposed law on deposit insurance to institute partial *ex ante* funding. The proposed law contains a two-stage guarantee system. The first stage consists of a deposit insurance guarantee fund with an eventual capital of CHF 9.75 billion, amounting to about 3% of the deposits guaranteed. Two thirds of the funding is to be provided by the banks through annual contributions levied over a period of several years until the amount is reached. The banks will cover the remaining funding by pledging securities. In case the fund was not sufficient to repay the amount insured, a second stage would cover the difference. Currently, there are two propositions for this second stage: An advance or guarantee by the federal government, which both would have to be compensated by yearly payments of additional insurance *premia* by individual banks. The law provides for the contributions and the *premia* paid by banks to be based on indicators of their risk, including capital adequacy and leverage. The law, if adopted, will significantly strengthen the effectiveness of the Swiss deposit insurance system and bring it more closely into line with international best practices. However further arrangements may need to be made with financial supervisors in countries hosting branches of Swiss domiciled banks, since the deposits with these branches are not guaranteed by the Swiss system.

Domestic banks were under significant profit pressures earlier in this decade, although their situation had improved significantly by the eve of the crisis as a result of consolidations and other measures. The banks may face increased competition in coming years as the largest banks reorient their business toward their more traditional core competencies. Evidence suggests that domestic banks as a group compare reasonably favourably with counterparts in other European countries, but that some segments operate at less than fully optimal cost-efficiency (IMF, 2007b). Creation of a more level playing field among the banks by abolishing or at least reducing current regulatory and other preferences would help to facilitate necessary adjustments to sustain their competitiveness.

Authorities have taken an important step in this direction by abolishing, effective in 2011, the preferential lower reserve requirement for cantonal banks compared to the other commercial banks. However the continued guarantee on their liabilities by the cantonal governments along with their mandates to lend to local customers tends to blunt their incentives and their ability to operate as effective commercial institutions. The combination can also encourage excessive risk taking. Consideration should be given to abolishing the guarantee, particularly as the reformed deposit insurance system renders it

largely redundant. The special mandates should also be abolished or, if maintained, financed from government revenues rather than bank resources. Further diversification of the ownership of the cantonal banks (most of which are entirely owned by their canton) could also help to strengthen their commercial orientation and facilitate consolidation in cases where it would be beneficial.

The previous *OECD Economic Survey of Switzerland* in 2007 recommended keeping the setting of key parameters defining the level of pension payments away from the political process (see Table 1.A1), which may facilitate the adjustment of benefit entitlements to demographic and financial market developments. The case for such reform is now even greater than in 2007.

Further steps to contain the risks from the largest institutions may need to be considered

More stringent prudential controls and strengthened supervisory oversight will reduce the likelihood of a catastrophic failure of one or more of the largest Swiss financial institutions. Steps discussed in the next section to improve cross-border co-operation and sharing of responsibility for supervision of large cross-border financial institutions (LCBFIs) and crisis management will also help, in part by reducing the damage if a failure occurs. However the steps may not be adequate to reduce the risk sufficiently for Switzerland given the exceptionally severe damage the largest financial institutions could cause to the economy in a worst case scenario. If so, further steps may need to be taken. Several possible approaches have been suggested (see Hildebrand, 2009). Each would pose significant legal and other challenges to implement and in some cases could affect the competitiveness of the LCBFIs and impose costs on the Swiss economy.

One approach would be for the financial authorities to impose limits on the scope or size of those institutions posing the greatest systemic risks (Hildebrand, 2009). One possibility would be to impose a direct limit on the aggregate size of the group, for example through a ceiling on total assets in relation to Swiss GDP. An important potential drawback is that the risks incurred by LCBFIs are determined not only by their aggregate size but also by the nature of their activities and their connections with financial markets and other financial institutions. For these reasons, it would be difficult to determine an appropriate size limit.

Another approach would be to directly restrict the business scope of a systemically critical institution. For example, divestment of the investment banking divisions of the Big-2 banks into legally separate businesses with no claim on the original institution would greatly reduce systemic risk. This would change the Big-2's character as universal banks, although it would retain the wealth, asset management and much of the business financial service activities that used to be their main focus.

Another possibility would be to shift some of the more risky group activities to subsidiaries that were structured so that they had no legal claim on the Swiss parent or the group's most systemically important components. It has been suggested, for example, that large financial institutions adopt a non-operational holding company structure similar to that developed in the United States and which has also been adopted by a number of other OECD countries (OECD, 2009b). This structure provides for commercial banking to be conducted in a subsidiary that is legally separate from subsidiaries involved in investment banking and other more risky activities. In theory, such a structure can insulate the most

systemically important components of the group from losses in its other subsidiaries to a degree that is not as possible for a universal bank. However it is not clear that such separation of financial businesses would be feasible or appropriate for Swiss or other European financial systems that have long been based on universal banking (FSA, 2009) or that such a structure would be permissible under existing Swiss law. Moreover, experience during the crisis has shown that legal separation of businesses may not be sufficient protection against contagion in a crisis, since reputational considerations can spread problems among components of a group even when there is no legal responsibility.

Less drastic measures include placing a limit on the size of the trading book relative to total assets; or limiting (or prohibiting) trading or holding of certain classes of instruments whose risks were deemed to be especially high and difficult to assess. This approach could achieve a more certain and precise means of limiting the systemic risk of institution than aggregate size limits. However, effective limits are more difficult to design given the complex interrelations among activities of a large financial institution.

Aggregate size limits or restrictions on business scope of the Big-2 could impose costs on the Swiss economy. The restrictions could directly lower the profitability and growth potential of the banks and might lead to a transfer of some business now conducted in Switzerland to subsidiaries in other countries. This would directly lower employment and value-added in the Swiss financial services sector. A reduction in the market prominence of the Big-2 might also reduce the attractiveness of the overall Swiss financial system to foreign investors.

The overall size of these costs is difficult to estimate. For example, evidence is mixed on the extent to which very large financial conglomerates actually benefit from scale economies or synergies among their activities (See Berger *et al.*, 1999). There also could be positive effects. Reduced systemic risk from the Big-2 should reduce risk *premia* in international markets for Swiss obligations. In any case, the overall costs of such restrictions would need to be weighed against the much greater damage that would be incurred in the unlikely but not impossible event of failure of one or more of the largest financial institutions as well as the costs of perceptions of the risk of such an event.

Strengthening cross-border arrangements for crisis prevention and management

The Swiss authorities' effective co-operation with foreign central banks and financial supervisors over the past several years both underscores the importance of such arrangements and the need to strengthen and extend them further. This means developing cross-border frameworks in respect of the supervision of LCBFIs and to facilitate resolution in the event of a failure is especially important for Switzerland.

Fiduciary standards are high

Rigour in protecting client interests has been a key factor sustaining Switzerland's prominent role as an international financial centre, particularly its dominant position in international wealth management. Switzerland's reputation stems from its maintenance of strict fiduciary standards. These include not only protection of the confidentiality of client information but at least as importantly stringent standards governing funds custody and management. Switzerland's laws and regulations on fiduciary responsibilities of financial institutions and their employees and civil and criminal sanctions for violations

are among the most stringent in the OECD. Switzerland has laws against money laundering, bribery, insider trading, and most other illicit financial transactions. Financial institutions in Switzerland are required (under pain of potential criminal prosecution in the event of violation) to determine and maintain records of the source and beneficiaries of funds placed with them.

Stronger cross-border arrangements are essential to effective supervision of the largest institutions

The Swiss authorities have developed a range of cross-border arrangements to help in supervising the largest financial institutions and for crisis management. These include regular information exchanges and discussions with United States and United Kingdom regulatory authorities; the co-operative arrangements for insurance company supervision established with EU member states in 2006; and the currency swap lines with the United States Federal Reserve and similar facilities with the Bank of England and the European Central Bank. Such arrangements are both bilateral and multilateral, though mainly confined to several major countries. Also in place are more multilateral supervisory college arrangements in respect of the largest banks and insurance groups. In some cases ad-hoc arrangements are also used and these also have proved to be quite useful in managing the strains from the turmoil in international markets.

Nevertheless, the experience of the past two years has shown that stronger and broader multilateral arrangements need to be developed to strengthen crisis management capabilities, provide for expeditious and orderly wind-down of LCBFIs in the event of their failure, and to clarify the respective responsibility of each supervisor. Switzerland especially may need such arrangements to contain the systemic risks from its LCBFIs and may be able to benefit from co-operating in the arrangements now being developed by the EU authorities (OECD, 2008).

There is now broad consensus that it can be helpful to have explicit arrangements to clarify the respective responsibility of LCBFIs among home country and authorities in foreign countries where they have significant presences (De Larosière, 2009; Turner, 2009; Group of 20, 2009). Switzerland has been using such "colleges of supervisors" as indicated above and similar ones have been in place for some time in the Nordic region and the concept has been under consideration by EU financial authorities for some time (Wajid *et al.,* 2007; European Financial Services Roundtable, 2004; OECD 2008). At its meeting in March 2009, the G20 agreed that supervisory colleges should be developed for each of the 30 largest LCBFIs and set a target date for the completion of the establishment of those not already set up of mid-2009 (G20, 2009).

The purpose of each college is to ensure coherent consolidated supervision of the institution as a whole by co-ordinating oversight of its units. Under the arrangements now being developed for the EU, the home country supervisor of one of the designated LCBFI invites supervisors from other EU countries where the institution has subsidiaries or branches with systemic importance to participate. Participation is voluntary and based on consensus (OECD 2008). Responsibilities can be allocated among the participating supervisors in a number of ways so that the powers of the home country supervisor need not be altered. Effective colleges need to overcome difficult challenges arising from differences in standards and practices among countries and are no substitute for strong home country supervision. But they can be highly beneficial by improving information sharing and ensuring co-ordinated and mutually reinforcing regulation.

"Core" colleges with banking supervisors from the United States and the United Kingdom have been in existence for the Big-2 since 2000 and separate bilateral regional colleges with banking supervisors from major Asian economies (China, Japan, Singapore, and Hong Kong, China) have more recently been established. Colleges have also been instituted for the major Swiss insurance companies. The colleges have largely focused on information sharing although those for the Big-2 have begun to consider collective actions in certain areas. The colleges could be a valuable resource for improving the oversight of the major Swiss institutions and for crisis management in the event of future problems. However their effectiveness might be improved through a more collective approach involving the participation of representatives from other major European and major Asian countries in the core colleges for the Big-2. The focus of the colleges' efforts should also be broadened over time to include discussion of major regulatory issues and contingency planning for future problems.

Supervisory colleges could also provide a venue for crisis management in the event that systemic threats emerge. The Financial Stability Forum has outlined a set of key principles for preparing for and managing threats to the solvency of systemically important institutions (FSB, 2009). These include: regular information sharing among involved parties, including details on LCBFI group structure and intergroup dependencies and their important linkages to markets and other financial institutions; and development of contingency plans for funding the LCBFI in case of market turmoil, including especially plans to ensure adequate access to foreign currency. The responses of the authorities in the event of a crisis need to be explicitly considered. These include potential impediments such as restrictions on the ability of subsidiaries to lend or transfer funds to their home parents ("ring-fencing"). Participants in the arrangements need to include central bank representatives as well as the financial supervisors. This could be accomplished by inviting central bank representatives to participate in the colleges.

The difficulties encountered in winding up Lehman Brothers have demonstrated the need to develop an explicit cross-border framework for resolving insolvency of LCBFIs (De Larosière, 2009; FSA, 2009) Home country bankruptcy regimes, such as the bank resolution framework in Switzerland, are adequate for purely domestic institutions. However, they are insufficient for LCBFIs, given that home country regimes cannot be applied to foreign subsidiaries. Ideally, a cross-border insolvency framework should provide mechanisms expediting the sale or liquidation of a failing institution's components, repayment of its depositors and other creditors, and sharing of risks and costs among national authorities. The framework also needs to include development of contingency arrangements by each systemically important financial institution for its unwinding in the event of failure ("living will") – a principle most recently endorsed by the September 2009 meeting of the Group of 20. At least in some cases, this may involve changes to the legal structure of the institution to facilitate the sale or winding down of its components. This in turn may require changes in tax laws (if the change in structure would unduly increase the group's tax liability) or other legal provisions.

A cross-border insolvency framework would complement stronger regulation and oversight of LCBFIs and would not in any way diminish the need for it. Establishing the framework is likely to be a lengthy process, involving multi-country negotiations over division of the responsibilities and burden sharing and also revisions to national regulations and, possibly, laws. But a framework is essential to contain contagion from a failing LCBFI and to reduce the costs imposed on the home country economy. The Swiss

authorities have emphasised the critical importance of such arrangements to limiting the risks posed by their largest financial institutions (Hildebrand, 2009). To this end, the authorities should encourage the Big-2 and major insurance companies to begin the process of developing orderly ways to deal with potential financial stress and distress situations, including bankruptcy threats to any part of their group.

Box 3.5. **Summary of main recommendations for strengthening financial regulation**

General principles

- Regulation should incorporate an explicitly macroeconomic perspective, in which prudential standards for financial institutions are based on their systemic risks to the economy as well as their micro-prudential risks.
- Stronger cross-border arrangements with financial authorities in other countries will be essential to ensuring effective regulation of the largest Swiss financial institutions, given their extensive and complex structures, and to prepare for a future crisis should it occur.

Prudential standards

- Authorities should require the Big-2 banks to maintain a minimum overall capital adequacy ratio (CAR) of at least 150% of the current BIS minimum in the near-term. This should be raised to twice the current BIS minimum once the banks' financial strength has been restored, if possible before 2013. Further adjustments should be made as necessary to ensure that Big-2 CAR remain among the most stringent of major international banks.
- A rules based mechanism mandating cyclical capital buffers that rise during market expansions and are permitted to be drawn down during contractions should be established. The buffer should be determined by objective and publicly disclosed rules based on indicators of the market cycle and risks, rather than on bank profitability.
- The leverage ratio of capital to the book-value of Big-2 assets now envisaged should be raised to at least 4% for the consolidated level and implemented at the same time as the revised CAR. Domestic lending should be included in the assets used to compute the ratio.
- Consideration should be given to measuring the aggregate exposure of individual insurers, including direct insurers and reinsurers, to one or more of the banks, particularly to the Big-2, and ensuring that insurance companies have appropriate limits.

Supervisory framework

- Macro-prudential oversight needs to be given greater emphasis and broadened to include monitoring of all the major components of the financial system.
- The respective roles of the SNB and FINMA for macro-prudential oversight should be further elaborated and formalised. In conformity with its legal mandate to contribute to financial sector stability, the SNB should lead, together with FINMA, which should remain the enacting body, the elaboration of macro-prudential standards and make its views public.

Box 3.5. **Summary of main recommendations for strengthening financial regulation** *(cont.)*

- FINMA should be given the authority for imposing administrative penalties for serious violations of its regulations.
- FINMA's personnel and other resources should continue to be reviewed in the near-term and regularly thereafter to determine if they are adequate to the authority's responsibilities.

Supervisory policies

- The largest insurance companies should be subject to a close oversight regime similar to that now applied to the Big-2, while recognizing the differences between the two sectors and relative risks of each.
- Consideration should be given to periodic rotation of the outside auditors responsible for particular financial institutions, and, if and when feasible, widening the range of authorized external auditors, as a means to sustain the objectivity of the oversight process.
- Strengthening of FINMA's liquidity regulation and oversight of the largest institutions needs to be given high priority in the near-term and extended in simplified form to other financial institutions over time. Consideration should be given to inclusion of a core liquidity ratio applied to foreign currency denominated assets as part of the liquidity regulation.
- Top-down stress tests of risks to the financial system need to be broadened, elaborated to include disturbances based on recent market stress, and include very low probability scenarios that would entail exceptional damage.
- Timely adoption of the proposed deposit insurance law will significantly improve the effectiveness of the system. The present ceiling on insured deposits should be revised as necessary to keep in line with any further changes in other countries.

Regulation and supervision of domestically oriented financial institutions

- Remaining preferences for cantonal banks, notably the guarantee on their liabilities, should be phased out and their mandates explicitly funded from government sources, in order to strengthen their commercial orientation.

Strengthening cross-border arrangements for crisis prevention and management

- Consideration should be given to broadening the core colleges of supervisors for the Big-2, in order to facilitate a more collective approach to their supervision. As part of these arrangements and supplemented as necessary by other measures, co-operation of Swiss authorities with foreign counterparts to develop contingency plans to deal with future crises should be developed. The major financial institutions should be encouraged to formulate arrangements to facilitate their winding down in the event of failure.
- The authorities should continue to implement the decision to endorse the OECD standard on transparency and the exchange of information in tax matters as rapidly as possible.

Notes

1. The Big-2 took a comparatively large portion of their total cumulative write downs relative early – the fourth quarter of 2007 and first quarter of 2008. Write downs by UBS and CSG during the two quarters were nearly two-thirds and one-half of the cumulative totals incurred through the second quarter of 2009. Most of the other heavy losers among European and United States Banks reported considerably less than half of their ultimate write downs during the two quarters (*The Banker*, 2009). This may have contributed to an impression that the Swiss banks' losses were more exceptional than they ultimately turned out to be.

2. Most of the write downs for the UBS group were attributable to the investment bank, with the bulk of the remainder to losses, also mainly in CDOs and derivatives, of Dillon Read Capital Management. See UBS 2008b.

3. As of August 2009, UBS individual bank strength was rated B- by Moody's Investor Services, above that of Bank of America, Barclay's Bank, and Royal Bank of Scotland but below Citigroup, Deutsche Bank, and CSG, all of which have a B rating. The UBS rating was under review for possible further downgrade.

4. For example, until fairly recently, UBS had pursued a relatively less aggressive strategy than other major investment banks due in part to its traditional specialization in wealth management. Beginning around 2003-2004, the bank made a strategic decision to give greater emphasis to its investment banking division, with a goal of achieving very rapid growth to become an industry leader (SFBC, 2008a).

5. The differences between the ratios for European banks and the US banks are also somewhat overstated by differences in accounting conventions used to calculate their total assets. US bank assets are calculated using the Generally Accepted Accounting Principles (GAAP) specified by the United States Financial Accounting Standards Board. These specify that derivatives be valued on a net basis. Assets of European banks are calculated according to the International Financial Reporting Standards (IFRS) applied in the EU and which value derivatives on a gross basis. CSG uses the United States GAAP standards, which partly accounts for its higher Tier 1 capital to assets ratio compared to UBS.

6. Indeed, average Tier 1 CAR ratios for the five banks suffering the largest losses were above the average for their other peers in the top 25 by total assets (10.3 and 9.8 respectively).

7. Interest rate spreads between euro area countries are instructive because they are not affected by currency risk perceptions.

8. According to calculations by the SNB (SNB 2009a), market risk accounted for 3.5% of total capital requirements of cantonal banks in 2007, less than 0.5% for regional banks, and 9.5% for the Big-2.

9. The Swiss approach of creating a "bad bank" for impaired assets with specified and strictly limited *ex ante* maximum costs to the bank is most suitable for dealing with an identifiable set of impaired assets. The approach can be more effective than alternative options (*e.g.* liquidity support or guarantees) in decisively and transparently improving balance sheet quality but also can (although not certainly) entail higher costs to the government (IMF, 2009c).

10. "UBS remains cautious after Q2 loss, big outflows", *International Business Times*, 4 August 2009, *www.ibtimes.com/articles/20090804/ubs-remains-cautious-after-q2-loss-big-outflows.htm*.

11. Swiss regulatory policy requires prompt corrective action if assets drop below 90% of discounted future obligations, but that point has not been reached.

12. See, for example, the recent warning by a high official of the ECB ("ECB fears bank crisis in 2010 as the recession drags on", London *Daily Telegraph, 10* June 2009 (*www.telegraph.co.uk/finance/economics/5498989/ECB-fears-bank-crisis-in-2010-as-recession-drags-on.html*).

