

Swiss Vocational Education
and Training -
Switzerland's Source of Richness

Rudolf H. Strahm





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THE RAJENDRA & URSULA JOSHI CHARITABLE FOUNDATION

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Rudolf H. Strahm - India Lecture Tour 2010

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About Booklet

Warum wir so reich sind “Why we are so Rich” in english is the title of the latest book amongst many books Rudolf Strahm has authored relating economics.

Mr. Strahm asks his fellow economists: How do you explain this economic paradox that Switzerland from the nineties until our current century had the lowest growth rate of all industrialised countries, but still had the lowest unemployment rate and the highest employment quota in the population and still has?

Following the common school book economy a low growth rate should result in high unemployment – a paradox between theory and economic reality. None of the academic models of the economy is able to explain this paradox.

In his publication he explains the background for the lowest unemployment despite a low economic growth in the last decade. He illustrates the precise mechanisms in the workplace accuracy and efficient training ethos that had dominated the industrial culture and which led the country to wealth. He explains it is the specific Swiss vocational training model and its success which enabled Switzerland to maintain the competitiveness in this Globalization.

The booklet contains the lecture of Rudolf Strahm on his India tour in March 2010.

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Foreword

I have been a friend of India for the past 30 years. The first time when I visited India, I was highly inspired by its rich and varied culture and the brilliance of its people, but at the same time I was moved by the need for the social intervention. Since then I am involved in many social activities in India.

India has been developing in many spheres over the years and has become the centre of World Human Resources. Lately I realized that there is a need to empower the young Indian workforce with the much demanded Quality Vocational Skills.

As a token of my long standing friendship with India, I have decided to bring in valuable knowledge from Switzerland to India. It is the knowledge on Quality Vocational Education and Training of Switzerland.

In my endeavor to bring this valuable knowledge, I had the opportunity to meet Mr. Rudolf H. Strahm, invite him to India on a lecture tour to speak about the Economical Success of Swiss Dual Vocational Education and Training System. I was also introduced to Rajendra & Ursula Joshi Charitable Foundation in Zurich, who is planning and operating The Vishwakarma Pilot project in India on the same lines of Swiss Dual VET System.

On behalf of the board of bj institute and my Indian partners and friends I thank Mr. Rudolf H. Strahm for spending his time for the speech tour in India. I thank Mr. Rajendra Joshi and his wife Ursula Joshi, all the Board Members and Ms. Achermann of Rajendra & Ursula Joshi Charitable Foundation for their financial and moral support without whom, this endeavor would not have been possible.

I would like to thank the Swiss Ambassador to India, Delhi, H.E. Mr. Philippe Welti and his team, CII Delhi and Dr. Neelam Nagar for hosting the Delhi program. I also thank my friend Mr. Manoj Saha of Dickenson intellinetics and his staff in bringing the Mumbai program to a reality. I thank the CII Hyderabad, for inviting Mr. Strahm to deliver the Keynote address at the Inaugural session Skills Development Conclave 2010. Last but not the least I thank Ms. Amita Desai and Ms. Monika Hirmer of Goethe-Zentrum Hyderabad for conducting a speech on their premises.



Bruno Jehle

8th March 2010

Press Note

It is an age-long observation that aspiration for progressive and dazzling careers has been the way of life for all humans – anywhere, anytime. It's the career-path and career-development, which makes life more inspirational and interesting. However, it is not very easy to choose a career with a proven path of prosperity. And, paradoxically, there are not many individuals or institutions to provide suitably able guidance in this sphere.

Though there are umpteen number of countries in the world, it's only a selected few, which have been prospering rapidly and progressively. One among such noted countries is – SWITZERLAND. Barring a few inevitable fluctuations here and there, the economic front of SWITZERLAND has always been growing positively. The crystal clear reason, which may not be known to many, is the emphasis there on VOCATIONAL Edification and subsequent application thereof.

India is a great country with a towering brilliance, coupled with richly varied culture and multifaceted civilization. She has been a fond name across the world – ever since. But despite many distinctive noteworthy features, Indian economy has not been all that great and encouraging. If one can make an objective analysis without getting into the details of different causative factors, an important fact can surface that the prominence for the vocational front has been dwindling. It can, therefore, be an understandable inference that the intrinsic, native and well-established age-long skills of multiple multitudes are being rather pushed into somewhat a cold storage.