13. The IMF Financial Sector Assessment of Switzerland published in June 2007 assessed the Swiss banking system overall as "… resilient to shocks…", with stress tests "… confirming their resiliency to the most relevant macroeconomic stress events" (IMF, 2007a, p. 12). The *Financial Stability Report* published by the Swiss National Bank in that same month stated that its "expectations regarding the stability of the Swiss banking sector are essentially positive" (SNB 2007, p. 5). Similar positive assessments of the overall robustness of financial systems despite concerns about certain developments were common in reports by financial regulators in other OECD countries.

14. By comparison, total worldwide assets of Citgroup, the largest US banking conglomerate, were 13.8% of 2008 US GDP. Comparable figures for Germany (Deutsche Bank) and the United Kingdom were 93% and 113% respectively.

15. Higher Tier 1 capital requirements help to restrain excessive leverage and limit the need to shed assets during severe downturns. See FSA, 2009a.
16. According to data provided by Euromoney.
17. It would also reduce the related risk that the banks would come to view the upper end of the range as the *de facto* minimum over the entire cycle and be unwilling to allow it to drop (FSA, 2009a). This would undermine the effectiveness of the measure in remedying the tendency of fixed CAR to amplify market swings.
18. The exclusion of domestic assets is ostensibly to avoid unduly inhibiting the lending by the Big-2 to domestic Swiss entities. Derivatives are included but the banks are permitted to adjust their valuation of derivatives to the US GAAP conventions.
19. Including all assets would have lowered the UBS stated leverage ratio for Q4 2009 to 2.2 from 2.5%; while the ratio for CSG for Q2 2009 would have been lowered to 3.2% from 4.0%. See *UBS Annual Report*, 2008, p. 162; and *CSG Financial Report*, Q2, 2009.
20. Under current law, compensation is taxable when paid into a deferred fund, even if the value of the payment is subsequently reduced. The circular suggests revising the law to base the tax liability on the value when the funds are withdrawn. The circular also indicates labor law issues that would need to be addressed.
21. FINMA's budget is incorporated in the Federal Budget rather than separated, as, for example in the United States (IMF, 2007a) and is subject to audits by the Federal Audit authority. However this does not appear to entail any explicit government oversight over the budget and the audit arrangement is typical of other countries. Remuneration of FINMA staff and officials is linked to the salary scales of the Swiss Federal Government, but FINMA is allowed some special exemptions that give it greater flexibility in setting composition.
22. This authority now rests with the Ministry of Finance. See IMF 2007a. FINMA is authorized to confiscate monetary gains arising from serious violations of regulations, such as insider trading.
23. Issues concerning macro-financial risks and macro-prudential policies are subject to discussion at the (semi-annual) meetings of the joint standing committee of the two bodies and at the semi-annual joint meetings of their governing boards, which has the responsibility for resolving disagreements. See SFBC 2007.
24. The "adverse" scenario reported in the SNB *Financial Stability Report* for 2008 assumed a decline in year-on-year decline in real GDP of 0.2% and 1.2% for the United States and Switzerland respectively, a 30% drop in global equity prices, and a 75 basis point rise in credit spreads. Except for the decline in Swiss GDP, these were considerably milder than the outcomes since 2006.

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Chapter 4

Lowering the high cost of housing and construction

Renting accommodation in Switzerland is considerably more expensive than in other OECD countries with high per capita income, especially for households on modest incomes. High costs in the construction industry, where geographic fragmentation still restricts competition, are one contributing factor. Moreover, legislation limits rent adjustments to market conditions for incumbent tenants even over long periods of time and restrictions to increases in rents also apply when there is a change of tenant. These rules are likely to privilege incumbent tenants compared to more mobile parts of the population and may distort rental prices of old relative to new housing stock, keeping the former relatively low. Hence they may distort incentives to invest in the maintenance of existing housing. Supply of affordable housing also appears to be held back by a relatively low building density in sub-urban areas. Strengthening sub-national governments' incentives to attract more population with low or medium income levels could help increase density, for example, by mitigating the incentives to compete for high income households resulting from tax competition and by increasing the share of municipalities' tax revenues raised from taxation of real estate.

As argued in Chapter 1, high rental prices of housing contribute significantly to the overall high prices for goods and services in Switzerland. The negative impact of high rents on welfare is significant, as households spend, on average, almost 25%[1] of their disposable income on housing services, and this share is considerably larger for low-income families, with households up to the 40th percentile of income spending close to 40% on average on housing (OFS, 2009). This chapter analyses the most important policy settings that keep the level of prices for housing services high. It also investigates causes for the relatively high level of construction costs, which contributes to the high rental prices of housing. Moreover, with construction being an important intermediate input for many other goods and services, high costs in this industry – for example, as a result of barriers to competition – have adverse effects for productivity downstream. Indeed, the effect of distortions of prices of goods and services on aggregate productivity performance are magnified if they are used as inputs in other sectors (Conway *et al.*, 2006).

The high level of rents is partially explained by construction costs

The level of rents is high in international comparison…

The level of prices of housing services is high in international comparison (Table 4.1). A number of reasons can explain the differences, including factors related to regulation of housing and residential construction. Quality differences are only partially controlled for, including only differences in dwelling size, number of rooms and availability of central heating. Rents are computed using a household survey that gathers information on rents paid by tenants and on imputed rents attributed to owners, computed using information on rents paid on similar dwellings.

Table 4.1. **Comparative dollar price levels in housing services**

EU27 = 100

	1999	2003	2007
Switzerland	**182.1**	**187.1**	**159.5**
Denmark	142.4	153.2	146.5
Ireland	119.2	147.2	142.2
France	122.7	124.5	124.1
Netherlands	114.6	123.2	121.1
Belgium	113.5	120.4	117.8
Sweden	137.4	122.7	114.1
Germany	131.4	119.9	113.2
Euro area	113.0	112.8	111.2
Italy	98.5	103.0	105.0
Spain	81.0	90.0	96.4
Austria	96.7	94.8	94.4

1. Comparative price levels are defined as the ratios of purchasing power parities to exchange rates. They indicate for a given aggregate the number of units of the common currency needed to buy the same volume of the aggregate in each country. Housing services includes data on rents and water, electricity and other fuel and maintenance charges.

Source: OECD-Eurostat PPP database.

... which can be partially explained by high construction costs

Construction prices in Switzerland were more than one fifth higher than the average of 27 EU countries in 2007, despite a low VAT rate, according to the OECD-Eurostat database. The only countries with a significantly higher level of construction prices than Switzerland were Denmark and Sweden at 63% and 51%, respectively, where the VAT rates are significantly higher. According to this unstable time series, the relative price of construction has come down over the period 2003-2007 (Table 4.2). Quality controls are introduced by gathering data for each country on the cost of more than 400 items[2] needed to build 23 fairly detailed, standardised models of residential, non-residential and civil-engineering structures (OECD, 2006b) (the relative prices shown in Table 4.2 are adjusted for these differences in quality).[3] Prices for residential construction and for civil works are particularly high. Reflecting differences in building specifications and norms across countries, construction costs appear to be particularly high in Switzerland.

Table 4.2. **Comparative dollar price levels in construction**

EU27=100

	1999	2003	2007
Denmark	140.0	137.1	162.5
Sweden	132.7	139.9	151.2
Austria	110.6	111.2	123.5
Switzerland	**136.8**	**156.2**	**123.3**
Netherlands	125.3	131.1	122.9
Germany	121.6	111.1	115.9
France	126.6	129.2	112.3
Ireland	99.1	121.5	107.3
Belgium	104.5	100.3	101.9
Euro area	103.9	103.4	98.4
Italy	77.3	80.7	82.8
Spain	82.0	95.4	78.7

1. Comparative price levels are defined as the ratios of purchasing power parities to exchange rates. They indicate for a given aggregate the number of units of the common currency needed to buy the same volume of the aggregate in each country.

Source: OECD-Eurostat PPP database.

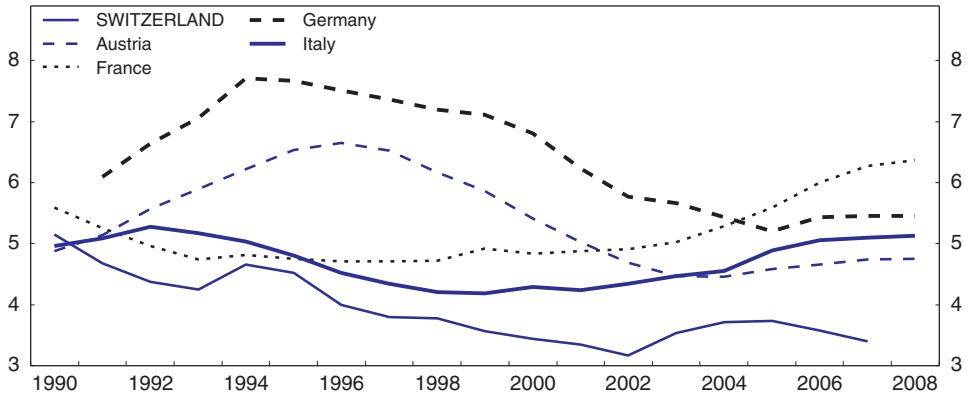
Tenant protection is also a factor explaining the high level of rent

Increases in population have been reflected in the prices of new homes only

The population has grown substantially over the past decade (by around ¾ of a percentage point per year on average between 1998 and 2007), caused by robust immigration inflows (see the previous *OECD Economic Survey* for immigration developments). Nonetheless, housing investment as a share of GDP remained modest (Figure 4.1). Price developments have been markedly different for new and old rental apartments on the other hand. Indeed, the asking rental price for new apartments has increased by 50% between 2000 and 2007, around 25 percentage points more than asking prices for existing rental apartments, for which changes in rents are regulated (Figure 4.2), as discussed below. Prices of apartments have increased more strongly than prices of detached single-family houses.

Figure 4.1. **Gross fixed capital formation, housing**

As a percentage of GDP



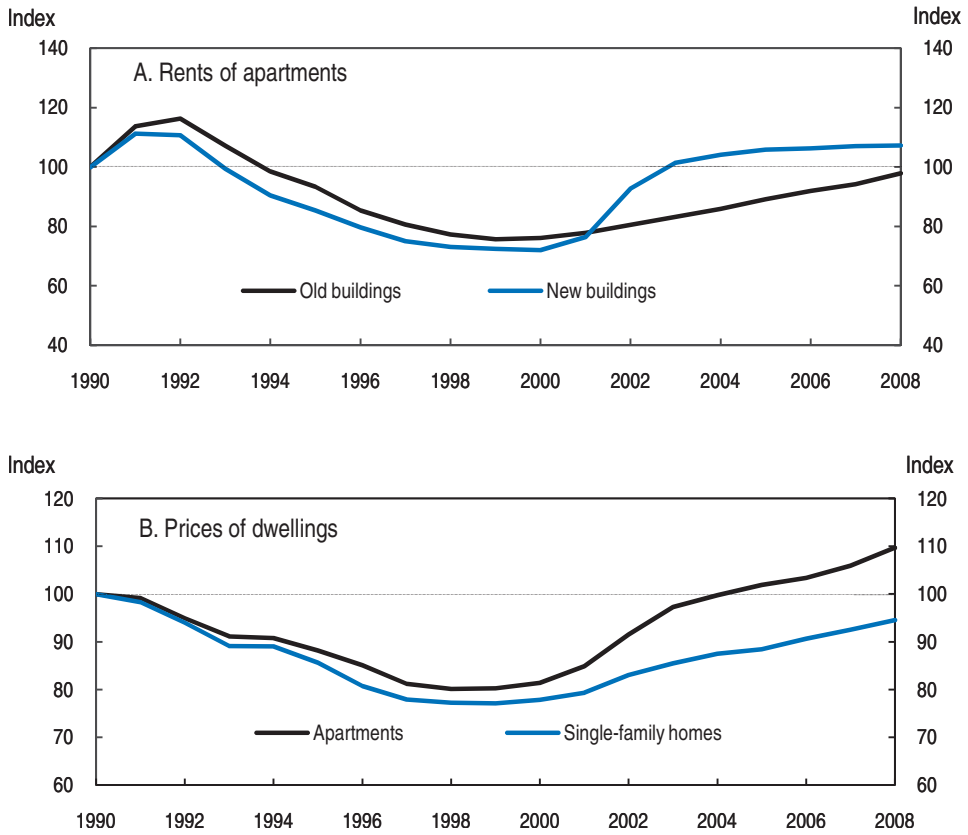
1. The 2007 data point is still provisional; 2008 was not available in the original series and was then substituted with the corresponding projection included in the Economic Outlook n° 85 database.

Source: Swiss National Bank; OECD, *OECD Economic Outlook n° 85 database*.

StatLink http://dx.doi.org/10.1787/747823103835

Figure 4.2. **The housing sector**

Index 1990 = 100



Source: Wüst & Partner.

StatLink http://dx.doi.org/10.1787/747841517307

Tenant protection contributes to limiting housing supply

Regulation of rents may prevent full adjustment of rents to market conditions over time for existing tenants.[4] Rent regulation is based on the principle that rents should be sufficient to allow the owners to fully recover their costs. Thus, rent increases are allowed only in cases where they are justified by improvements, an increase in costs (mortgage interest rates, for example) or to maintain the purchasing power of the investment (compensation for inflation). In addition rents may occasionally be adjusted to the level prevailing in the area for example due to a change of ownership. The contracting parties need to take the initiative to prevent breaches of regulation (following the abuse principle). In practice, most adjustments are linked to changes in mortgage interest rates; for example, an increase of 0.25 percentage point in the reference mortgage rate allows for an increase of 3% in rents.[5] The parties can, instead, also opt to index the rent to a consumer price index in contracts signed for a minimum of five years[6] but these contracts are relatively rare. Although landlords and new tenants are in principle free to set the terms of a new lease for a new tenant, including the rent, it is possible for new tenants in existing housing to contest rents as excessive relative to previous tenants' rents in the first 30 days of the contract. Criteria used in the resulting arbitration procedure include the average rents in the area or excess returns to the tenant's investment, which has in practice been deemed to be 10 basis points above the mortgage interest rate. Since the average level of rents is also affected by regulation, adjustment to the rents prevailing in the area does not necessarily allow rents to adjust to market conditions. Although rents are only contested in very few contracts and these cases are concentrated in the Geneva region, it is likely that this rule has an indirect effect if landlords restrict increases in anticipation of them being contested.

Box 4.1. **Most housing is rented**

Nearly two thirds of all residential units in Switzerland are rented, more than in most other OECD countries. This is likely to reflect the relatively neutral stance of tax policy with regard to housing tenure status, the high share of immigrants living in the country (who are more likely to rent than Swiss households, Office fédéral du logement, 2005) and the high cost of purchasing a home, which makes it more likely that credit constraints are binding for households (Bourassa and Hoesli, 2008). Indeed, among the 20% of households with the highest incomes, only 40% rent their home (OFS, 2009). Despite the fact that most households are not owner-occupiers, home ownership is still dominated by private households. Institutional owners (for example, pension funds and insurance companies), and federal, cantonal and municipal governments play only a secondary role in the housing market. Overall, social housing (provided mostly by co-operatives) only accounts for less than 8% of the total number of dwellings in Switzerland.*

* There is, however, significant heterogeneity in the share of social housing among the cantons. For instance, in the Canton of Zurich, the share of social housing is around 25%.

Deregulation in the housing sector could help reduce the rental and construction costs

The government reform of rental regulation must go further

For a long time, the indexation of rents to mortgages interest rates has been a contentious issue, mostly because of the induced volatility of rents. A new draft reform project was drawn up by the Confederation in 2008 with the support both of the Swiss

Association of Tenants and Landlords' Associations. The most important proposed changes are the following. *First*, the close link between rents and mortgage interest rates would disappear. Instead, rents increases would be indexed to a consumer price index that excludes housing and energy prices. In case rents increase by more than 5% per year for two consecutive years, the government can suspend the automatic adjustment of rents (Conseil fédéral, 2008). *Second*, the criteria used to determine whether the initial level of rent for a new tenant in an existing dwelling is excessive will be modified by taking into account the dwelling's characteristics and local housing market conditions in a more systematic manner through the use of hedonic models. *Third*, other changes include the possibility of determining fixed rent increases at the beginning of the contract under the following conditions: *i)* the contracts has a duration of three or more years; *ii)* there is at most one increase in rent per year; and *iii)* the amount of the increase is fixed in Swiss francs. The draft reform has been rejected by one chamber of Parliament but discussions may resume.

Current regulation may distort the rents in old apartments relative to new apartments. This occurs because rental prices are determined by market forces only for new dwellings whereas subsequent changes in the rent are restricted by regulation even when there is a change of tenant. As interest rates are stationary, indexing rents for existing tenants to mortgage rates might not even compensate for inflation in the long-run. However, rental prices are likely to need to rise even in real terms, over and above inflation, to reflect market forces for two reasons. *First,* as land is a scarce resource, and is subject to regulations that further restrict its availability (see below), population growth may well require house prices to rise in real terms. Indeed, the requested rental prices for new dwellings have been particularly marked in recent years, reflecting demand pressures. *Second*, productivity growth is lower in construction than in other industries (Thalmann, 2008). Since rent regulation may depress the level of rents of old homes relative to new ones, it may distort incentives to invest in the maintenance of existing housing. A reduced economic lifetime of dwellings would reduce the overall stock of rented housing on offer, raising the overall average level of rental prices.

The legislative proposal to end the indexation of rents to mortgage interest rates, requiring instead the indexation to a measure of consumer prices, would have allowed yearly adjustment of rents for incumbent tenants in line with inflation, which would reduce distortions in prices between rents in new and existing dwellings. However, it does not allow these rents to adjust fully with market forces even over longer periods of time. It does not appear likely that the provisions regarding the setting of rents for new tenants will allow market forces to play a more significant role. There is a risk that the envisaged rent comparisons would remain strongly influenced by regulated rental prices in other dwellings.

Competition in construction and in its ancillary industries can be improved

Construction laws, regulations and norms are necessary to ensure that construction meets certain reasonable performance and safety standards. However, construction laws and regulations in Switzerland are perceived to have high compliance costs as compared to other countries. For instance, a Survey conducted in the 1993 found that construction standards and the required furnishings of dwellings were more demanding in Switzerland than in Germany and could account for almost 80% of the differences in construction costs (these differences in standards are not necessarily accounted for in Table 4.2). The level of restrictiveness of construction norms and regulations has also increased over time. A new

study comparing the construction costs of a building in 1969 and in 2005 in Switzerland suggests that more than 20% of the increase in costs is due to more stringent construction norms and regulation (fire, heat and noise standards) and to the standards of fittings (kitchen and bathrooms) new tenants require. While some aspects of the more stringent requirements may be justified to meet the particular physical conditions of Switzerland and social preferences, countries with similarly high per capita income have high quality dwellings without such onerous norms.

Heterogeneity of regulations among cantons and municipalities affecting construction limit competition, besides imposing high compliance costs, and make these industries susceptible to the exercise of market power by cartels. Differences in regulations are also in place regarding the labour market. For example, a recent attempt to harmonise cantonal standards used to measure construction surfaces has not yet been successful. Regarding construction products, progress has been made via increased coordination with the EU (Balastèr and Schüpbach, 2008). A new agreement with the EU that homologated the technical and safety standards of construction products appears to have helped to diminish the differences of standards across cantons as well as with EU countries. A few cantons have required firms from other cantons in a limited number of professions to abide by local labour market conditions, which prevent firms from other cantons with lower labour costs from taking advantage of this competitive advantage. More generally, in the construction sector, collective wage agreements are extended to all workers in the sector, which may risk putting up wages.

The Internal Market Act strives to guarantee the free movement of goods, services and labour across cantons. It also guarantees businesses established in one canton to establish themselves in other cantons even if regulation in the destination canton would prevent it. The Act was most recently amended in 2005, when the conditions under which the equivalence of titles and professional experience acquired in other cantons can be refused were tightened (OECD, 2006a). However, the implementation of the Act is limited as Cantons can claim exemption in cases of "overriding public interest". Although the Competition Commission, which is in charge of enforcement, had some success by taking legal action against cantonal decisions violating the internal market act, it lacks the necessary resources to enforce the law effectively. One option to reduce the pressure on the resources of the competition commission would be to allow private parties room to take legal action against violations of the internal market act. While such a provision exists, it is not clear whether this right can be invoked when approved plans for dwellings are not accepted when reused in a second location.

Public procurement policies, especially at the lower levels of government, may also contribute to high construction costs. Recently decisions by courts have required local authorities to make public the criteria that are used to choose among different suppliers. However, much scope remains to lower costs of public procurement at sub-national levels of government by removing barriers to competition, as highlighted in the last *OECD Economic Survey*, and no progress has been made with respect to harmonising procurement rules across cantons, lowering threshold values for public tendering and benchmark public procurement costs at lower levels of government (Annex 1.A1).

Municipalities lack financial incentives to allow denser building

Land planning responsibilities are placed at different levels of government. Federal law regulates the use of non-buildable land, while the cantons and municipalities regulate

the use of the buildable areas. The cantons are in charge of zoning restrictions, separating building areas according to the type of use. For each individual zone, regulations are issued that define, among other things, the maximum allowed dimensions of the buildings and the distances between them. In addition, cantonal law regulates the provision of public utilities for parcels of building land, a prerequisite to start construction. The municipal authorities issue structural plans for their own municipality and have control over the planning process at local level. In particular, they can set maximum levels of construction density of buildable land.

While there appears to be no scarcity of buildable land in the country as a whole – it is estimated that around one quarter of the total area already zoned for building[7] is yet to be built on (Office fédéral du développement territorial, 2008) – most of it is located in rural areas, where housing demand is low and access to public transport deficient.[8] On the other hand, while construction density is high in the main urban centres, it is relatively low in suburban areas.[9] One significant factor explaining the low construction density in suburban areas seems to be the lack of financial incentives for municipalities to increase it. Taxes on real estate contribute relatively little to the total tax income of the cantons and municipalities, while only two cantons have a tax to be levied when land is rezoned for building. While the revenues from the tax on capital gains in real estate transactions accrue to municipalities, the rates are relatively low. As municipal governments rely on personal income and wealth taxes that are accrued locally, which account for almost 70% of their total revenue, they have incentives to attract relatively wealthy residents by favouring single-family constructions over multi-storey buildings, which could be detrimental to high density housing. It is generally accepted that tax competition affects local income tax rates. Transfers appear to equalise differences in tax bases to some extent. However, little information is available about how well redistribution among municipalities takes into account changes in the composition of local populations.

Increased population, especially lower income households, carries with it additional social spending by cantons and municipalities. Social assistance programmes in particular are administered by the cantons, although most of them have passed financial responsibility to their municipalities. Social assistance expenditure accounts for close to 15% of the municipal budget for the average municipality. In addition, municipalities also face expenditures for primary schools, early childhood education and childcare (see also Chapter 4). Municipalities may therefore have incentives to selectively attract high-income households, which would reduce the density of residential development. Such incentives could also contribute to geographic segmentation of the population according to social strata, which could have adverse effects for education outcomes for children with low socio-economic background. Efforts should be concentrated in aligning the revenues of municipalities more closely with the demographic determinants of the demand for services they are required to offer.

Legal barriers to the foreign ownership of real estate in Switzerland are significant, and may prevent foreign developers from investing in new residential construction. This may be an unintended consequence of quotas imposed by cantons on foreign owned dwellings and land to limit the demand for secondary dwellings, fearing that it could push up real estate prices and drive residents out of desirable areas, particularly in tourist zones.

Housing supply could be much improved by making a more judicious use of already urbanised lands, particularly in suburban areas. Local zoning laws that do not allow high

density buildings could be behind the low presence of for-profit firms in the housing market (only around 15% of housing is owned by for-profit entities), which could prevent economies of scale of big projects and the expertise of institutional investors from being fully exploited. In order to achieve this, municipalities should benefit directly from increasing their population.

Box 4.2. **Recommendations to reduce the high cost of housing and construction**

Allow rental prices for used housing stock more room to adjust to market forces

- Restrictions on the setting of a new rental price when a new tenant moves into a dwelling should be removed.
- It should be ensured that yearly rent increases for existing tenants can at least compensate for inflation, regardless of contract duration. Moreover, over longer periods of time, adjustment to market prices should be achieved for incumbent tenants while protecting them against high increases over short periods of time.

Lower the high costs in construction

- Construction norms should be reviewed so as to reduce costs.
- Regulations set by cantons and local governments affecting construction projects should be harmonized.
- The practice of requiring firms to pay the wages for certain professions prevailing in the canton where the construction project is located should be ended, for example, by applying the Internal Market Act to such cases
- Enforcement of the Internal Market Act should be strengthened, for example by raising the competition commission's resources, giving room for private parties to take legal action on the basis of the Act when construction plans used in one canton are rejected elsewhere and by reducing scope for exemptions.

Densify residential construction in existing buildable land

- Reduce municipalities' incentives to selectively attract high-income households for example by better ensuring that demand for social services is taken into account in intergovernmental transfers received by municipalities.
- Strengthen municipalities' incentives to attract population, for example, by raising the weight of real estate tax revenues in municipalities' budgets.

Notes

1. Including expenditure on energy.
2. These items can differ in each country, but they are chosen so they are of comparable quality across countries.
3. However, these estimates are based on specialists' quotes and should therefore be interpreted only as indicating broad orders of magnitude.
4. Luxury dwellings and those with an extension of more than 150 m^2 are exempt from the tenant protection legislation and thus are not restricted by rent controls.
5. The parties can also opt instead to make the adjustment to rents every six years, under the same conditions. In addition, rent increases are allowed when a dwelling is sold to a different owner.
6. Rental leases are in most cases signed for one year but can be renewed, and a contract is considered of indefinite duration, unless otherwise agreed at the formation of the contract.

7. This would be enough, assuming a constant population density in constructed areas, to house up to 2.1 million inhabitants.
8. More than half of buildable land receives only marginal public transport service (Office fédéral du développement territorial, 2008).
9. For instance, per person residing in the downtown area of one of the big cities there are 135 square meters of buildable land, a person residing in the periphery of a big city can enjoy an average of 312 square meters, a difference of 130%.

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Chapter 5

Raising education outcomes

Almost all workers are educated at least to the upper secondary level and vocational education contributes to one of the most successful transition performances of youth to employment in the OECD. Higher education enjoys an excellent reputation, as reflected in one of the highest scientific publication rates relative to population in the OECD and high placements of Swiss universities in international rankings. Participation in continuous education is among the largest in the OECD. Results for children with low socio-economic background or immigration background do not fully measure up to the high standards of the education system. Improving early childhood education and availability of childcare facilities for very young children would raise subsequent educational attainment, especially for these groups of children. Accountability of schools for their education outcomes should be raised. In tertiary education, attainment rates among the young are modest for a high-income OECD country, reflecting the importance of the upper secondary vocational system. A larger supply of tertiary graduates could have benefits for productivity performance especially in the context of demographic ageing. Public spending per pupil on pre-primary education is low in international comparison whereas spending on tertiary academic education per graduate is among the highest in the OECD.

Education outcomes

Education outcomes at the end of compulsory education are strong but depend on socio-economic background

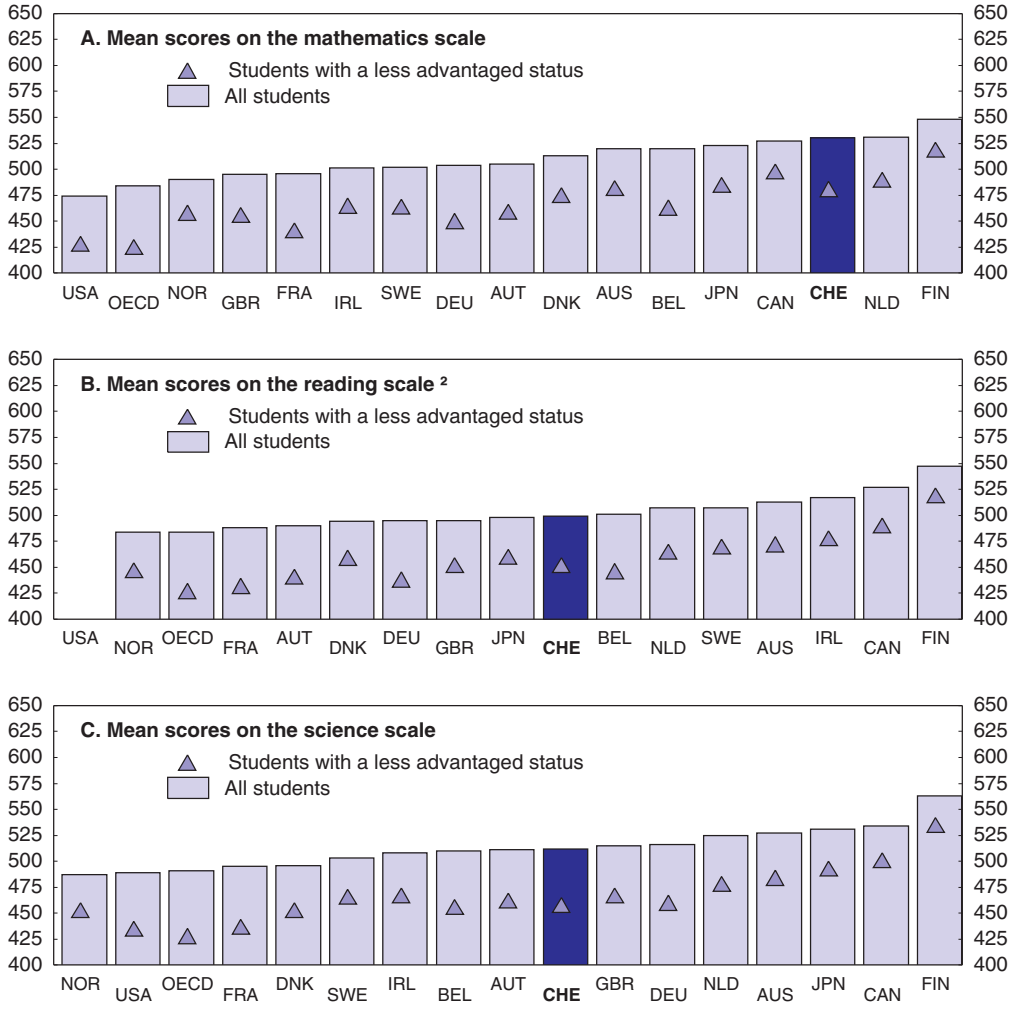
In the *Programme for International Student Assessment* (PISA), Swiss pupils reached higher average scores than their peers in most OECD countries, ranking among the top performers in mathematics, even though a relatively large share of teaching hours in Switzerland is devoted to the teaching of non-native languages. However, results are less favourable, in comparison with OECD countries with the highest GDP per capita, for pupils with modest socio-economic background (Figure 5.1).[1] Indeed, the impact of socio-economic background on education outcomes is stronger than on average in the OECD, especially with respect to the educational attainment of the parent, although it is not quite as marked as in other countries in which pupils are placed in different tracks in lower secondary schools. The impact of parental socio-economic background on student performance is stronger if the pupils attend different schools than if they attend the same school (OECD, 2007b). At the same time, participation of students in different study programmes contributes considerably less to explaining variation in PISA scores than in other countries practicing early tracking (OECD, 2007b). Also, controlling for the positive influence average educational attainment and income per capita have on PISA scores across countries, the results may compare less favourably internationally (see Figure 5.2, which uses a simple, rough method to control for such influences on science scores), including in comparison with some OECD countries with highest per capita incomes. Results are weaker yet in reading.

The education outcomes achieved at the end of compulsory education differ considerably across cantons. These gaps are likely to be related to the strong differences across cantons with respect to socio-demographic characteristics and the share of immigrants in their populations. Cantons also differ considerably regarding the impact of socio-economic background on PISA performance.

The difference between the performance of native and first-generation immigrant children is among the highest in the OECD. Integrating children with immigration background at school is particularly important as well as particularly challenging, as they make up a large share of pupils: 22% of 15 year-olds have immigration background (Figure 5.3). The shortfall in PISA results is particularly large for children who do not speak the language of instruction at home. More than half of children with immigration background or their parents originate from countries in which none of the Swiss official languages is spoken. Their weaker socio-economic status, relative to native children, also contributes to explaining the weaker results for immigrant children. However, some countries with similar average gaps in socio-economic background between native and immigrant children succeed in limiting performance differences more strongly than Switzerland, such as France , Greece, Norway, Sweden, and the United States (OECD, 2007a). Moreover, immigrant youth also perform considerably less strongly than native children with a similar socio-economic background, regardless of whether or not they are native speakers of the local language (Table 5.1).

Figure 5.1. **PISA scores in selected OECD countries: overall average scores and average scores for pupils with a less advantaged economic, social and cultural status** [1]

Mathematics, reading and science



1. Students with a less advantaged status are the bottom quarter of the PISA index of economic, social and cultural status.
2. Data for the United States on the reading scale have not been published.

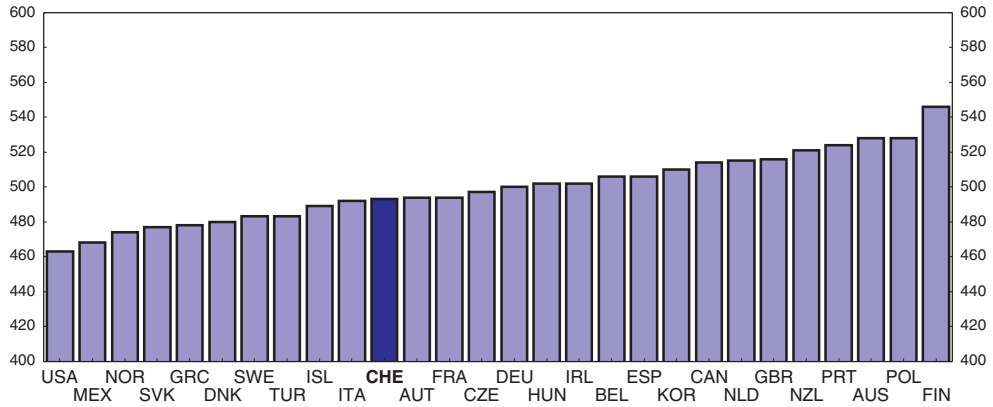
Source: OECD, PISA 2006.

StatLink http://dx.doi.org/10.1787/747854038087

Upper secondary attainment is high

Around 90% of 25 to 34 year olds have obtained an upper secondary degree, considerably more than the OECD average (Figure 5.4). Immigrant youth contribute a large share of youth who leave full-time education without an upper secondary degree. Almost 30% of the immigrant population do not possess an upper secondary degree, compared to less than 10% of natives, regardless of whether or not they completed compulsory schooling in Switzerland.

Figure 5.2. **PISA science score controlling for GDP per capita and education attainment in the parent generation**[1]



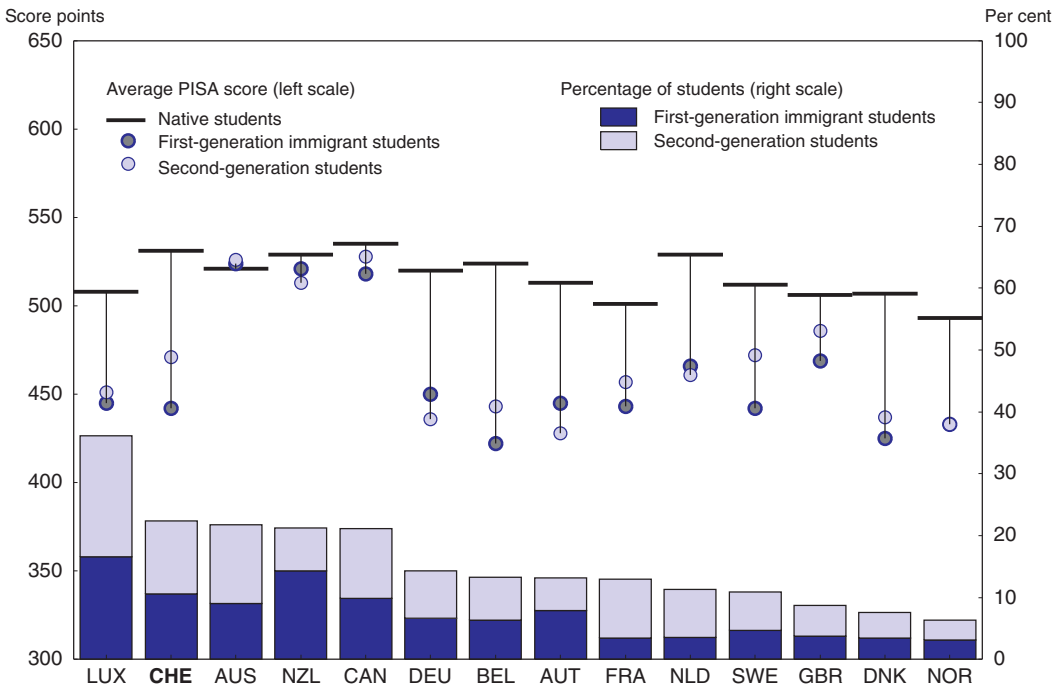
1. Science performance adjusted by GDP per capita and the percentage of the age group 35-44 years with upper secondary attainment.

Source: OECD, PISA 2006.

StatLink http://dx.doi.org/10.1787/747864405631

Figure 5.3. **Learning outcomes for immigrant and native students compared**

Average for reading, mathematics and science scales, PISA 2006[1]



1. Only including countries with at least 3% of students in each category.

Source: OECD, results from PISA 2006.

StatLink http://dx.doi.org/10.1787/748001584750

Most youth completing upper secondary education obtain a degree in the dual vocational system, which, in most cases, combines workplace-based, vocational training with 1-2 days per week of school-based general education, (see Hoeckel *et al.*, 2009 for a

Table 5.1. **Differences in science performance between students with an immigrant background and native students**

	Students with an immigrant background minus native students		Students with an immigrant background who speak a language at home that is different from the language of instruction minus native students	
	Without accounting for the economic, social and cultural status of students	With accounting for the economic, social and cultural status of students	Without accounting for the economic, social and cultural status of students	With accounting for the economic, social and cultural status of students
Australia	–2.0	–0.4	–15.2	3.0
Austria	–90.1	–60.9	–96.4	–36.8
Belgium	–86.4	–57.2	–102.4	–51.8
Canada	–16.9	–12.8	–20.7	–10.1
Denmark	–86.9	–48.9	–95.7	–33.3
France	–53.1	–18.1	–58.8	–18.2
Germany	–85.4	–45.8	–96.9	–24.3
Greece	–44.3	–25.1	–78.9	–10.4
Ireland	–10.5	–12.8	…	…
Italy	–58.4	–46.9	…	…
Luxembourg	–66.5	–31.7	–82.3	0.0
Netherlands	–75.5	–41.0	–85.6	–36.9
New Zealand	–15.9	–16.7	–38.6	–7.4
Norway	–58.6	–35.3	–59.8	–24.0
Portugal	–54.9	–56.5	…	…
Spain	–59.7	–48.2	…	…
Sweden	–60.8	–43.4	–67.6	–32.0
Switzerland	**–81.4**	**–56.3**	**–95.5**	**–37.2**
United Kingdom	–32.5	–14.2	–49.1	–8.3
United States	–48.3	–16.8	–62.2	–9.5
OECD average	–54.4	–34.4	–69.1	–21.1

Source: OECD (2007b).