“BJ Institute” (www.bj institute.org) and “Rajendra & Ursula Joshi Charitable Foundation” (www.joshi-foundation.ch) have hence realized the entire scenario and came closer to jointly spearhead a movement for the revival of the Vocational Activities. Having common GOALS and OBJECTIVES in the cited direction, they have both thoroughly deliberated on the issue. To further the efforts, an AWARENESS CAMPAIGN with speeches by Mr. Rudolf H. Strahm from Switzerland is organized in different Metros of India viz Delhi, Mumbai and Hyderabad. The Speech tour would take place between 10th and 20th March 2010. Under this unique educative programme, backdrop information would be sent to interested Institutions as well as the Media well in advance, in addition to the already available details at website (<http://www.bj institute.org/vet/>).

Mr. Rudolf H. Strahm , who is the former Member of Swiss National Council (Member of Swiss Parliament), Author, also the Price Regulator of Switzerland from 2004 to 2008. He published his latest book titled - “Why we are so rich” which vividly depicts the role of quality Vocational Training, which is the strong pillar of Economic strength. In fact, Swiss Dual Vocational Education and Training (VET) is the source of richness of Switzerland.

The purpose of the proposed Campaign is to explain the paradox of Switzerland having lowest industrial growth and yet lowest unemployment. The Dual VET System in Switzerland will also be explained. This educative exercise would throw light on the Post-Schooling opportunities for the comprehensive development of Individuals as well as the Country. This would facilitate the Industry, Government and Professional/Trade Associations to play a pivotal role to be the progress partners.

On the whole, the purposes of this joint Campaign would be:

- Propagation of the importance of Skills through Vocational Training
- Exposure of the Swiss VET System and its success in India.
- Equipment of knowledge for implementing VET in India.

Thus this campaign is aimed to be of utility to the Industry, the Government, the Civil Society and last but not the least-the YOUTH craving for right careers. This would certainly be an appropriate platform - enabling the Government to do things differently on one hand and on the other, paving way for the FUTURE MAN POWER of the country, the YOUTH to enliven their dreams of forging ahead with confidence.

1 Switzerland's wealth



1.1 The Swiss economy ranks among the top International countries

Ranking of the international competitiveness, 2009

Based on WEF

World Economic Forum

The Global Competitiveness Report

Based on IMD

International Institute for Management Development

World Competitiveness Yearbook

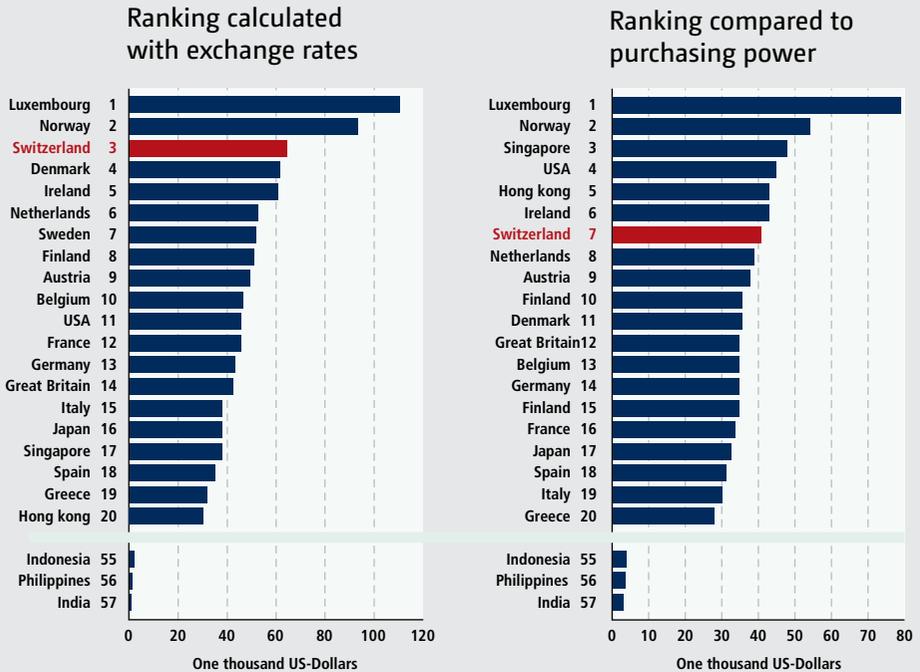


Source: WEF / IMD © Strahm / hep verlag

From the business perspective the Swiss economy is classified among the most competitive national economies of the world. Both in the world ranking according to World Economic Forum WEF (Geneva and Davos) and those of the International Institute for Management Development IMD (Lausanne) it constantly ranks amongst the top group. The ranking changes slightly from year to year due to subjective assessment conducted of managers and changes in the mainstream (the opinion of the day).