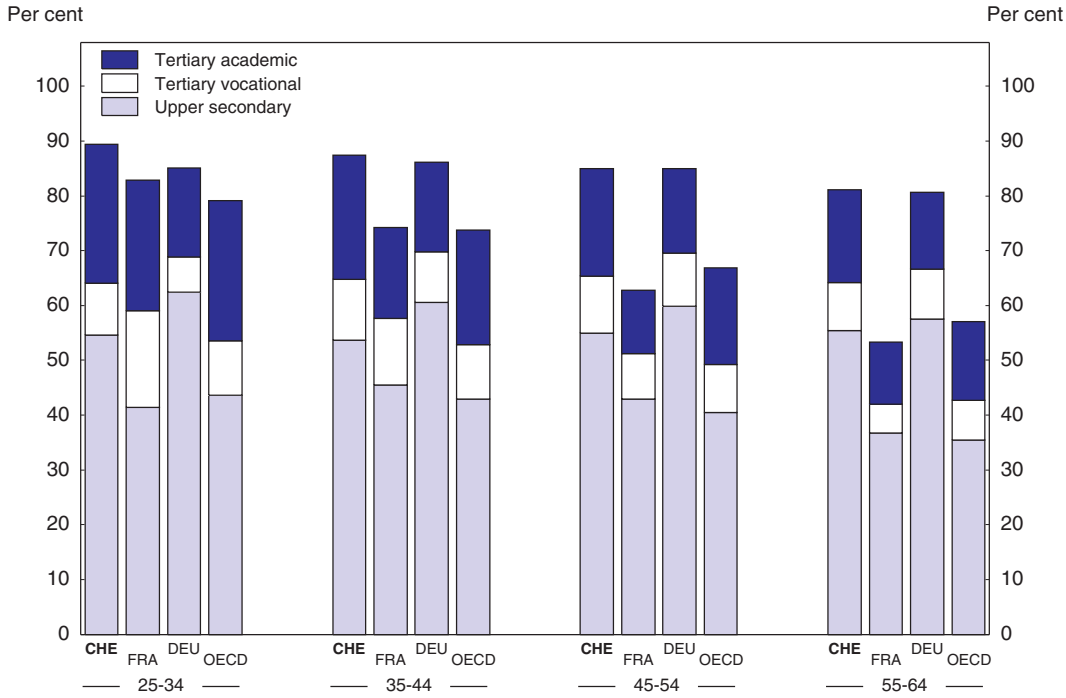
detailed description) although a small minority do so through entirely school-based education (*écoles de culture générale*, see Annex). Almost 60% of students in upper secondary education pursue combined school and work – based education, more than in any other OECD country. On the other hand, the share of pupils pursuing a course that prepares for entry into tertiary academic education (*maturité*) is the lowest, at around 30%. Most apprenticeship certificates take 3-4 years to complete, similar to general upper secondary education, which takes 3 years.

The share of pupils obtaining an upper secondary qualification which prepares for entry into tertiary academic education (*maturité*) has risen gradually over time (Figure 5.5), although this trend has flattened in recent years. Much of the rise is accounted for by the introduction of the *maturité professionnelle* at the end of 1990s (Figure 5.5). This degree offers graduates with vocational degrees a pathway towards tertiary academic education institutions introduced at the same time, namely the universities of applied science (see further below). In order to acquire the *maturité professionnelle,* apprentices attend additional general education courses. About a third of graduates from the *maturité professionnelle* decide to take the degree after completing their vocational degree, which contributes to a relatively high average age of graduation (21 years, see OFS, 2009).

About a quarter of the students who pursue the vocational track in upper secondary obtain a *maturité professionnelle*. Of these, most move on to the universities of applied

Figure 5.4. **Upper secondary and tertiary attainment**

By level and age group, 2007



Source: OECD, *Education at a Glance* (2009).

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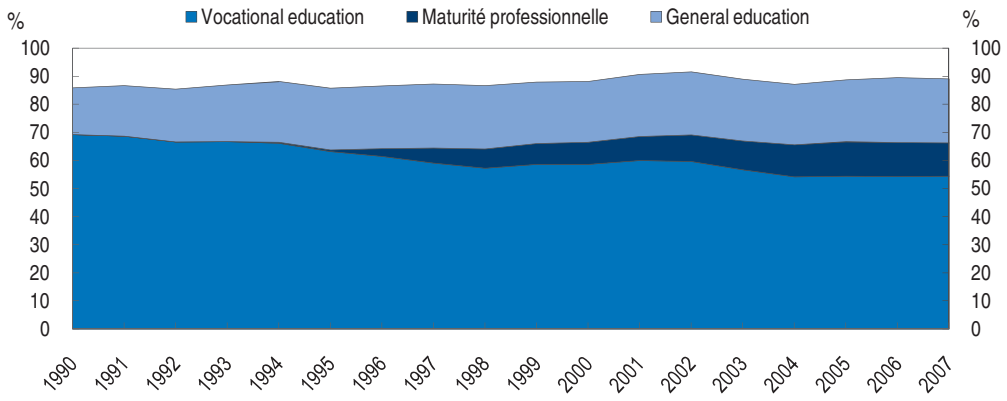
Figure 5.5. **Trends in upper secondary graduation rates**



Source: Swiss Federal Statistical Office.

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science. In addition, roughly 20% of vocational secondary graduates eventually enter tertiary vocational education. By contrast, almost all pupils who complete the general track in upper secondary education move on to university.

Tertiary attainment among young workers is modest while private returns are high

Tertiary attainment for the population of working age is above the OECD average though below it among 25 to 34 year olds (Figure 5.4), as tertiary attainment has expanded more

slowly in Switzerland than elsewhere in the OECD. Tertiary graduation rates have risen more markedly since 2000 in academic tertiary education institutions (ISCED 5A, see Figure 5.6; this includes universities and the *universities of applied science*, described in Box 5.1). The creation of the *universities of applied science* (*hautes écoles spécialisées*) is the main contributing factor, although it has in part been offset by a decline in tertiary vocational degrees. The related increase of degrees preparing for the *universities of applied sciences* as well as the number of students taking up studies in these universities has flattened (Figures 5.5 and 5.6). Graduation rates have also been temporarily boosted by the introduction of the 2-tier degree structure in universities and universities of applied science (OFS, 2009b), as not all students who enrolled in the previous one-tier system have graduated yet.[2] Overall entry rates into tertiary academic education have levelled off since 2003, although some effect of the improving business cycle at the time may also have played a role. These trends suggest that the increase in tertiary academic graduation rates observed in recent years will level off, as projected by the Federal Statistics Office and that tertiary attainment will remain below the rates seen in most other high-income OECD countries in the foreseeable future.

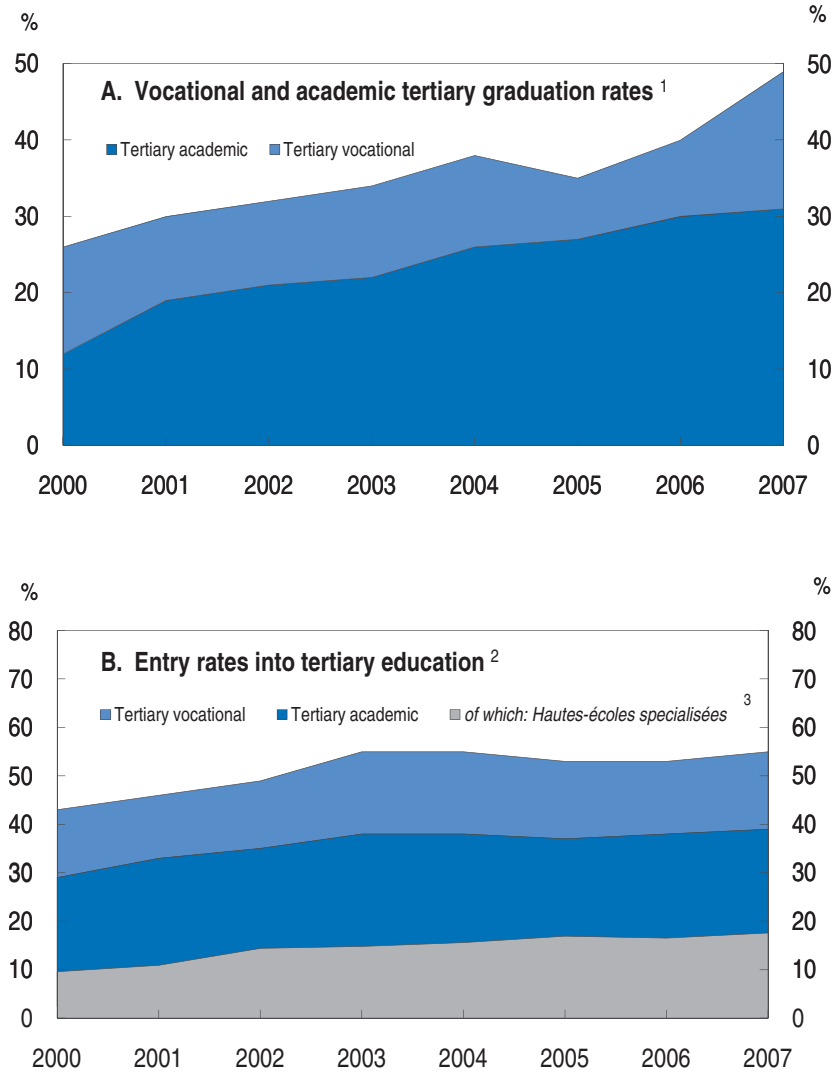
Box 5.1. **The universities of applied science (*hautes écoles spécialisées*)**

The universities of applied science were introduced in 1996, emanating from institutions offering tertiary vocational education. Their introduction was motivated by the desire to make the upper secondary vocational education pathway more attractive by offering access to academic tertiary education and to help graduates from these institutions obtain internationally recognised degrees. They offer an approach to teaching and research that is more closely oriented to direct applicability. Their research is limited to applied work and they do not offer PhD degrees. More than half of students enter via the vocational education system, obtaining the *maturité professionnelle*. Pupils who graduate from the *lycée* can also access the universities of applied science but have to gain work experience in order to be allowed to do so. Starting salaries of graduates of universities of applied science are as high as for university graduates but rise less with age. Since their inception graduation rates have expanded well beyond graduation rates achieved in the institutions they originated from. Two private universities of applied science have been accredited. Study duration is a little shorter than at universities, averaging about 3.5 years (prior to the introduction of the bachelor degrees).

As in other OECD countries, high parental educational attainment raises the probability of participating in university education considerably. The probability that a university student has a father who has himself had university education is about twice than for a randomly picked young person.[3] The introduction of the universities of applied science has contributed to moderating the impact of socio-economic background on tertiary attainment.[4]

Private returns to tertiary education in Switzerland are high in comparison to other high-income OECD countries (Figure 5.7), especially for men. The high private returns are accounted for by relatively large high gross wage *premia*.[5] Tertiary attainment contributes little to raising the probability of being in employment, reflecting the high employment rates achieved by graduates from vocational upper secondary education. In recent years, however, employment rates of tertiary graduates have evolved more favourably than those of upper secondary vocational graduates. The returns are particularly high for universities of applied sciences and tertiary vocational degrees (Wolter and Weber, 2005).[6] Social

Figure 5.6. **Graduation and entry rates into tertiary education**



1. Percentage of tertiary graduates to the population at the typical age of graduation.
2. Sum of net entry rates for each year of age.
3. National data on entry rates into *hautes-écoles spécialisées* do not include entrants into master and postgraduate.

Source: OECD, *Education at a Glance* (2009); FSO.

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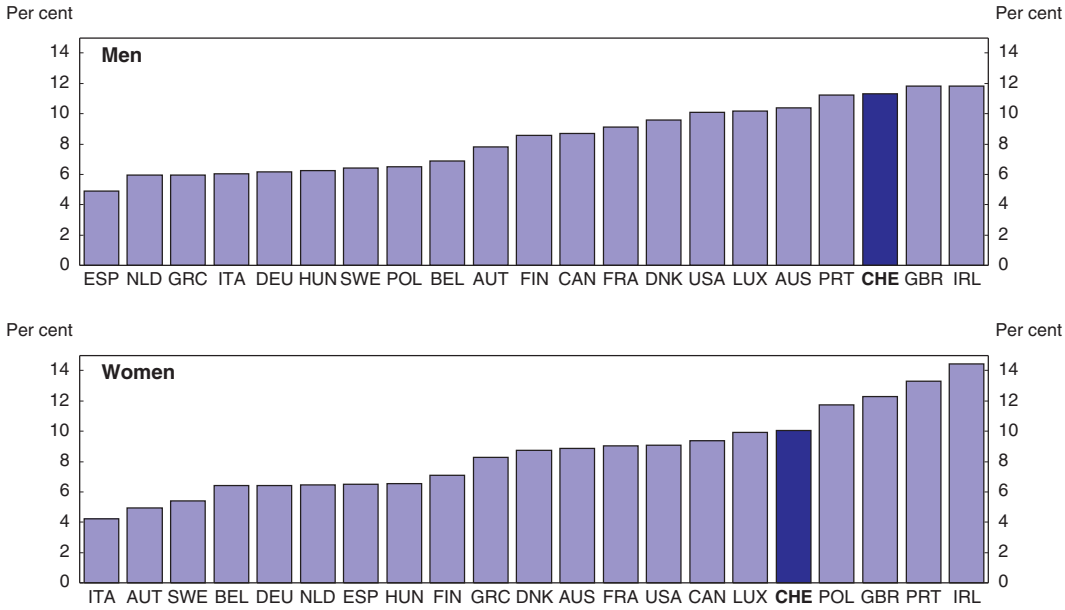
returns to tertiary academic education – defined here as the sum of private and fiscal net benefits, so include total worker compensation as benefits and take into account public spending on education in the costs – compare less favourably, reflecting the high government spending per graduate (OECD, 2008a).

The transition to the labour market of upper secondary and tertiary graduates is excellent

The Swiss education system is unusually successful in assuring a smooth transition from full-time education to work for most youth. Only 11% of the population in the age bracket of 20-29 years were neither in education nor in employment in 2006. This is one of the lowest shares among OECD countries and considerably less than the average (Table 5.2).

Figure 5.7. **Estimates of the private internal rates of return to tertiary education**[1]

2001[2]



1. Uniform labour productivity growth across countries assumed to be 1.75% per year.
2. Except Poland and Switzerland: 2000 and Hungary: 1997.

Source: Oliveira Martins J., R.Boarini, H.Strauss, C. de la Maisonneuve and C.Saadi (2007), "The policy determinants of investment in tertiary education", OECD Economics Department Working Paper No. 576.

StatLink http://dx.doi.org/10.1787/748088243327

The successful integration of workers in the labour market from young age, coupled with a low share of workers without formal skills is likely to be an important factor in explaining the modest degree of inequality in the distribution of income in Switzerland. Indeed the Gini coefficient on size-adjusted household income is lower than in a majority of OECD countries, although it is higher than in most small European countries (OECD, 2009).

Table 5.2. **Trends in the percentage of the youth population in education and not in education**

	2000			2006		
	In education	Not in education		In education	Not in education	
	Total	Employed	Not employed	Total	Employed	Not employed
Switzerland						
Age group:						
15-19	84.6	7.5	7.9	84.4	8.0	7.6
20-24	37.4	56.7	5.9	36.9	52.3	10.8
25-29	15.0	73.9	11.1	14.7	73.8	11.5
OECD average						
Age group:						
15-19	80.4	11.3	9.2	85.6	8.0	6.5
20-24	35.4	47.8	17.5	41.4	44.3	14.6
25-29	12.4	68.6	19.0	14.5	69.1	16.9

Source: OECD (2008), *Education at a Glance*.

The well-developed upper secondary vocational education system contributes significantly to this favourable result. Indeed, employment prospects immediately after completing full-time education are as good for upper secondary graduates as they are for tertiary graduates. Among a sample of individuals having left full-time education within the preceding 6 to 24 months, graduates of vocational upper secondary degrees have slightly higher unemployment rates than tertiary graduates, but the share of workers in employment and not subject to precarious working conditions is high for all types of graduates (Table 5.3). However, the share of youth aged 20–24 not in education and not in employment rose somewhat between 2000 and 2006 (two years which are close to cyclical peaks). These individuals are most likely to possess an upper secondary vocational degree. As is the case for unemployment rate trends (Chapter 1), these figures suggest that their labour market entry conditions for this group, while excellent, have deteriorated somewhat in recent years.

Table 5.3. **Employment status after graduation**

Per cent of graduates having left full-time education within the preceding 6 to 24 months, 2008

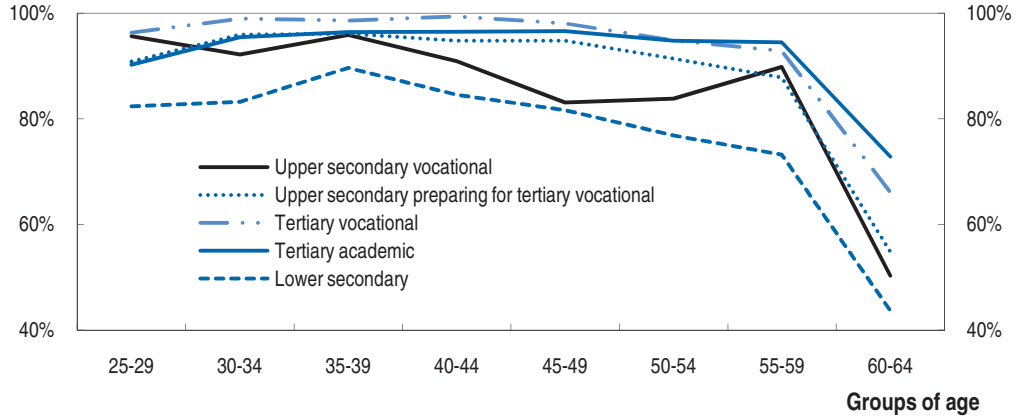
	Upper secondary vocational	Tertiary vocational	Tertiary academic	Average
Total	100.0	100.0	100.0	100.0
Non-precarious work	74.6	82.9	74.3	76.6
Precarious work[1]	14.1	13.8	19.2	15.8
Inactive	5.4	1.0[2]	3.5	3.7
Unemployed	5.9	2.3[2]	2.9[2]	3.9

1. In involuntary part-time work, in several simultaneous jobs or in a temporary contract.
2. Less than 50 individuals in sample.

Source: OFS (2008), *Labour Force Survey*.

While vocational upper secondary graduates have a highly successful record with regard to the transition to the labour market, their performance compares less favourably over the life cycle. Employment rates of vocational graduates diminish more strongly with age than those of tertiary graduates (Figure 5.8, which shows employment rates of male workers only, because women's life cycle employment profiles are more strongly affected by child-raising). Earnings profiles for tertiary graduates are considerably steeper than for upper secondary graduates. For example, earnings on average double over the life cycle for university graduates while they rise by 20% for graduates from vocational upper secondary education (CSRE, 2006). Part of this significant difference in wage growth over the life cycle may reflect higher participation of tertiary graduates in continuous education, perhaps because tertiary studies foster the ability to learn. One possible explanation for this divergent evolution of labour market performance over the life cycle may be that the human capital of vocational graduates depreciates more quickly, as some empirical research suggests for Germany.[7] This could, perhaps, be explained by the higher degree of specificity of knowledge, which leads to accelerated depreciation of human capital when technological change is rapid, especially in countries close to the technological frontier in many industries (Arvantis *et al.*, 2009, and references therein). However, employment rates also remain relatively high at mature age for tertiary vocational graduates. All in all, these data suggest that continued expansion of tertiary attainment could have a favourable impact on aggregate productivity growth and employment rates in the context of demographic ageing, which will require a lengthening of the life span spent in economic activity and increase the share of workers with long work experience.