1.2 Switzerland in the league of the richest countries of the world

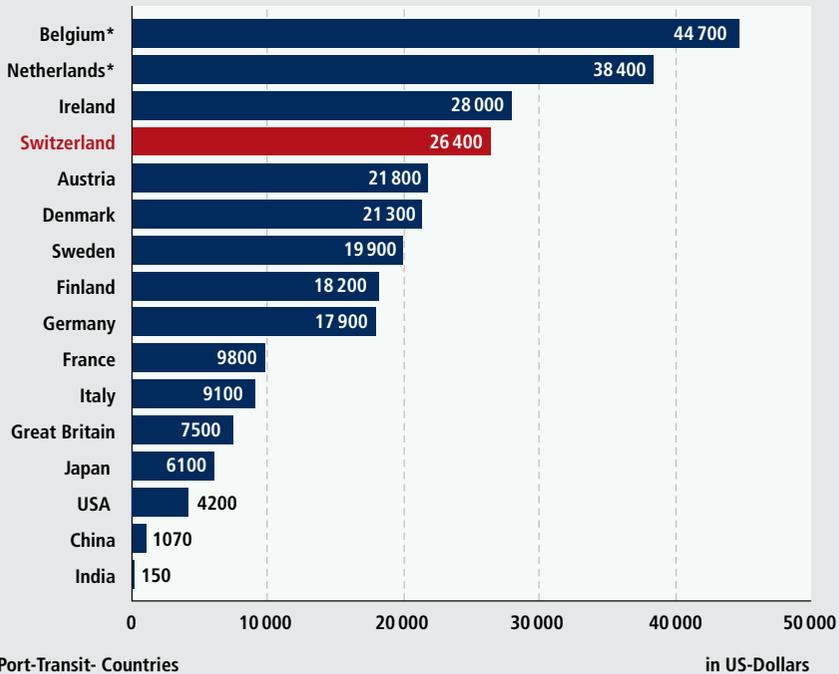
Gross Domestic Product (GDP) in US-Dollar per head, 2008



Switzerland belongs to one of the richest countries in the world measured against its GDP per head. In 2008 it ranked third with its GDP per head calculated with currency exchange rate and seventh against purchasing power. The ranking changed according to currency exchange rate from year to year. Some of the countries ranked ahead of Switzerland are exceptional cases (small countries like Luxembourg, oil rich Norway).

1.3 Switzerland among the world champions in export

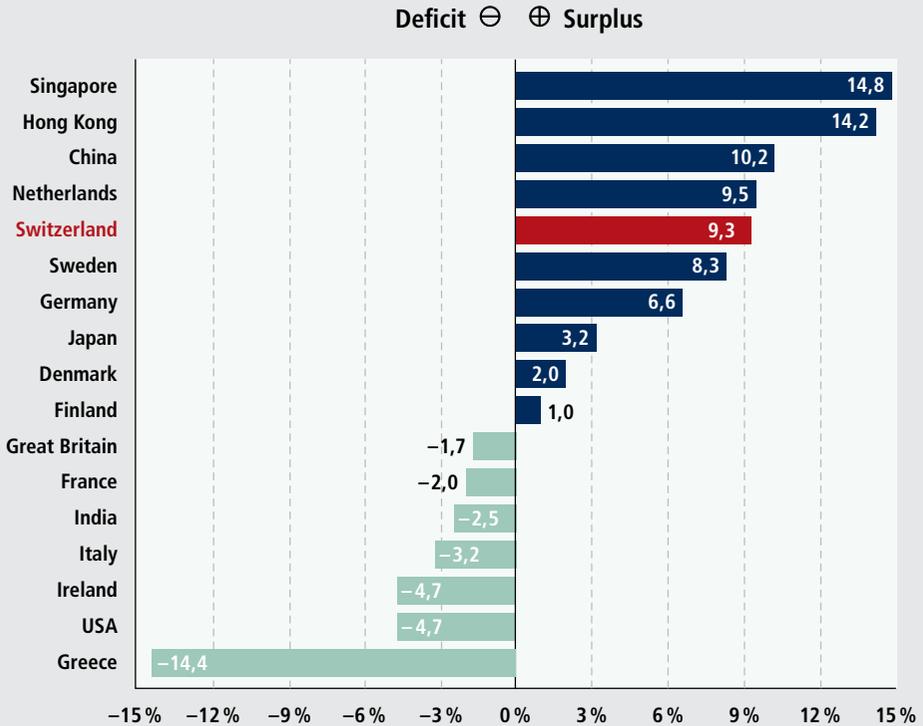
Exports of goods in US-Dollars per capita 2008



Measured per person of population Switzerland belongs to the strongest export countries of the world. Seen against the two exceptional cases Holland and Belgium, which act partly due to their harbours as transit countries, hence Switzerland ranks second after Ireland as export countries. The Swiss economy is export-oriented and already significantly globalised.

1.4 Switzerland amongst the top countries with surplus foreign exchange

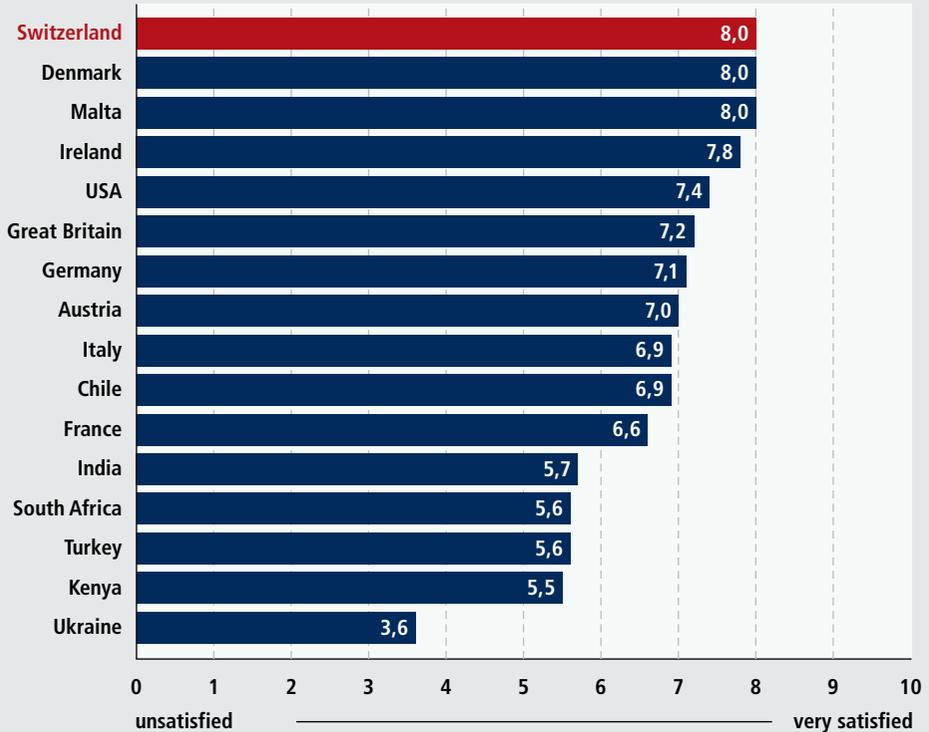
Balance of payments Surplus / Deficit as percentage of Gross Domestic Product (GDP) 2007



Besides three Asian export countries and oil rich countries Switzerland has the highest balance of payments surplus. The surplus budget is the sound and convincing indicator for its international competitive position. It reveals how many more goods & services were exported and imported per year. This surplus achieved around 50 bn SFr. Approximately 9 % of GDP. This implies that Switzerland had to invest abroad 50 Bn SFr. in 2008 saw the temporary shrinking of the surplus as a result of the financial crisis.

1.5 *Swiss population is one of happiest in the world*

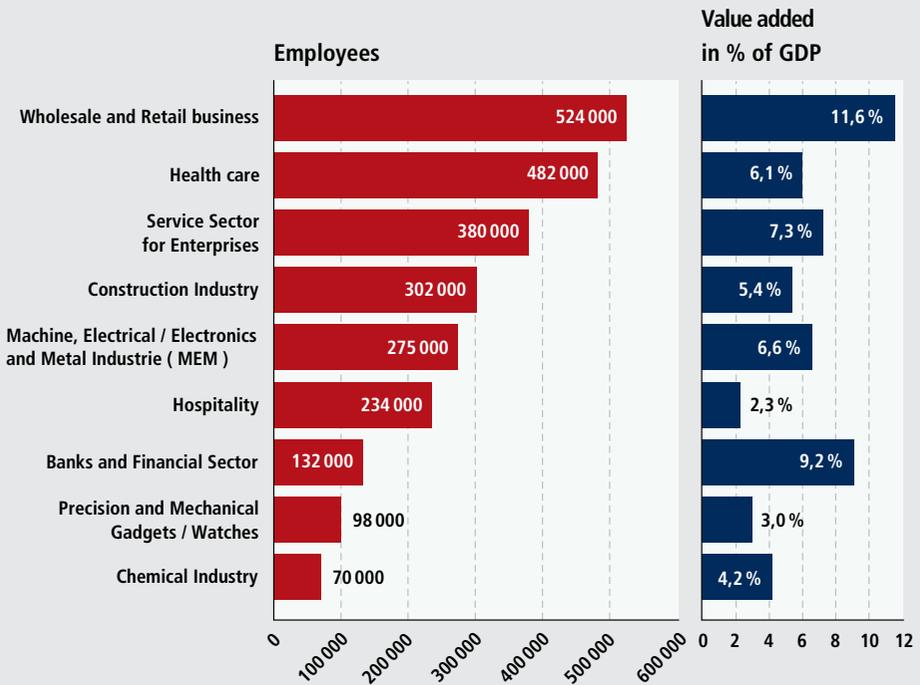
Collective indicator for people's sentiment of happiness, 2004