Figure 5.8. **Male employment by educational attainment (2006)**



Source: OECD, *EAG database.*

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Growth in demand for tertiary graduates has been strong in recent years

Growth of employment of tertiary graduates has been strong in recent years, considerably stronger than average employment growth. On the supply side, this increase has been fuelled by increased graduation rates at the tertiary level (see above) and by rising immigration of highly qualified workers (OECD, 2007a). The increase in supply of highly-qualified workers has been absorbed easily in the labour market. Unemployment rates for tertiary graduates developed broadly in line with the overall unemployment rate while pay remained stable in real terms between 2002 and 2006 (OFS, 2009b). Employment rates of recent tertiary graduates have risen more strongly than for the population at large between 2003 and 2008 while the share of graduates reporting to be employed in jobs with too low skill requirements diminished. Indeed, the share of employed graduates reporting to be in jobs which do not require a tertiary level degree 4-5 years after graduation fell from almost 20% in 2002 to around 10% in 2007 (OFS, 2008). Graduates made their transition to jobs with commensurate skill requirements increasingly quickly, with two thirds of graduates being employed in such a job after 2 months in 2006. Moreover the share of establishments (weighted by their shares in total employment) reporting difficulties in hiring tertiary graduates increased over the past cycle (OFS, 2009). Particularly marked difficulties were reported in hiring tertiary vocational graduates. Hiring bottlenecks for highly-qualified workers appeared to be particularly binding in financial intermediation, transport and communication as well as information technology.

Meeting the additional demand through higher supply could have a favourable impact on productivity growth. The evidence presented in Annex 5.A2 suggests that, within any industry, firms with a relatively high share of workers with tertiary education have higher productivity levels than other firms, holding the share of workers with upper secondary vocational attainment and other determinants of firm level productivity constant (see Annex 5.2) Conversely, firms with a relatively high share of upper secondary vocational graduates do not seem to have robustly higher productivity, holding the share of workers with tertiary attainment constant. A positive contribution of intermediate vocational skills is discernible if attention is limited to firms with relatively low productivity. Among highest-productivity firms, the correlation between the share of workers with intermediate vocational skills and productivity turns negative.

The results of the annex must however be interpreted as being descriptive rather than as reflecting a causal relationship because the data do not permit controlling for unobserved heterogeneity among firms. However, the supply of tertiary-level skills in Switzerland has grown more slowly than in other OECD countries and there are some signs that the labour market could absorb a larger increase of tertiary-skilled workers. Moreover, the share of tertiary graduates among recent immigrants has been larger than among the Swiss population of working age, in part reflecting policies encouraging the immigration of highly skilled workers (see the 2007 *OECD Economic Survey*), and the increase in the supply of tertiary skills in recent years has been absorbed well, with a high match quality, while the share of businesses noting shortages in recruiting tertiary graduates has risen, as noted above. Taken together, this evidence suggests that a further increase of the supply of highly skilled workers could foster the expansion of the most productive businesses in Switzerland. International evidence also indicates a strong link between cognitive skills, as measured in adult literacy scores, and individual earnings, with a particularly marked effect in Switzerland (Hanushek and Woessmann, 2008, and references therein). Moreover, there appears to be a causal relationship between cognitive skill levels on the one hand and aggregate economic growth on the other hand, including when the share of high performers is considered (although this evidence relies on test scores obtained at secondary level).

Reforms to raise education outcomes

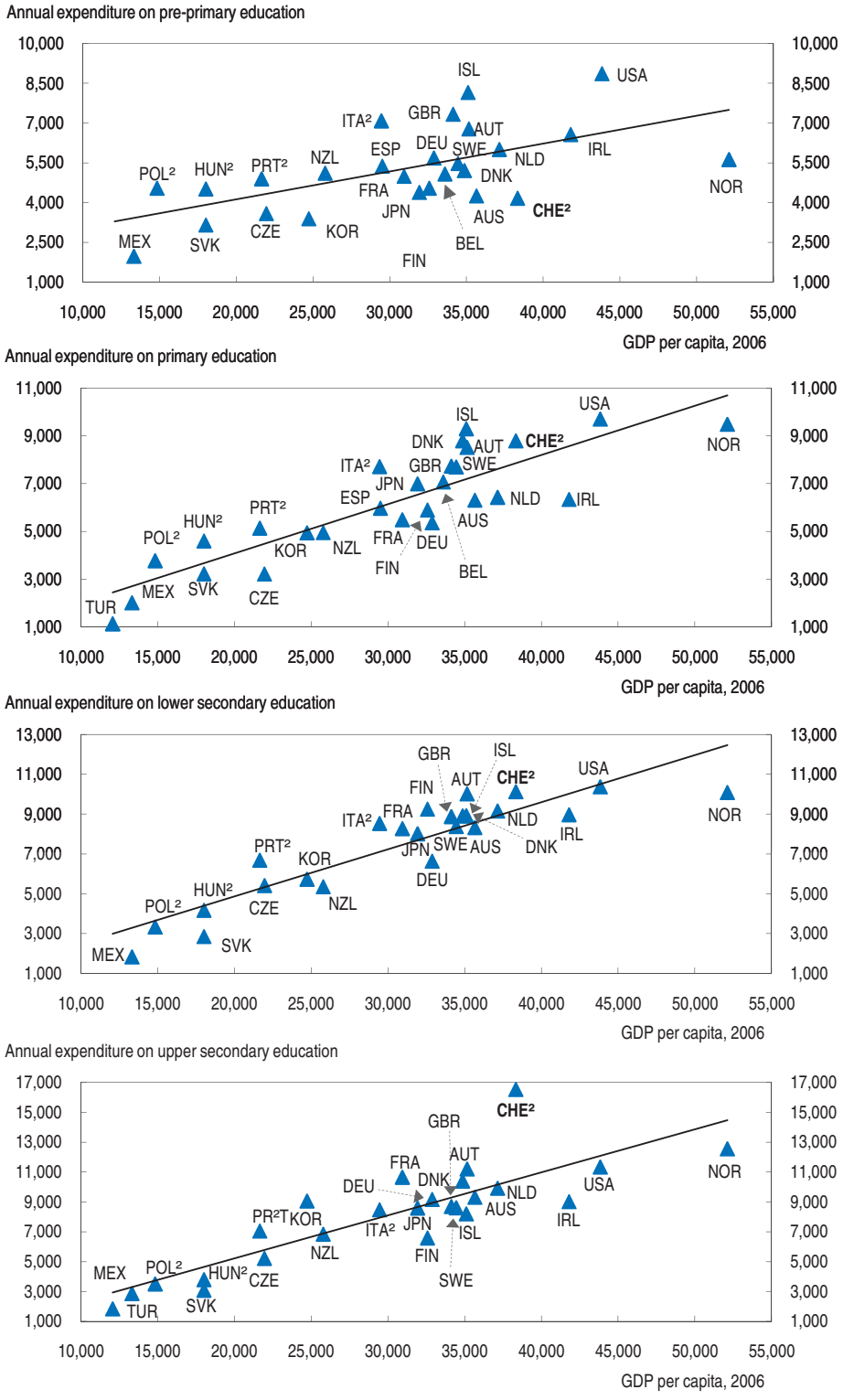
Public spending is relatively low on education of very young children

Education spending as a share of GDP in Switzerland is close to the average in the OECD (around 6%). However, spending per pupil relative to GDP per capita is high. This is explained to a considerable extent by relatively low participation rates in early childhood and tertiary education. Spending per student is higher in the later stages of the education career (especially in upper secondary and tertiary academic education) in most OECD countries. In Switzerland, this tendency is considerably more marked than in other OECD countries. Spending per pupil is low on pre-primary childhood education (Figures 5.9 and 5.10). Fees are often high for childcare facilities for children below the age of 4, entailing low participation (see further below).

As in a majority of OECD countries, most spending is public, including in tertiary academic education. An important exception, in Switzerland, is vocational upper secondary education, for which firms make significant training outlays for on-the-job training. Roughly half of the cost of vocational education is born by employers (Höckel *et al.*, 2009). Since apprenticeships are profitable for firms on average over the whole duration of the apprenticeship (see *e.g.* Wolter, 2008), these private costs are largely ultimately born by the trainees through time spent working with wages which are below the marginal product.[8] The time trainees need to work to fund the cost of their training might constrain the time they can devote to education. This circumstance could perhaps raise the question whether they spend an amount of time on education that is optimal with respect to its life-time net benefits, including in terms of improved life time employment prospects. The fraction of time spent in school per week varies, typically ranging 1-2 days per week (Höckel *et al.*). According to an analysis of the *Adult Literacy Survey*, which tested reading, mathematics and problem solving skills of the adult population, the average score reached by upper secondary vocational degree holders was 41 points. Individuals with compulsory school reached 33 points on average (see Falter *et al.*, 2007) and holders of *maturité* degrees (including *maturité professionnelle*) 61 points. Some of these differences are likely to be

Figure 5.9. **Spending per student and GDP per capita** [1]

2006



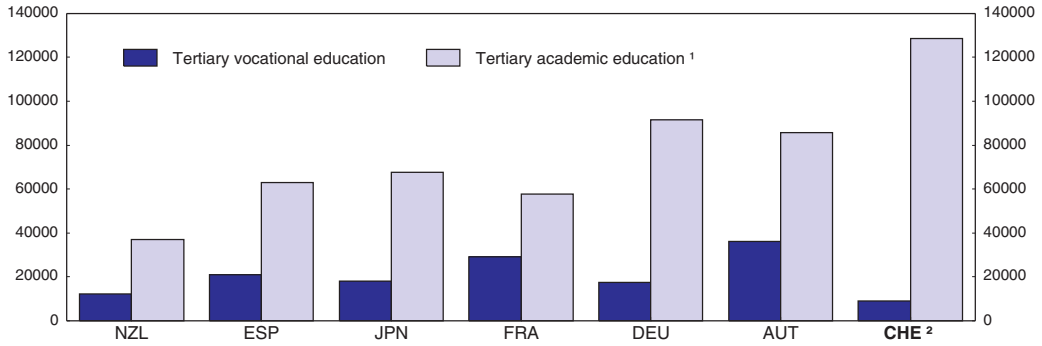
1. In equivalent USD converted using PPPs for GDP, by level of education, based on full-time equivalents.
2. Public institutions only.

Source: OECD, *Education at a Glance (2009)*.

StatLink http://dx.doi.org/10.1787/748118683022

Figure 5.10. **Cumulative spending per student in tertiary education, 2006**

Expenditure for all services over the average duration of tertiary studies
In USD converted with PPPs, by type of programme



1. Includes expenditure on advanced research programmes.
2. Public institutions only.

Source: OECD, *Education at a Glance (2009)*.

StatLink http://dx.doi.org/10.1787/748141665622

accounted for by selection effects. A slightly larger share of time spent in school education might induce more graduates to obtain the *maturité professionnelle*, giving access to the universities of applied science, whose degrees appear to offer relatively high returns, although policy makers would also need to avoid raising the number of drop-outs. Public spending per student on upper secondary general education, where there is no significant private contribution to funding, is about 25% higher than in compulsory education (OFS, 2009a) and considerably higher than in vocational upper secondary education. Government spending per student is also considerably lower in tertiary vocational than in tertiary academic education.

It was argued in OECD (2007c) that it is questionable whether higher public spending per student in later education phases is an appropriate setting of priorities for efficiency and equity reasons: *First,* there is evidence that the effectiveness of education imparted at any given level depends heavily on how effective education has been in previous stages (Heckman and Masterov, 2007), suggesting that the marginal benefit of public spending in the early stages is high, especially in Switzerland where participation in pre-primary education and childcare is still relatively low. While the link between the level of resources and education outcomes is often weak, there is evidence that, for example, class size has a more important impact for very young pupils from disadvantaged backgrounds (see *e.g.* Piketty and Valdenaire, 2006, for evidence on France). *Second,* most students pursuing long education careers tend to have family backgrounds which over-represent favourable socio-economic backgrounds. Public spending favouring the later stages of an education career thus tends to be regressive. This point is particularly marked in Switzerland, where vocational pathways receive less public funding than non-vocational ones. *Third,* early education has particularly pronounced public and merit goods characteristics: education failures at a young age are likely to entail large costs for the society at large (such as through welfare spending) and parents whose children are likely to benefit the most may not be able to fully assess the benefits.

In view of the private benefits to higher education there is a case for allowing private funding to play a more significant role in tertiary university education, without putting

access of students from low socio-economic backgrounds to higher education at risk. Resources for education spending in early childhood education could also be mobilised from savings in social spending entitlement programmes, notably health and disability (OECD, 2007a).

While the federal government makes a significant contribution to university funding, public spending on primary and secondary education is mostly funded by the cantons. The municipalities have significant responsibilities in the funding of childcare as well as early childhood and, to a lesser extent, primary education. Allocating significant funding responsibilities to municipalities generates geographical spill-overs which may contribute to under-provision especially where attendance is not compulsory. The benefits in terms of subsequent better education and labour market outcomes are often not reaped by supplying municipalities as a result of geographical mobility. Moreover, since a significant part of the benefits does not accrue to the individual but to all tax payers nationwide, through higher tax revenue and lower welfare spending, and meritorial characteristics, as argued above, parental voters are unlikely internalise those benefits in voting decisions. The positive impact of more generous provision of pre-primary education on female labour supply might also be subject to externalities, as parents may choose to place their children in a facility outside their municipality of residence (OECD, 2006a).

Improving the contribution of pre-primary education to outcomes

A large body of empirical work has established that fundamental cognitive and non-cognitive abilities are produced in the early years of childhood, long before children are five years old. Children from disadvantaged families receive much less cognitive and emotional stimulation than other children, retarding development (Heckman and Masterov, 2007). For these children, attendance of childcare and pre-school education facilities is effective in avoiding learning difficulties later on (*e.g.* OECD, 2006d). There is substantial evidence showing that schooling at a very young age raises educational opportunities at later stages, especially for those with fairly poorly educated parents (Cunha *et al.*, 2006). It also raises the share of pupils who are able to pursue education at the tertiary level (Caneiro and Heckman, 2003). A considerable body of evidence from several OECD countries almost unanimously points to the success of measures to address weaknesses in child development very early on, including, for example, household visitation programmes in New Zealand and the United States (OECD, 2006d).

The supply of childcare facilities remains scarce

While no nation-wide administrative statistics exist on the participation of children below the age of 4, Labour Force Survey data show that less than a quarter of couples whose youngest child is less than 6 years old make use of some childcare (formal and informal) for more than one day per week. A third of these families make use of a formal collective structure. Immigrant children are less likely to attend childcare facilities, according to a study of attendance in three Swiss towns (OECD, 2007b and references therein). A quarter of facilities do not offer subsidized places for low-income families, and, among those which do, little more than a half of the places are subsidized (BKFF, 2008). Subsidized facilities are subject to waiting lists. Existing places are often not made available at times and for age groups for which demand is particularly high (EKM, 2009).

To address the lack of childcare facilities resulting from deficiencies in funding, the government introduced a co-funding scheme from 2003, covering up to 30% of the initial

investment and operating costs for up to 3 years. To receive the subsidy the provider must be able to fund the service over a period of six years and ensure minimum opening hours. The scheme is scheduled to end in 2011, although the government has submitted an extension for public consultation, as well as a proposal to give the federal government powers to develop new forms of financial support for childcare facilities. The scheme has been effective in raising the number of available places, which increased by 40% since it was put in place, albeit from a very low base. The amount of funds awarded depends on the number of places created and on the number of new occupied places. Since the introduction of the scheme in 2003, CHF 127 million have been committed (less than 0.1% of yearly GDP).

While the scheme may have succeeded in maximising additional childcare places for a given volume of subsidies, the design of the programme suffers from shortcomings. The facilities are not subject to federal quality standards or federal evaluation of quality standards but instead require providers to meet cantonal requirements, which vary. A few cantons have adopted regulations to ensure minimum quality standards for inputs (such as the number of children per staff, conditions of physical infrastructure). Among these cantons, fewer than one half have included pedagogical objectives (Stadelmann-Steffen and Stamm, 2009). The federal scheme may generate incentives for cantons to lower quality requirements, so as to be able to expand the supply of new places more quickly and to be able to limit their cofunding share to the minimum of 70%. Although the scheme respects the principle of allowing the subsidy "to follow the child" it fails to direct funds to those institutions which meet parental demands best, because it distorts competition between established and new facilities and does not direct priority funding to those children who are likely to enjoy the largest educational benefits. Moreover, the subsidies are not subject to conditions concerning the fees charged to parents.

A scheme of vouchers, linked to a nation-wide accreditation system, could ensure that supply adjusts better to parental demand and that financial support is directed to children who would benefit the most from the beneficial impact of childcare on their subsequent education outcomes. Such vouchers could cover a significant share of the average cost of provision of a place in a childcare facility and could be targeted, in the first instance, at households whose children have special education needs, notably low-income households and households in which the children do not speak the local language. Accreditation criteria should include standards with respect to educational targets. To support the provision of childcare facilities, a voucher scheme should be introduced and linked to a system of accreditation and nation-wide quality standards. Subsidies for childcare provision also have a significant impact on female labour supply, in part by creating a denser network of facilities, thereby reducing commuting costs, and these effects may well be particularly marked in Switzerland, where many women work part-time. The federal government has presented a draft ordinance for public consultation which would introduce such minimum quality standards as well as a nation-wide agency, to be created by the cantons jointly, which would be responsible for the accreditation and supervision of childcare facilities. It has also funded pilot projects for voucher schemes. These are welcome steps forward.

Parliament has adopted new legislation which reduces the income tax payments of families with children with an estimated budgetary cost 0.1% of GDP. The legislation includes a new allowance for children, which is deducted from the tax payment (CHF 250 per child), as well as the deductibility of childcare costs from taxable income up to a limit of CHF 10 000 for children up to the age of 14 years. The former measure is

however likely to reduce labour supply, while the latter measure is not suited to target childcare provision with educational benefits, especially among parents with low socio-economic background, who are likely to face low marginal income tax rates. Consideration should be given to redirect the resources devoted to the new child and childcare allowances to a voucher scheme for childcare as described above.

The planned lowering of compulsory education to the age of 4 marks progress

The Swiss system of early childhood education and childcare (ECEC) distinguishes early childhood education for children from age 4 onwards (*écoles enfantines*) and childcare facilities, which are also provided for younger children. Attendance in early childhood education has increased from 35% to 86% of children aged 4 between 2004 and 2008. A new cantonal agreement – the *HarmoS* concordat – will lower the start of compulsory free schooling from 6 to 4 years nation-wide if approved by all cantons (Box 5.2). Indeed, in view of the significant benefits of early childhood education and the difficulties parents with low educational attainment may have in assessing such benefits, compulsory pre-school can make a significant contribution to raise education outcomes for children, especially from socially disadvantaged backgrounds. This argument may carry particular weight in the case of Switzerland, where compulsory school finishes already at age 15, and some students in upper secondary education, notably those pursuing short degrees in the dual apprenticeship system, receive little general education beyond that age.

Cantons which have agreed to the HarmoS concordat will have considerable leeway in how they will implement compulsory schooling from the age of 4 onwards. While high-standard qualification requirements on pedagogical staff are set across cantons,[9] attendance times and teaching input will remain at the discretion of individual cantonal governments. At present many cantons provide attendance of less than half a day, which also limits the capacity of parents, notably mothers, to work full time if they wish to do so. Moreover, many cantons have introduced objectives for the educational phase before the age of 6. However, the HarmoS concordat does not foresee such standards. The cantons are encouraged to accelerate in the introduction of compulsory schooling from the age of 4. They should set common educational objectives, evaluate education outcomes and offer full-day attendance.

Very young children with education needs which are particularly difficult for parents to meet – including highly talented children, children of parents with low socio-economic background and children whose parents do not speak the local language – can benefit particularly strongly from early childhood education. In Switzerland, these special needs are, in most cases, not taken into account. In particular, early childhood education facilities are not placed in a position to help compensate the learning needs of children with parents from poor socio-economic backgrounds (Stadelmann-Steffen and Stamm, 2009). In Germany, some states have moved to test children's local language abilities 2 years before the beginning of primary school and to enrol young children in special support programmes if weaknesses emerge. In recognition of the higher cost of such programmes, pre-schools receive higher capitation subsidies for immigrant children (OECD, 2008b). The capacity of early childhood education and childcare facilities to support children with specific education needs should be strengthened.

Improving efficiency in compulsory education

While cantonal governments are autonomous with regard to their policy settings for compulsory education, they have agreed on common basic structural elements (Box 5.1).

Thus, in all cantons compulsory schooling currently begins at age 6 and lasts until age 15. Primary school in most cantons covers the first 6 years of schooling, although in 2 cantons it lasts for 5 years and in some for 7 years (including an orientation phase). In most cantons selection of pupils into different tracks at the end of primary education is widespread. Cantons belonging to the same language community set common rules on the content of teaching in core subjects. However, the sequence and timing of the teaching of non-native and foreign languages differs considerably, even among cantons with the same main language, which has generated some barriers to intercantonal mobility of families with children.

The cantons have therefore decided to reinforce common structures in the *HarmoS* concordat, following a recent constitutional amendment which provides the cantons with a mandate to do so (Box 5.2, see also OECD, 2007a, for the main provisions of the *HarmoS* concordat). A common core catalogue of subjects will be defined and basic course contents will be more closely harmonised.

School autonomy is strong in some respects but accountability is weak

Almost all schools in lower secondary education appear to be autonomous in decisions related to selection and the dismissal of teachers (OECD, 2007a). This also applies to upper secondary schools, of which two thirds hire teachers themselves. Schools thus have considerable influence on personnel decisions, as teachers, like all public sector employees in Switzerland, do not have special job protection rules. Most schools can also take decisions on the use of their budget independently. However, they have little autonomy in decisions concerning teaching material and course content. In many cases, these decisions are mostly taken by cantonal governments alone (Figure 5.11).

Empirical evidence suggests that autonomy of schools in some respects can raise school performance, but only if combined with accountability of schools for outcomes. Otherwise there is a risk that autonomy is not used to the best advantage of raising outcomes. Indeed, school autonomy with regard to teacher salaries has been estimated to increase maths outcomes somewhat,[10] if accountability mechanisms, such as external final exams, are in place (Wößmann, 2005a). Conversely, external final exams can be counterproductive if schools do not have autonomy with regard to teaching contents. With external final exams, the PISA score in maths is estimated to improve by 19 points if schools have autonomy over teaching content, whereas they deteriorate by 12 points as a result of such autonomy if no external final exams are set. School autonomy in procedural matters, for example in the choice of books, the purchase of teaching materials, the hiring of teachers and the use of the budget, was also estimated to have a positive impact on schooling outcomes. According to Wößmann, externally set final exams boost outcomes by as much as what pupils learn in one school year; and the effect appears to be greater if there are also regular standardised tests to monitor pupil performance in the course of their school careers.[11] Other methods of enhancing school accountability used across OECD countries include the publishing and qualitative monitoring of school results. Finland – which has achieved high PISA scores in recent years – has made use of a randomised inspection service. Whichever method is employed, the collection of information on results needs to be followed up by analysis to allow recommendations to be drawn for school practices.

While many cantons have made efforts to introduce mechanisms of accountability, scope for improvement is large. Most cantons have occasionally evaluated education

Box 5.2. **Assignment of responsibilities across levels of government**

Municipalities are, together with the cantons, in charge of funding pre-primary education and childcare as well as part of the expenditure of primary education, notably for physical infrastructure and teaching materials. They also run primary and lower secondary schools.

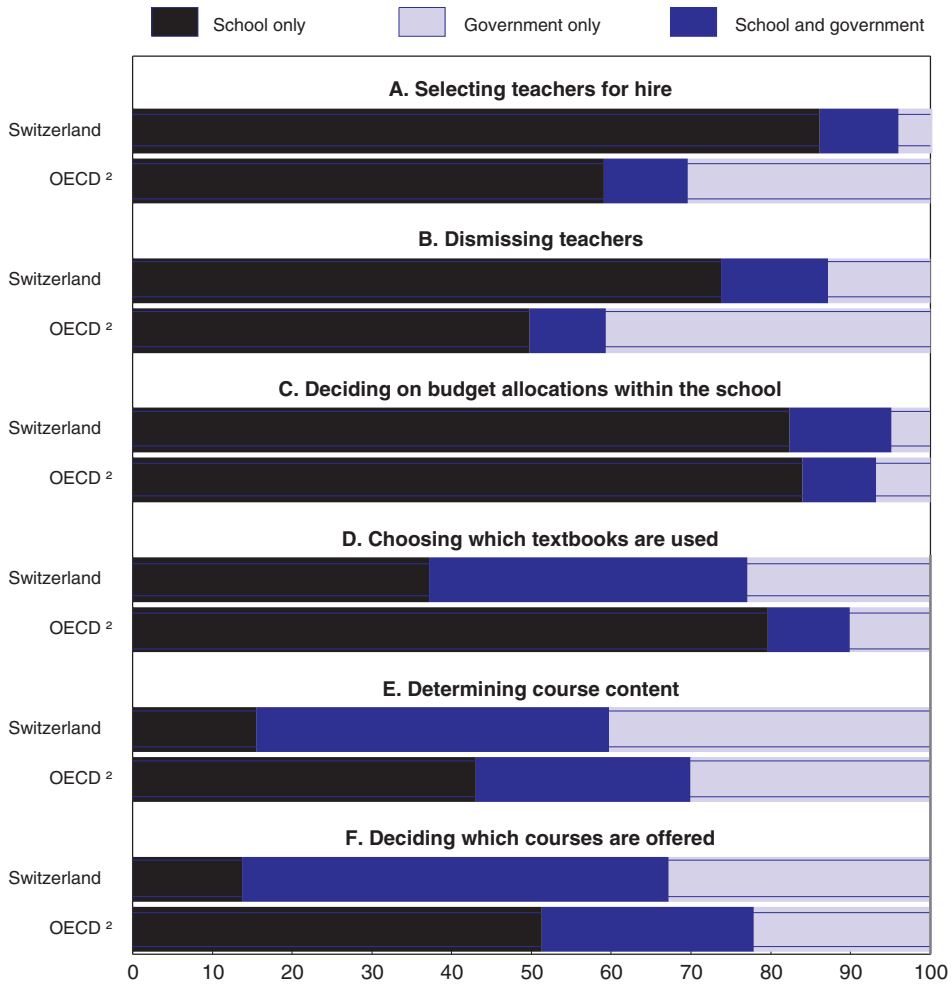
Cantons regulate all compulsory education as well as upper secondary education in the academic stream, although all final upper secondary degree requirements are set in co-operation with the Confederation. They provide all public funding for lower secondary and most of upper secondary education, including in the vocational track. The cantons have responsibility for cantonal universities and the *Universities of Applied Science* (*Hautes Écoles Spécialisées*). Cantons also contribute most of the funding for education services in these institutions and are in charge of setting up grants and loan schemes for students, which they mostly fund themselves, with a small contribution from the Confederation.

The cantons coordinate their education policies in the **Swiss Conference of Cantonal Ministers of Education**, which comprises the members of cantonal governments in charge of education and oversees the implementation of agreements across cantons. The foundation for this co-operation was laid in the *school concordat* from 1970, in which cantons agreed on for example, mutual recognition of degrees, common features in curricula, common requirements on teacher qualification. It also sets common basic features in compulsory schooling, including the age thresholds of compulsory schooling, An additional concordat (*HarmoS*) is in the process of discussion (see below).

The confederation regulates vocational education at the secondary and tertiary level, although most public funding is provided by the cantons. It also sets the framework conditions for academic tertiary education and is responsible for the two *Federal Institutes of Technology (écoles polytechniques fédérales)*, for which it provides all public funding. It also regulates the *Universities of Applied Science (hautes écoles spécialisées)*, although the cantons are responsible for operating them. The confederation also provides between 20 and 40% of the funding of the cantonal universities (*universités cantonales;* OFS 2009b) and one third of the funding of the universities of applied science.

A recent constitutional amendment, approved in a referendum in 2006, requires the cantons and the confederation to harmonize key aspects of the education system nationally, in particular with respect to the entry age and duration of compulsory education, the setting of education objectives, and access conditions. It also prescribes that confederation and cantons co-ordinate their policies towards institutions offering tertiary academic education (see Box 5.3). It empowers the federal government level to harmonize these key elements on its own if the cantons do not reach agreement. In June 2007, the Swiss Conference of Cantonal Ministers of Education agreed on the HarmoS Concordat to comply with this requirement. If implemented in all cantons, it will introduce common standards for education outcomes in compulsory education and lower the beginning of compulsory education from age 6 to 4 in all cantons. It will offer continuous schooling hours and to offer day-care for pupils so as to better reconcile attendance with working hours of parents and reduce differences in curricula within each language community so as to reduce geographical barriers to mobility for families with children. The HarmoS concordat is in force since 1 August 2009 for the 11 (out of 26) cantons that have agreed to it. It has been rejected in 7 cantons, among which by popular vote in 6 cantons. The cantons in which the concordat is applied have 6 years to fully implement its provisions.

Figure 5.11. **Involvement of schools in decision making**[1]



1. Results based on reports from school principals and reported proportionate to the number of 15-year-olds enrolled in the school.
2. Simple average.

Source: OECD, *Pisa 2006: Data*, Volume 2.

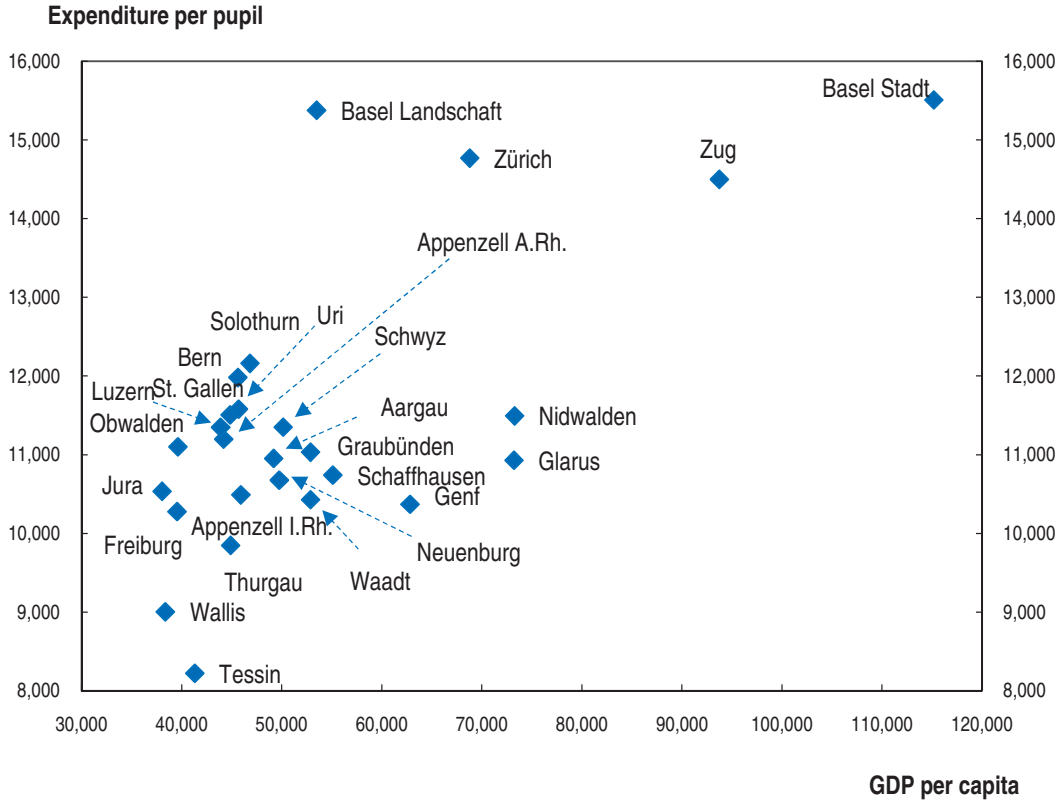
StatLink http://dx.doi.org/10.1787/748167522131

outcomes for selected competencies. However, with the exception of the canton of Geneva, they have not been conducted as recurrent exercises over time (CSRE, 2006). Moreover, these programmes have not generally allowed comparisons across cantons. No nationwide evaluation of reading competencies in primary school has been conducted since 1991. Hence the opportunity to determine best practice among cantonal policies is foregone. Indeed, differences in resource utilisation and policies are considerable across cantons. For example, while the overall number of hours taught per year in primary school is slightly above the average of OECD countries (CSRE, 2006), it varies considerably across cantons. The number of hours of instruction is one of the few inputs that have robust explanatory power in accounting for cross country differences in educational outcomes (OECD 2006a)

and substantial effects on performance have also been estimated for Switzerland (OFS/CDIP, 2009). Differences across cantons also exist with respect to the method of school evaluation, the distribution of hours taught across subjects, work requirements on teachers and curricula. Significant differences are also apparent in spending per pupil in primary education (Figure 5.12). The data suggest that there may be a risk that spending tends to be lower among cantons and municipalities with a high share of low-income households. At the same time, it is in the municipalities with many low-income households where a high level of resources in the early phases of education may be particularly effective in raising outcomes.

Figure 5.12. **Expenditure per pupil on primary education and GDP per capita across cantons**

2005, CHF



Source: Swiss Federal Statistical Office, 2008.

StatLink http://dx.doi.org/10.1787/748182630211

If the *HarmoS* concordat is approved, cantons will share education standards for the second, sixth, and 9th (final) year of schooling in core subjects. These standards are being prepared by the Swiss Conference of Cantonal Ministers of Education, on the basis of recommendations from a commission of scientific experts. Implementation of this programme is important, so as to be able to identify best practice among cantonal education policies. The impact of differences in education policy, spending and resources across cantons should be investigated regularly and the results published.

The evaluations planned in the HarmoS concordat cover representative samples of cantonal schools and therefore cannot be used to hold individual schools accountable for

their performance. Cantonal evaluations have also, in almost all cases, been sample-based. School inspection services are not geared towards the evaluation of education outcomes. A few cantons have moved towards the definition of competencies, which help set objectives more clearly while giving schools more room to determine themselves how to attain them and have recently introduced central exit exams at the end of compulsory school very recently. Few schools report that achievement data are tracked by authorities or used for the allocation of resources inside schools (OECD, 2007a). Accountability of schools for education outcomes should be strengthened. To this end, external testing should be conducted at regular intervals over time and over the school career at all schools, and the results should be benchmarked against the newly defined competency objectives. In view of the empirical evidence in favour of the complementarities between external exit exams and repeated external evaluation throughout the school career, such regular external testing would help ensure that the new external exit exams at the end of compulsory school, introduced in some cantons, would have a beneficial impact on outcomes.

A minority of cantons foresee the possibility of teaching evaluation playing a role in pay and career advancement of school managers and teachers. The evidence on the effectiveness of performance-related elements in teacher career is mixed.[12] However career incentives for head teachers can help hold schools accountable more effectively.

School management teams with clearly defined responsibilities and powers to set strategic objectives and improving the school's education practice can make it easier to hold schools accountable for performance. Training of school managers for these tasks and significant *premia* of school managers' pay over teachers' pay play an important role to ensure competent school management (Pont *et al.,* 2008). In Switzerland head teachers are little involved in assessing teaching practice in their school.[13] No nationwide requirements on qualification of school managers exist, although they are in process of elaboration. While teachers in Switzerland are generally well paid, pay *premia* for school managers are often small,[14] giving rise to difficulties in filling vacant head-teacher positions. Moreover, few schools have any full-time head teacher and some have no head teacher at all, although in some cases this reflects small school size. Staff devoted to school management should be introduced more widely. Their responsibilities and powers should include setting of objectives, developing plans to improve practice as well as evaluate and help develop teaching skills. Head teachers should be required to acquire school management skills in all cantons. A cantonal agreement to set a common standard for such skills is in preparation.

Selection lacks effectiveness in assigning pupils to tracks according to ability in lower secondary education

Most cantons' school systems select pupils into two or three types of lower secondary school (schools with basic, medium and extended demands) at the age of between 11 and 13 years. 2 cantons offer comprehensive schooling only, although streaming of pupils for core subjects within schools is also practiced in these. Admission to lower secondary schools with extended demands is based on recommendations from teachers towards the end of primary school. In several cantons pupils have to pass an exam if they do not receive a recommendation from the teachers to be admitted to a school with extended demands. In many cases parents appear to take the final decision (OECD, 2007b). About 60% of pupils attend schools with extended demands, whereas 30% attend schools with basic demands. These shares have remained stable over the past 10 years.

The probability of children at a given performance level having been placed in a lower secondary school with extensive demands depends heavily on socio-economic background, gender and immigration status. For pupils with PISA scores close to the average this probability is about 50% higher for girls with a middle or high socio-economic background than for girls with low socio-economic background, and is about 2½ times higher for a native boy with high socio-economic background than for an immigrant boy with similar socio-economic status (CSRE, 2006 and references therein).[15] The weak correlation of study programme and PISA score also suggests that, nation-wide, there is significant overlap in the PISA scores found across different school types.

Differences in cantonal selection criteria appear to contribute to the difficulties in assigning pupils with highest competency levels to schools with higher demands consistently nation-wide. Indeed, across cantons the average PISA scores of schools with basic or medium requirements overlap with the average scores of schools with extended requirements in other cantons (*économie suisse,* 2008).

Early tracking strengthens the dependence of learning outcomes on socio-economic background…

Cross-country evidence suggests that comprehensive school systems generate PISA outcomes which are considerably less correlated to socio-economic background than tracked school systems (see, *e.g.* OECD, 2007b, 2008b and the references therein) and a few countries which have delayed or abolished tracking have diminished this correlation while improving average performance. This has been the result of the abolition of tracking in Sweden in the 1950s and postponement of tracking by one year in Poland in 2002 (OECD, 2007b). In Switzerland, too, there is evidence that the correlation of education outcomes on socio-economic background increases once the pupils have been placed in different tracks (Vellacott and Wolter, 2005). This is, perhaps, consistent with micro-evidence on peer effects, which suggests that the presence of academically strong pupils reinforces education outcomes of weak pupils, while adverse effects of weak students on strong students may perhaps be smaller or absent.[16]

Peer effects are particularly important for learning the local language and therefore contribute significantly to the success of integrating immigrants' offspring in formal education. Reading skills of non-native speaking pupils are considerably better if their share in the school class is relatively small (whereas the reading skills of native speakers of the local language does not appear much affected, see Vellacott and Wolter, 2005, and Nusche, 2009). 60% of pupils in lower secondary schools with lower requirements have a cultural background[17] that differs from the local one, whereas the share is less than 20% in schools with higher requirements. The selective school system therefore appears to generate risks for the progression of immigrant children.

A relatively high share of pupils with learning difficulties are separated from mainstream teaching and placed in classes or schools for children with learning difficulties or disabilities. This share appears to be high in international comparison although some reduction has occurred in recent years (according to CSRE, 2006, although international comparisons are difficult). Children with immigration background are more than 3 times as likely to be placed in such schools or classes as native children, even if participation in special needs classes specifically designed to help pupils overcome language barriers is not counted (OFS, 2009a). The evidence indicates that integration of children with learning

difficulties in mainstream classes and schools raises their education outcomes, especially in the case of children with immigration background, and that integrative support measures are less costly (Vollacott and Wolter, 2005; CSRE, 2006). Placement of children in separate schools and classes for children with learning difficulties or disabilities should be further reviewed, notably with respect to children with immigration background, who are overrepresented. According to a new nationwide framework (inter-cantonal Concordat), the cantons have specified a catalogue of education services that cantons will be required to offer for free to children and young people with special education needs up to the age of 20. The Concordat specifies that integrated education should be preferred to the separation of pupils in special needs classes or schools. It has been ratified in six cantons and is scheduled to become law in 2011 if at least 10 cantons approve it.