Switzerland belongs to the countries with the highest life contentment amongst its population. The GDP is not the only measurement for quality of life, as it only assesses the economic goods and their market price. Based on the Collective Index of the "World Data Base of Happiness", study conducted by the Erasmus-University of Holland, above is the ranking list of the sense of happiness. This comparison takes 95 countries into account based on figure indicative of welfare and life quality

1.6 The Swiss wealth does not originate from the banks only

Strong business sectors according to employees (2008) and its contribution to the Gross Domestic Product (GDP) (2007)



Switzerland is rich as a result of its banks is the clichè over Switzerland's national economy, is highly perceived both abroad as well as at home. The banking sector (without insurance) at the peak before financial crisis had 3.3% of the total employees and contributed 9.2% to the national economical value added. The value added ratio of the banks as percentage of the GDP decreased in 2008 as a result of the financial crisis to 7.6%. The Swiss economy is robust because its not monopolistic oriented rather multifarious sectors contributing profoundly to its wealth.



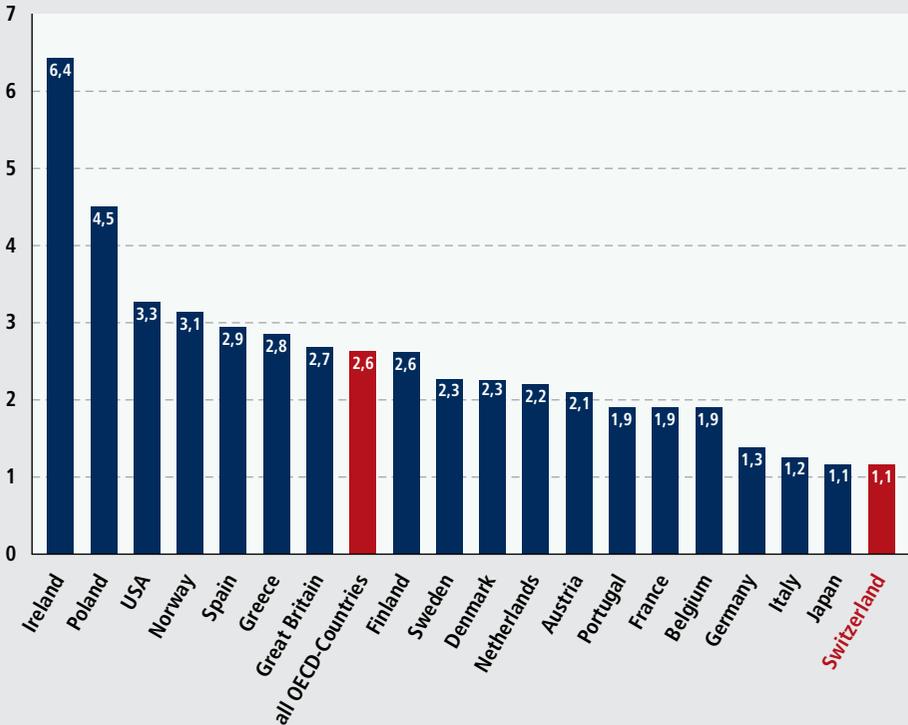
2 Economic growth and unemployment

- *A paradox in the economy*



2.1 *Switzerland with the lowest economic growth in the nineties*

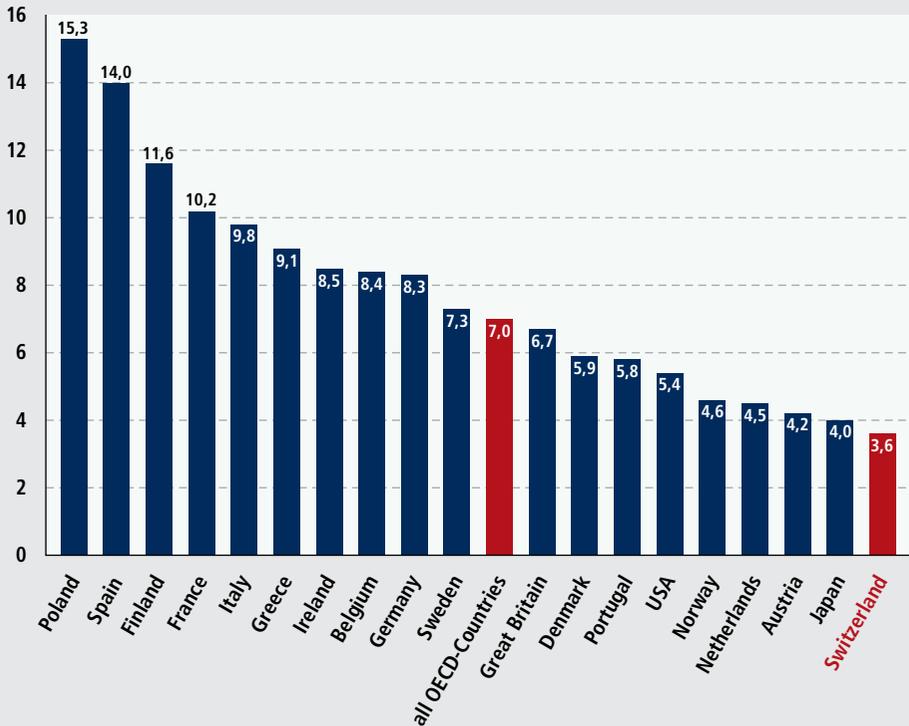
Rate of yearly average growth of Gross Domestic Product (GDP) from 1992 till 2005 (14 years)