… and has a strong influence on subsequent education pathways

Almost all pupils attending schools with basic demands and who subsequently move on to upper secondary degrees do so in the vocational education system. By contrast, one half of pupils graduating from a school with extended demands move on to the *lycée*, which prepares for university. Pupils in schools with basic demands find it difficult to move on to a *lycée* even if they attain very high levels of competency (as measured by PISA test scores). For example, pupils having obtained the highest score level category on PISA have a probability of more than 80% to move to a *lycée* if they attended a school with extended demands, whereas this probability is below 50% if such a pupil attended the school with basic requirements. For a medium competency level the probability is 5 times higher for a pupil who has attended a school with extended demands (CSRE, 2006). These results suggest that mobility across school types is insufficient to ensure that all pupils with high competency have equal access to upper secondary tracks preparing for entry into tertiary academic education. Indeed, the type of school is a stronger predictor for the subsequent educational pathways taken than the competency level. The impact of parental education background on the probability of entering dual vocational training rather than full-time schooling[18] is high, and this impact is strongly intermediated by the selection into schools at the lower secondary education level.[19]

In sum, tracking in the secondary schooling is not effective in giving all pupils with high competency levels access to tracks preparing for tertiary academic education. The difficulties in assigning pupils to different tracks according to their competency level consistently across the country impairs the selection of students into higher education. The probability of a pupil with a modest socio-economic background aspiring to enter tertiary academic education, relative to a pupil with relatively favourable socio-economic background, is lower than in almost all OECD countries. While some other countries with selective lower secondary school systems (Germany, Hungary, the Slovak Republic) also display very low odds, in Switzerland the odds remain unusually low even when the odds are computed for a given point score on the PISA scale of mathematics (OECD, 2007c).

In response to the inequities generated by early selection in lower secondary education, the *HarmoS* concordat proposes to postpone the age of first selection to 13 years in all cantons. Many cantons have already done so, although in 3 of them first tracking still occurs at age 11. Several cantons have also decided, over the past decade (*e.g.* the canton of Zurich), to introduce school systems that combine a smaller number of tracks with streaming inside the class for each subject. There is evidence that these newly introduced school types have

encouraged upward mobility of pupils during lower secondary school (CSRE, 2006). Some are also offering comprehensive schooling as an alternative to tracked schools, although this step may in effect raise the number of tracks in lower secondary education.

Policy reforms are underway in tertiary academic education[20]

The university education system is diverse in its institutional structure. Universities (*hautes écoles universitaires*) comprise the 2 *Federal Institutes of Technology* (*instituts fédéraux de technologie*), funded and supervised by the federal government, as well as 10 cantonal universities, mostly funded and fully supervised by the cantons. The *maturité* degree gives unconditional access to most degree courses in these institutions. In addition, the universities of applied science, which are also mostly funded by the cantons, but, unlike the universities, are subject to federal regulation, offer access to tertiary academic education through upper secondary vocational education (see Boxes 5.1 and 5.2).

The reputation of Swiss universities benefits from a high level of resources and well-developed autonomy

Swiss universities rank highly in terms of research output and the research reputation of staff. The number of publications relative to population is large in international comparison (OECD, 2006a) and international rankings of universities – such as the *Shanghai Jiao Tong University Academic Ranking of the World* – show that many achieve relatively high placements in comparison to the average performance, in per capita terms, of other national university systems in the OECD (see, for example, Aghion *et al.*, 2007 for an international comparison).[21] Hence, most Swiss university students are enrolled in an institution with high international reputation (although this is not true for the universities of applied science).

Universities are autonomous with respect to staffing decisions and the allocation of funds. This, alongside resource levels, has contributed to the research reputation of Swiss universities, in comparison to other OECD countries. Indeed, empirical evidence shows that university autonomy as well as competition among universities for funds interact with each other to improve research output of universities. Nonetheless the drop-out rate of about 30% is high in view of the relatively low entry rate and a selective upper secondary education system. The drop-out rate seems to decrease with the introduction of the two-tier degree structure according to the principles of the Bologna Process (OFS, 2009).

Current reform efforts address segmentation of the higher education system

The segmentation of institutions into different types with different and often highly local policy responsibilities have lead to fragmentation in the past, raising costs by favouring provision by sometimes small departments (OECD 2003, 2006a). This contributed to long study duration, which reached 6 years for university graduates in 2007.[22] Differences in study duration, even for the same degrees across subjects, are still large even though these differences have diminished at the universities since the adoption of the two-tier degree structure.

Reforms, which are still in the process of implementation (Box 5.3), are seeking to overcome fragmentation, by subjecting the different types of institutions to common regulation and funding principles, shared by cantons and the federal government. The draft law foresees the creation of an independent accreditation agency, which will introduce institutional accreditation of universities and universities of applied science

Box 5.3. **Reform of universities and universities of applied science**

The recent constitutional amendment (Box 5.1) requires the confederation and the cantons to coordinate their policies towards tertiary academic education. Draft legislation foresses that the hitherto separately regulated universities and universities of applied science will be subject to a common regulatory framework. It proposes the creation of new institutions to ensure common decision-making. If the legislation is approved by parliament the new institutions include the following:

- The **conference of universities and universities of applied science** (*conférence des hautes écoles*) meets in two forms. The plenary conference (*conférence plénière*), which will consist of representatives of all cantons and of the confederation, will set funding conditions, including the rules underlying the reference costs, The council of university institutes (*conseil des hautes écoles)* which consists of representatives of all jurisdictions in charge of tertiary academic institutions (the confederation and 14 cantons), will determine, *inter alia*, framework conditions for course structure and accreditation procedures. In particularly costly education programmes, it will take direct decisions about the assignment of teaching duties across institutions.
- A **rectors' conference** of universities and universities of applied science, in charge of preparing and implementing the conference's decisions.
- The **council for accreditation** will include representatives of universities, the social partners, students as well as higher education policy experts. It will take independent decisions on accreditation of institutions and programmes, supported by an agency, and regulates the rules governing accreditations on quality assessment and accreditation.

Quality assurance will rely on internal mechanisms developed by the institutions. The accreditation process foresees providing a review of the adequacy of these mechanisms. The contributions of the federal government to the basic funding of education services from cantonal universities and universities of applied science will be based on reference costs. The confederation will fund 20% of reference costs at the cantonal universities and 30% at the universities of applied science. Reference costs are calculated on the basis of average costs across institutions offering the same degree for each study year completed by enrolled students (subject to an absolute limit on years of study). The federal government transfers will also take into account a mix of input and output indicators – in particular the number of students and graduations, the average duration of studies, the teacher-student ratio and the disciplines chosen by students Students' cantons of origin will make transfers covering a substantial share of the remaining reference cost component (after deduction of any student fees).

A cantonal *concordat* is planned to determine the rules for the funding of cantonal universities and universities of applied sciences, especially with respect to students who study in a different canton than their canton of origin. An agreement between the federal government and the cantons is also necessary to introduce the new framework.

according to coherent criteria, and more strongly output-oriented funding principles. Indeed, a mix of input and output-oriented funding principles, as foreseen, may be best-suited to foster cost-effectiveness. Enrolment is a useful criterion if student mobility is strong and creates pressure to improve quality. An external validation of internal quality assurance mechanisms, as the reform aims for, seems the most appropriate for education systems experienced in evaluation (OECD, 2008c).

An important reform step already taken is the establishment of uniform cost accounting across universities and universities of applied science which has allowed comparisons of the cost of obtaining similar degrees across institutions. The accounting system has served as a basis for establishing cost benchmarks per study year. The draft law foresees that the cost benchmarks ("reference costs") will be used to determine the federal co-funding for cantonal universities and the universities of applied science (Box 5.3).

Funding principles in tertiary academic education could be improved further

Competition for funding among universities and universities of applied science depends in part on mobility of students. This point is further reinforced by the fact that the share of university funding allocated through competitive bids on a national basis is limited to bids for research projects. However, mobility of students is low (Oliveira-Martins *et al.*, 2006). In part this is because the mutual recognition of credits for coursework across cantons is underdeveloped. The low volume of cantonal loans and grants (see further below) also contributes to the lack of mobility, especially in view of the unusually high housing costs in Switzerland (see Chapter 4). Many students therefore prefer to live with their parents and attend the institution closest to home. The mobility of students should be fostered, including through better recognition of course credits across universities.

Since the reference costs will be determined with data from all institutions, they will help generate incentives to reduce costs, as federal co-funding for each university or university of applied sciences does not need to rely on each institution's own costs or inputs. Average cost comparisons in 2004 revealed significant differences between universities in the cost of a degree, with the most expensive degrees in the natural sciences being 50% costlier than the least expensive (ECRS, 2006). Costs have since converged significantly. To achieve cost reductions, universities have co-operated more intensely in the provision of education, for example through joint specialised master degrees. Nonetheless, the mixed funding arrangements, with large contributions from both the confederation and transfers from canton of origin of the student, may generate inefficiencies. In particular once mobility of students across cantons has risen, a substantial part of study cost per student at cantonal universities and universities of applied sciences will not be born by the canton providing education. These cantons could maintain inefficient facilities, whose costs exceed the reference cost, at a relatively small cost to them. Maintaining such inefficient facilities would in turn raise reference cost and thereby cost throughout tertiary academic education. Particular attention will therefore have to be paid to ensuring that inefficient facilities are in fact closed.

The fees charged to Swiss students by most universities are below CHF 1 500 per year. Fees are higher in some universities of applied science, reaching up to CHF 2 400 and for tertiary vocational education, where they reach CHF 8000 and more (see also Höckel *et al.*, 2009), depending on the type of institution. While tertiary vocational students pay a significant share of the cost of their education, students in tertiary academic education finance a negligible share.

Grants and government loan schemes for students fall under cantonal competence. 84% of students in universities and universities of applied science do not receive any financial support from the government, neither through grants nor through loans. Less than 2% receive government-sponsored loans. CHF 280 million are disbursed for grants per year, while loan disbursements amount to CHF 30 million. Both loan schemes and grants are subject to tests on income and wealth, and, for both types of aid, the amounts

disbursed are meant to fill the gap between, on the one hand, the resources parents and the students themselves can provide and the actual cost of study on the other hand. An inter-cantonal agreement is in the process of being adopted and will set common standards for means tested support to students. If adopted, it will allow disbursement of one third of the financial support in the form of a loan.

Box 5.4. **Recommendations to improve education outcomes**

Raising the contribution that pre-primary education and childcare make to subsequent education outcomes

- The cantonal governments should introduce compulsory, free schooling from the age of 4, where this is not already the case, as foreseen in the *HarmoS* concordat. They should set common educational objectives for this educational phase and offer full-day attendance.
- The capacity of early childhood education and childcare facilities to support children with specific education needs should be strengthened.
- To support the provision of childcare facilities for children below the age of 4, a national voucher scheme should be introduced, linked to a national system of accreditation of facilities.

Improving efficiency in compulsory education

- The impact of differences in education policy, spending and resources across cantons should be investigated regularly and the results published so as to determine best practice. To this end, the regular evaluation of education outcomes at different stages of compulsory schooling, as foreseen in the planned *HarmoS* concordat, should be introduced as soon as possible.
- Accountability of schools for education outcomes should be strengthened. To this end, external testing should be conducted at regular intervals over time and over the school career at all schools, and the results should be benchmarked against the newly defined competency objectives.
- Management staff should be introduced as appropriate. Their responsibilities and powers should include setting of objectives, developing plans to improve education practice as well as evaluating and helping to develop teaching skills. Head teachers in all cantons should be required to acquire school management skills.
- Once accountability mechanisms have been strengthened, school autonomy with respect to defining teaching content and materials should be reinforced.

Reducing the impact of socio-economic background on educational outcomes and attainment

- Placement of children in separate schools and classes for children with learning difficulties or disabilities should be further reviewed, notably with respect to children with immigration background, who are overrepresented.
- First tracking should be postponed to the age of 13 in the cantons which have not already done so, as foreseen in the *HarmoS* concordat, at least, and mobility across school tracks subsequently be raised.
- An overall review should be conducted of whether the current mix of vocational and education training and academic education for young people is right for the needs of the labour market.

Improve funding mechanisms for tertiary education

- Tuition fees in tertiary academic education should be raised, and government-sponsored loans to students should be made widely available, coupled with an income-contingent repayment scheme.

The lack of government-sponsored loan schemes limits the share of the costs of education that can be financed privately through student fees. Raising the private share of funding is desirable on both efficiency and equity grounds, especially in view of the high private returns to tertiary education. Government-sponsored loan schemes can increase the proportion of study cost born by students while avoiding any discouraging effects on risk-averse prospective students by making repayments contingent on income, similar to a tax. Moreover, such loan schemes could remove financial access barriers if they also help cover living expenses. Detailed empirical evidence on the impact of raising fees for study at universities, accompanied by the introduction of government-sponsored loan schemes in which repayments are tied to the level of income attained once students have graduated is available for Australia. It shows that this policy has allowed widening access to university education by mobilising private funds, while the higher fees did not alter the composition of the studentship to the disadvantage of students with modest socio-economic background (Chapman, 2006). By alleviating precarious financial conditions for some students, which appear to raise study duration significantly (CSRE, 2006, and references therein) government-sponsored student loans could also help lower study duration. In some countries, such loan schemes have been geared further towards providing incentives to raise cost-effectiveness, by turning a fraction of such loans into grants if study duration does not exceed specified limits (OECD, 2008c). At the same time, continued access to grants for students from the most disadvantaged backgrounds should be ensured. Among these students, information about the benefits of higher education is likely to be particularly scant (see *e.g.* OECD, 2008c).

Tuition fees in tertiary academic education should be raised, and government-sponsored loans to students should be made widely available, including for tertiary vocational degree courses, coupled with income-contingent repayments. Higher fees for tertiary academic education would also help avoid the risk that geographic externalities generate disincentives for cantons to fund tertiary academic studies for their graduates from upper secondary education when such studies are economically beneficial. Such externalities may result from students living in a different canton than their canton of origin upon graduation after they start to work. In particular, cantons which fund additional students in tertiary academic education are likely to require higher tax rates, other things equal, whereas cantons use low tax rates to attract highly-qualified workers, including tertiary graduates. Such disincentives could affect cantonal policies upstream in lower and upper secondary education. Moreover, they reinforce the equity case in favour of higher student fees, coupled with government loans tied to income-contingent repayments.

Notes

1. The PISA index of socio-economic background takes is a composite index taking into account parental account educational attainment and occupation as well as cultural possessions at home.
2. The shorter, first *bachelor* degrees, were delivered by universities in 2004. Almost all students enrol within the new 2-tier system since 2006. In the universities of applied science, the first students graduated with a *bachelor* degree in 2008.
3. See Bauer and Riphahn (2004), based on data from the Swiss census conducted in 2000.
4. See OFS (2008b). The figures, which are based on students' assessment of parental education, for university students differ considerably from those in Bauer and Riphahn (2004).

5. Expressed in earnings per hour controlling for individual characteristics other than education attainment. Estimates are calculated on the basis of average duration of tertiary education in both vocational and academic streams. See Oliveira Martins *et al.* (2007).
6. To some extent, the estimated returns for the universities of applied science may be overestimated relative to those from universities because most graduates from the former have entered the labour market recently. It appears to be the case, however, that earnings rise less strongly with experience than is the case for university graduates.
7. On the basis of workers' own assessments of the usefulness of the education they have received. See Ludwig and Pfeiffer (2005).
8. This is consistent with the prediction from human capital theory that the cost of obtaining skills which are useful across many firms must be borne by the trainee.
9. These stipulate a university-level degree combining academic education and practical training.
10. In PISA by 4 points and in TIMSS (Trends in International Mathematics and Science Study) by 20 points (relative to an international average of 500 points in both studies).
11. With standardised tests, PISA maths results are estimated to improve by 28 points as a result of the introduction of centralised exams. When standardised tests are absent the gain is only estimated to be 9 points (Wößmann, 2005a). Moreover, if external exams are absent, regular standardised tests were found to be counterproductive.
12. Hanushek and Rivkin (2006), argue in favour, but OECD (2005) provides a sceptical review.
13. Only 40% of Swiss head teachers report having surveyed in-class work of teachers in maths over the course of a year, less than in most OECD countries, according to 2003 *PISA* survey data (Pont *et al,* 2008).
14. For example, in the canton of St. Gall, the starting salary of a head teacher can at most be 20% above a teacher's salary and head teacher positions are not generally full-time posts. According to the *Weisungen zur Schulleitung vom 1. September 2004 Erziehungsdepartement St. Gallen*.
15. According to data from 2001.
16. The evidence on peer effects is not yet conclusive, as available data sets have, for the most part, not yet allowed the resolution of estimation issues (such as self selection and simultaneity, see the review in Nechyba, 2006). Recent studies, which resolve estimation problems to some extent, include Hanushek *et al.* (2003) who report that students whose performance is rated in the upper quartile are not affected by performance of other pupils, in contrast to performance in the lower quartiles.
17. Defined as a different nationality or a different mother tongue.
18. These include the *lycées* as well as the *écoles de culture générale* (see Appendix 5.A1).
19. See Hupka, Sacchi and Stalder (2006).
20. Tertiary academic education refers to the universities and universities of applied science (both are classified as ISCED 5A).
21. The Shanghai index is based on a range of criteria focussing on published research output in the sciences, engineering and mathematics as well as the presence of faculty staff and alumni with prestigious prices and strong publication performance. See Aghion *et al.* (2007), who rank countries' university systems by summing inverted ranks in the index.
22. In the one-tier degree structure which is being phased out. In the new dual degree structure, students take 4.2 years to complete a first degree and most move on to a master's, which takes 1½ to 2 years to complete.

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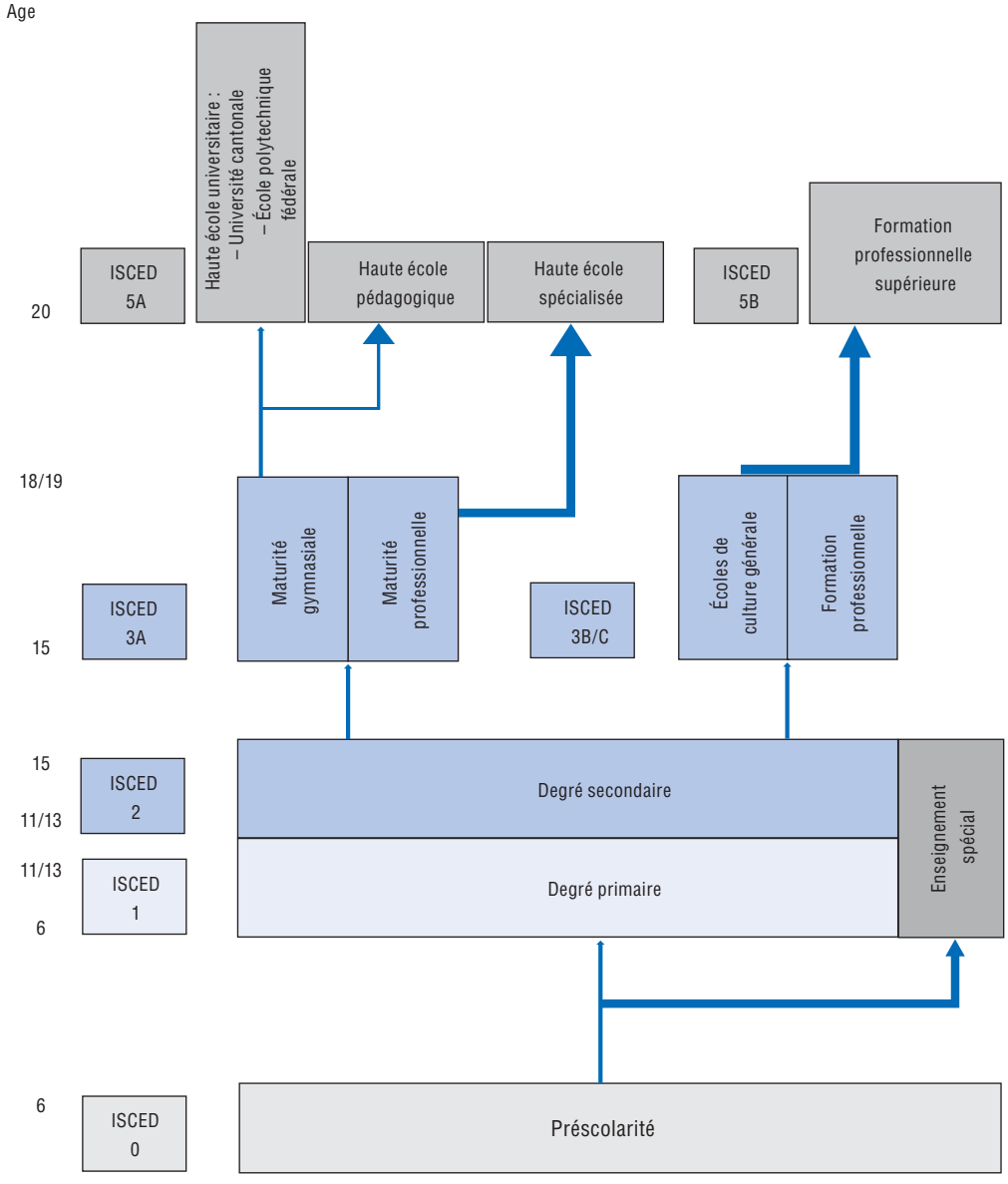
ANNEX 5.A1

The education system in Switzerland



ANNEX 5.A2

Education attainment and firm productivity

This annex presents an empirical study on the relationship between firm-level productivity and educational attainment. It provides a summary of a study commissioned by the OECD and carried out by Arvanitis, Bolli, and Woerter for the 2009 Economic Survey of Switzerland. A more complete account of the results will be published as a working paper by the authors (Arvanitis, Bolli and Woerter, 2009; *forthcoming*). It investigates the effects of three different levels of formal education: upper secondary vocational (in the dual apprenticeship system; below referred to as intermediate vocational), non-university tertiary (which includes university of applied sciences and tertiary vocational education) and university.[1]

Main findings

To the authors' knowledge, it is the first study in Switzerland that focuses on the correlation of apprenticeship-based education with the productivity of firms (Box 5.A2.1). The study finds a significant positive correlation between observed variation in firm-level productivity and the observed variation in the shares of employees with university education, controlling for a range of other determinants of productivity. A significant positive effect is also found for the share of the employees with non-university tertiary education for all firms but this effect is more clearly determined in manufacturing firms. In manufacturing, particularly in machinery, electrical machinery and electronics/instruments (less in chemical and pharmaceutical industry), there a long tradition of employing engineers and technicians of this category who are mostly occupied in production and marketing activities.

The results for the share of employees with intermediate vocational qualifications are less clear. In the estimates in which all explanatory results are lagged (results shown below), no significant correlation between the observed variation of workers of this category and productivity was found. Only estimates in which the explanatory variables were not lagged (results not shown below) provided a significant positive effect. Quantile regressions reveal that there are discernible differences between low-productivity and high-productivity firms with respect to the contribution of the variations in the shares of this employee category to explaining productivity; these differences seem to be quite sector-specific. In manufacturing, a positive effect of the share of employees with upper secondary vocational qualifications was estimated for firms in the lower half of the productivity spectrum.

It is interesting that estimates show a difference between high-productivity firms and low-productivity firms with respect to the correlation of the share employees with upper

secondary vocational qualifications and productivity. This result could be interpreted in accordance with the technological frontier approach of Vandenbussche *et al.* (2006) as described shortly in Box 5.A2.1 (employees with intermediate vocational skills are relatively less productive the nearer to the technological frontier the firm operates).

Box 5.A2.1. **Theoretical and empirical literature on firm-level productivity and attainment**

Vandenbussche *et al.* (2006) develop a model, in which the relevance of education depends on the distance to the technological frontier. They argue that workers with primary or secondary education are able to induce growth by imitation but do not contribute to the innovation process: innovation-induced growth is driven by workers holding tertiary education only.

There is also a literature strand that analyzes the impact of general and skill-specific education on macroeconomic growth rates in situations of slow and fast technological progress, for example, by Krueger and Kumar (2003, 2004). They argue that European education systems focusing on vocational education worked well during the 1960s and1970s, but not in the information age when technological progress sped up. Due to the specificity of knowledge, the workers adapted more slowly to the new technological opportunities, resulting in a technology adoption lag compared to the US. Similarly, Gervais *et al.* (2007) argue that skill-specific human capital is more valuable in relatively stable environments while general human capital appears to suit better under high uncertainty. At the microeconomic level, the argument is supported empirically for Germany by the study of Ludwig and Pfeiffer (2005) who show that the depreciation rate of (specific) vocational education capital is higher than that of general education capital.

Empirically, there is no study, to the authors' knowledge, that focuses on the effects of apprenticeship-based education on the productivity of firms. But some studies exist that allow partial conclusions with respect to a positive impact on firm productivity of workers who have accomplished an apprenticeship, notably in the case of Austria (Prskawetz *et al.*, 2005; Prskawetz *et al.*, 2008; and Zwick, 2007). Overall the results do not show strong correlation.

Barely any empirical evidence exists on the relationship between firm productivity and the share of workers holding a tertiary vocational qualification. With respect to the effect of academic tertiary education, the literature shows in general a positive effect on the productivity of firms. For Germany, see, *e.g.* example Zwick (2005, 2007). Mohrenweiser and Zwick (2008), Addison *et al.* (2000). Evidence for a positive influence in Austria is provided by Prskawetz *et al.* (2005) and Prskawetz *et al.* (2008). Arvanitis (2008) as well as Hollenstein and Stucki (2008) confirm the findings for Switzerland, while Arvanitis and Stucki (2008) find no effect of the share of workers holding a tertiary education for start-up firms.

Brief presentation of the model and results (see Arvanitis *et al.* 2009, forthcoming, for details)

The authors investigated the correlation between educational attainment and productivity at both the industry and the firm level. At the industry-level, the inclusion of time dummies, which is essential to control for changes in the cyclical position, led to unstable results. Hence these results are not reported below and only the results at firm level are discussed.

Specification of the empirical model (at firm level)

The authors did not assume a concrete functional form for the theoretical production function underlying the productivity equation because their data – collected in the course of three surveys among Swiss enterprises – would not allow an identification of this functional form. They use a linear logarithmic specification. GLS random effects (RE) estimators were used (with the random effects applying to each firm).[2] Tests with first difference equations and fixed effects as alternative panel estimation methods led to unstable or counterintuitive results presumably due to the fact that the time series dimension is limited to four points of time (with a distance of three years between each of them). This characteristic gives the panel rather the character of a series of consecutive cross-sections. Hence, unobserved heterogeneity is not controlled for and the results must be interpreted as merely descriptive and not as showing causal relationships. OLS pooled regressions with year dummies were also estimated, the results are close to those of the RE estimates. In order to avoid problems of endogeneity, explanatory variables were lagged. As the resulting smaller sample could imply selection bias, the robustness of estimates was tested by estimating equations without lags. Results were qualitatively similar.

The productivity equations were estimated separately for manufacturing and services. In addition, quantile regressions have been conducted to capture differences between high- and low-productivity firms with respect to the correlation of the share of employees with intermediate vocational skills with productivity.

Results (at firm level)

A formal expression of the equation is as follows:

$\ln(Q/L)_{it} = \alpha_0 + \alpha_1 \ln(C/L)_{it-1} + \alpha_2 \ln(R\&D/S)_{it-1} + \alpha_3 \ln(HQUAL1)_{it-1} + \alpha_4 \ln(HQUAL2)_{it-1} + \alpha_5 \ln(MQUAL)_{it-1} + \alpha_6 NCOMPET_{it-1} + \alpha_7 IPC_{it-1} + \alpha_8 INPC_{it-1} + \alpha_9 FOREIGN_{it-1} + \alpha_{10} \ln(L)_{it-1} +$ industry and time dummies + e_{it} (for firm i in year t).

Table 5.A2.1 gives the complete variable definitions. Table 5.A2.2 shows the results for all firms. Table 5.A2.3 and Table 5.A2.4 present separate estimates for manufacturing and services. Table 5.A2.4 shows values for the estimated coefficient of the share of workers with intermediate qualifications. The values of this coefficient are shown for different quantiles of firm productivity, using the boostrapping technique.[3]

At the firm level, the variable for the physical–capital-to-labour ratio[4] shows the expected positive sign, also the variable for R&D intensity, although in the latter case the coefficient is not statistically significant. The coefficients for the two categories of high-educated employees (tertiary-level education) are positive and statistically significant; the coefficient for employees with intermediate vocational skills is not statistically significant.

The economic interpretation of the coefficient (in this case: elasticity), *e.g.,* for the variable for university-educated employees (ln(HQUAL1)) is as follows: an increase of 1% of the share of this employee category (*e.g.,* from 10% to 10.1%, *i.e.* for a firm with 1 000 employees an increase of 100 to 101 workers educated at university) is positively correlated with an increase of average labour productivity of 0.02%. supposing there is no effect on the productivity on other workers this would be consistent with the worker having him- or herself a productivity which is 20% higher than the residual group; a fairly modest estimated effect.[5]

The three variables representing the degree of competition and market structure are not significant. Finally, estimates indicate a positive effect for foreign-owned firms and a

Table 5.A2.1. **Definition of variables**

Variable	Description
Ln(Q/L)	Natural logarithm of value added per employee; industry level: at constant prices.
Ln(L)	Natural logarithm of the number of employees (in full-time equivalents).
Ln(C/L)	Natural logarithm of capital income per employee (capital income = value added minus labour costs divided by value added); Industry level: natural logarithm of book value of equipment and buildings (at constant prices) per employee.
Ln(R&D/S)	Natural logarithm of R&D expenditures divided by sales.
Education	
Ln(HQUAL1)	Natural logarithm of employment share of employees with university education (excl. universities of applied sciences – Fachhochschulen).
Ln(HQUAL2)	Natural logarithm of employment share of employees with tertiary-level education other than university education.
Ln(MQUAL)	Natural logarithm of employment share of employees with intermediate vocation education (formal upper secondary vocational education as defined in the Swiss dual educational system).
Competition	
IPC	Values 1 to 5 on a five-point Likert scale assessing the intensity of *price* competition (ordinal variable).
INPC	Values 1 to 5 on a five-point Likert scale assessing the intensity of *non-price* competition (ordinal variable).
NCOMPET	Number of main competitors in a firm's most important (worldwide) product market (interval variable: 1: up to 5 competitors; 2: 6 to 10; 3: 11 to 15; 4: 16 to 50; 5: more than 50).
FOREIGN	Foreign-owned firm yes/no (dummy variable).

positive, non-linear effect of firm size. As expected the positive coefficient of the lagged productivity variable is rather low indicating a weak correlation between the productivity levels in two points of time with a distance of three years. Additional quantile regression estimates yield some evidence that upper secondary vocationally-educated employees show a significantly positive effect in the low-productivity segment of firms, up to the lowest 30% (Q30) and a negative effect at the highest level (Q90) (not shown, see Arvanitis *et al.*, 2009).

A comparison with the separate estimates for manufacturing and services reveals some interesting additional findings: *i*) the effect of university-educated employees (HQUAL1) is stronger in service firms than in manufacturing firms but the effect of employees with tertiary education other than university is more prominent in manufacturing than in the service sector; *ii*) the contribution of employees with intermediate vocational skills is significantly positive for the lower productivity segment up to Q50 in manufacturing but not in the service sector. Further differences between the sectors refer to the competition variables. The estimates in Table 5.A2.3 (columns 1 and 2) yield some evidence that that there is a negative effect of the number of competitors and of the intensity of price competition in manufacturing. Innovative firms are more likely to be productive and innovative firms naturally have fewer competitors and face fewer entrants. This effect appears to play a statistically significant effect in manufacturing but not in services. Finally, estimates did not indicate (qualitative) differences between sectors with respect to physical capital, R&D intensity, foreign-owned firms and firm size.

Table 5.A2.2. **Firm-level regression: Dependent variable: Average value added by full-time equivalent worker; 1994-2005; all firms**[1]

	$Ln(Q/L)_t$	$Ln(Q/L)_t$	$Ln(Q/L)_t$
$Ln(Q/L)_{t-1}$		0.189***	
		(0.026)	
$Ln(C/L)_{t-1}$	0.011***	0.030***	0.026***
	(0.003)	(0.010)	(0.004)
$Ln(R\&D/S)_{t-1}$	0.004	0.008	–0.015
	(0.041)	(0.039)	(0.042)
$Ln(HQUAL1)_{t-1}$	0.020***	0.015***	0.021***
	(0.005)	(0.005)	(0.005)
$Ln(HQUAL2)_{t-1}$	0.013**	0.011**	0.014***
	(0.005)	(0.005)	(0.005)
$Ln(MQUAL)_{t-1}$	–0.011	–0.016	–0.001
	(0.011)	(0.011)	(0.011)
$NCOMPET_{t-1}$	–0.009	–0.008	–0.011*
	(0.006)	(0.006)	(0.006)
IPC_{t-1}	–0.014*	–0.012	–0.015*
	(0.008)	(0.008)	(0.008)
$INPC_{t-1}$	0.005	0.003	0.010
	(0.008)	(0.008)	(0.008)
$FOREIGN_{t-1}$	0.169***	0.151***	0.177***
	(0.029)	(0.028)	(0.026)
$Ln(L)_{t-1}$	0.032***	0.030***	0.029***
	(0.008)	(0.008)	(0.007)
Industry dummies (27)	Yes	Yes	Yes
Time dummies (2)	Yes	Yes	Yes
N	3179	3179	3179
R2 overall	0.239	0.311	
R2 within	0.011	0.008	
R2 between	0.256	0.344	
R2			0.245
Wald chi2	452.4***	531.0***	
F-test			16.9***
Root MSE			0.447
Rho	0.441	0.422	
$Ln(Q/L)_{t-1}$		0.189***	

1. Random effects GLS estimates (columns 1 and 2); OLS pooled regression estimates (column 3); ***, ** and * resp. denote statistical significance at the 1%-, 5%- and 10%-level respetively. Rho: fraction of variance due to firm heterogeneity.

Table 5.A2.3. **Firm-level regression: Dependent variable: Average value added by full-time equivalent worker; 1994-2005**[1]

	Manufacturing		Services	
	$Ln(Q/L)_t$	$Ln(Q/L)_t$	$Ln(Q/L)_t$	$Ln(Q/L)_t$
$Ln(Q/L)_{t-1}$		0.296***		0.129***
		(0.036)		(0.040)
$Ln(C/L)_{t-1}$	0.009*	0.015***	0.013**	0.068***
	(0.005)	(0.003)	(0.006)	(0.022)
$Ln(R\&D/S)_{t-1}$	0.056	0.050	–0.092	–0.084
	(0.047)	(0.044)	(0.064)	(0.063)
$Ln(HQUAL1)_{t-1}$	0.012*	0.005	0.019*	0.018*
	(0.006)	(0.006)	(0.010)	(0.010)
$Ln(HQUAL2)_{t-1}$	0.015**	0.011*	0.010	0.010
	(0.007)	(0.006)	(0.009)	(0.009)
$Ln(MQUAL)_{t-1}$	0.023	0.013	–0.026	–0.029
	(0.014)	(0.012)	(0.018)	(0.018)
$NCOMPET_{t-1}$	–0.014*	–0.006	–0.004	–0.008
	(0.007)	(0.007)	(0.012)	(0.012)
IPC_{t-1}	–0.015	–0.017*	–0.019	–0.015
	(0.010)	(0.009)	(0.015)	(0.015)
$INPC_{t-1}$	–0.001	–0.006	0.022	0.022
	(0.010)	(0.010)	(0.016)	(0.016)
$FOREIGN_{t-1}$	0.177***	0.149***	0.124**	0.120**
	(0.032)	(0.029)	(0.061)	(0.062)
$Ln(L)_{t-1}$	0.037***	0.030***	0.033**	0.035**
	(0.009)	(0.008)	(0.016)	(0.017)
Industry dummies (17; 9)	Yes	Yes	Yes	Yes
Time dummies (2)	Yes	Yes	Yes	Yes
N	1735	1735	1132	1132
R2 overall	0.227	0.355	0.244	0.295
R2 within	0.014	0.001	0.029	0.002
R2 between	0.241	0.381	0.256	0.322
Wald chi2	265.5***	364.1***	178.4***	198.1***
Rho	0.566	0.484	0.330	0.265

1. Random effects GLS estimates; ***, ** and * resp. denote statistical significance at the 1%-, 5%- and 10%-level resp. All variables with the exception of the variables measuring market mobility refer to the period (t-1); the market mobility variables refer to changes between (t-1) and t. Rho: fraction of variance due to firm heterogeneity.

Table 5.A2.4. **Effect of the share of workers with intermeditate vocational skills on firm labour productivity; 1994-2005; estimates by firm productivity quantile**[1]

	Manufacturing		Services	
	Without lagged dependent variable	With lagged dependent variable	Without lagged dependent variable	With lagged dependent variable
Q10	0.118***	0.050**	0.013	0.005
	(0.023)	(0.023)	(0.017)	(0.012)
Q20	0.046**	*0.019*	0.012	0.007
	(0.019)	(0.014)	(0.014)	(0.012)
Q30	0.043***	0.012	0.019	0.012
	(0.016)	(0.013)	(0.016)	(0.018)
Q40	0.033*	0.009	0.004	–0.001
	(0.019)	(0.011)	(0.018)	(0.018)
Q50	0.031*	0.013	0.001	–0.009
	(0.018)	(0.012)	(0.015)	(0.017)
Q60	*0.022*	0.008	–0.003	–0.007
	(0.014)	(0.014)	(0.013)	(0.014)
Q70	0.013	0.005	0.012	–0.004
	(0.016)	(0.015)	(0.009)	(0.020)
Q80	0.006	–0.004	–0.004	–0.013
	(0.013)	(0.012)	(0.031)	(0.033)
Q90	0.026	0.016	–0.083	–0.087
	(0.017)	(0.021)	(0.059)	(0.055)

1. Simultaneous quantile regression (bootstrap standard errors); only the coefficients of the variable ln(MQUAL) are presented. The specification of all other variables is as in Table 5.A2.3; ***, ** and * resp. denote statistical significance at the 1%-, 5%- and 10%-level resp. The figures in italics indicate the quantile for which the variable Ln(MQUAL) becomes statistically insignificant.

Notes

1. Hence coefficients on variables capturing shares of workers with certain educational attainments must be interpreted with respect to the residual group. These are workers without formal skills, as well as those whose highest educational attainment are upper secondary degrees outside the apprenticeship structure.
2. With respect to the adequateness of a random effect estimator as compared to a fixed effect estimator the authors follow the argumentation in Hsiao (2003): "When inferences will be made about a population of effects from which those in the data are considered to be a random sample, then the effects should be considered random. In this respect, if N becomes large, one would not be interested in the specific effect of each individual but rather in the characteristics of the population. A random-effects framework would be more appropriate."
3. For the 50th percentile, for example, this is equivalent to minimizing the absolute value of the (non-squared) residual in the productivity equation.
4. The capital stock per worker is approximated with a measure of the return paid to capital (see Arvanitis *et al.*, 2009).
5. The time dummies used in the regressions only control for aggregate business cycle effects. However, there are industry-specific differences in business cycles, so the cyclical effect of capacity utilisation is not fully controlled for. Since highly qualified personnel is less prone to be cut when capacity utilisation is low, this is likely to be one source of downward bias. Interactions of time and industry dummies could have addresses this, but were not included in the regressions.

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