Over 14 years Switzerland has been at the rear end with its GDP in comparison with industrialized countries of the OECD (Organization for Economic Co-operation and Development). Low economic growth was partially due to production outsourcing abroad and appreciating of the Swiss currency value. Only since 2003 the economic growth has ascended.

2.2 Despite the low economic growth Switzerland still had the lowest unemployment rate

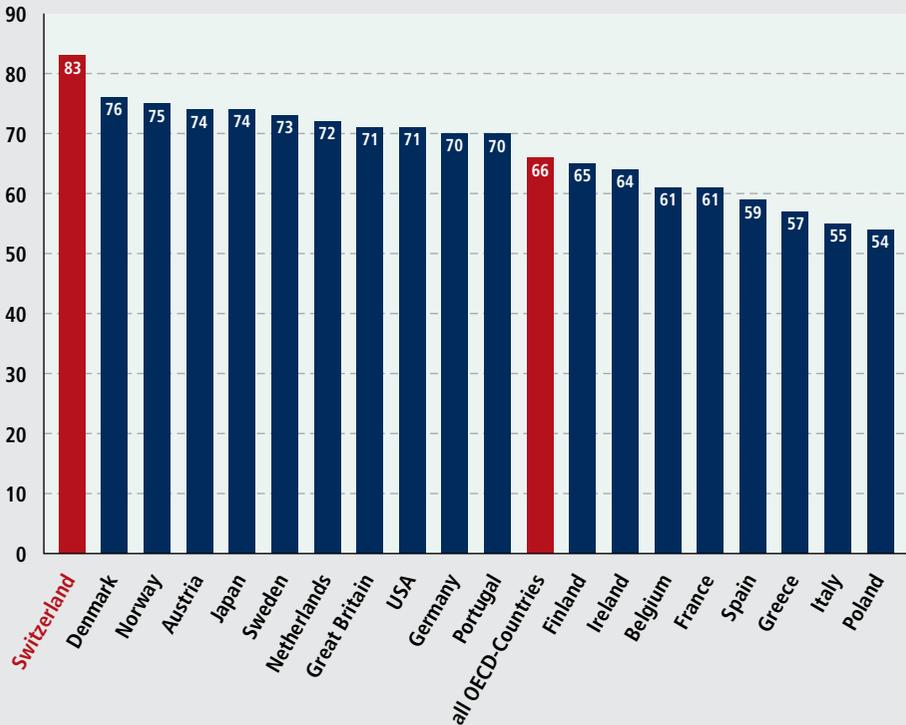
Average unemployment rate from 1992 - 2005 (14 years)



A paradox: Despite the low economic growth Switzerland still had the lowest rate of unemployment compared with OECD countries. The explanation lies in the closeness between labour market and educational system VET brings higher employability. The OECD has standardized the unemployment ratio making the comparison feasible: Registered unemployed work force in percentage against total number of the work force (ages 15-64)

2.3 *Despite the low economic growth Switzerland had the highest rate of employment*

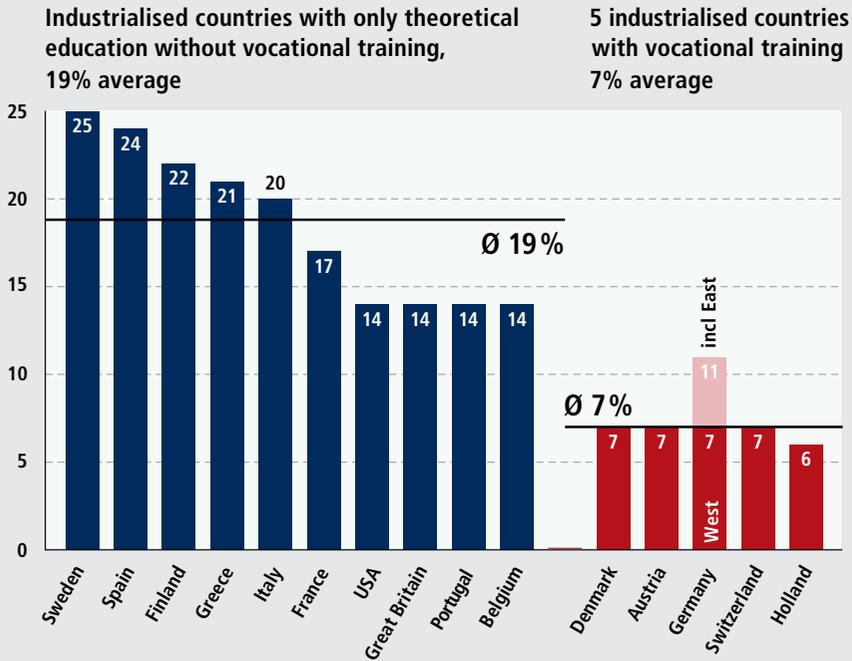
Average employment ratio between the period 1994 and 2005 (12 years)



A paradox: Despite the low economic growth Switzerland had and still has the highest ratio of employment of its paid workforce, between 15 and 64 years of age, compared with OECD countries. The Swiss educational system significantly assists employability. The OECD includes all forms of employment in the labour force participation ratio irrespective of full-time or part-time employment.

2.4 The countries with apprenticeship system had lower rate of unemployment amongst its youth prior to the financial crises

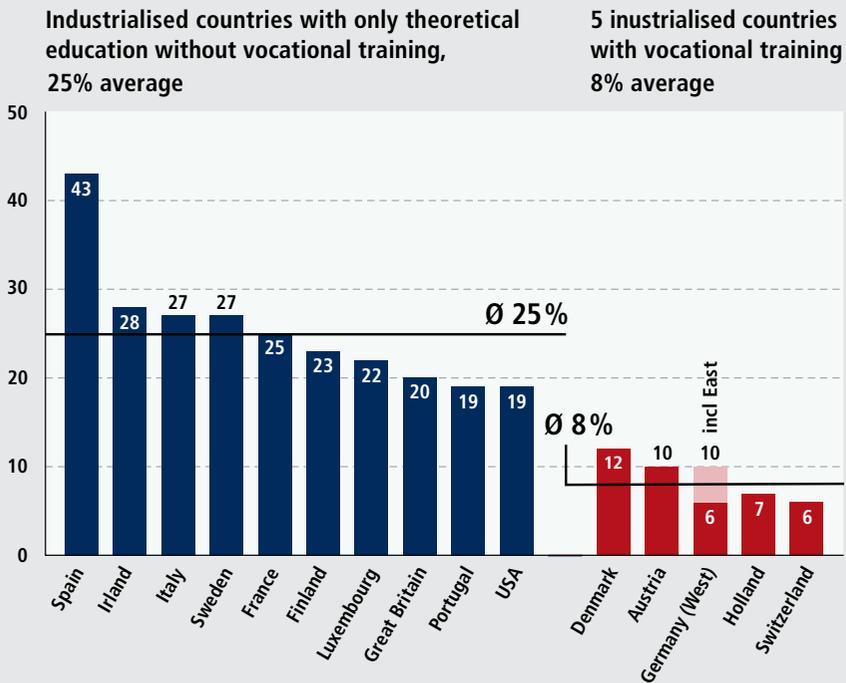
Unemployment rates of adolescence between 15 – 24 years (only concerning the youth who are no longer in vocational training), 2008 before the financial crises



Countries which are conversant with apprenticeship system – a combination between apprenticeship in host company and vocational school – have significantly lower rates of unemployment amongst its youth. Switzerland, Austria, Germany, Denmark and the Netherlands belong to the countries which offer VET. Combined school/worked-based VET promotes and fosters practical intelligence and enables better orientation during the apprenticeship for employability. Single-track Educational System leads to more youth falling out of the main stream. Above mentioned youth is excluded from the labour force participation ratio.

2.5 Countries with vocational training system still have lower rate of unemployment amongst its youth during the financial crises

Unemployment rates of adolescence between 15 – 24 years (only concerning the youth who are no longer in vocational training), during the financial crises, autumn 2009



The VET based on the dual system proves superior even during economic crisis concerning employability. The five industrial countries with dual VET system had at the peak of the recession (second half of 2009) significant lower unemployment rates of adolescence, while Latin and Anglo-Saxon countries with their full-time school had noticeably more unemployed.

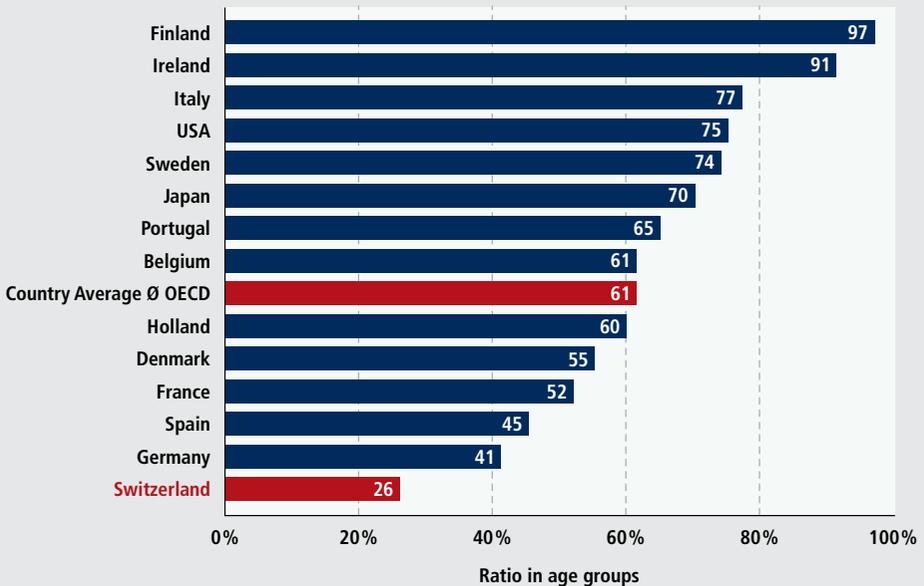
3 Vocational Education and Training (VET) and Employability

- *International and national Comparisons*
- *Unemployment amongst Adolescence*
- *Countries with VET system have the lowest youth unemployment*



3.1 *Swiss Educational System is difficult to be compared with other countries – Switzerland is exceptional with Bacca-laureate*

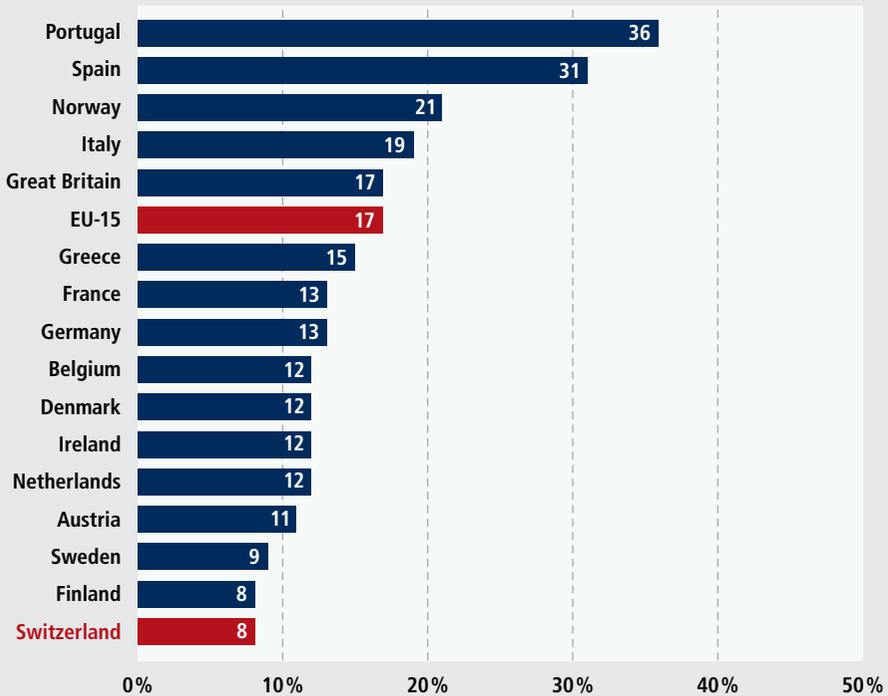
Rate of admission to University compared internationally, 2005 (the average age of students completing Bacca-laureate and Professional Bacca-laureate indicated in percentage)



Compared to each other the educational systems of the countries are extremely different. The ratio of the youth, finding access to higher education, with Academic Bacca-laureate or a comparable Diploma of the secondary level II, move in the range of 97% in Finland, but only 26% in Switzerland. In Switzerland Bacca-laureate quota is divided in 18% Academic Bacca-laureate and 8% Professional Bacca-laureate. The OECD education reporting and consequently resulting in the Bologna model show that vocational paths are not being valued in the same way.

3.2 International comparison: Countries lacking in apprenticeship system have more youth without professional education training

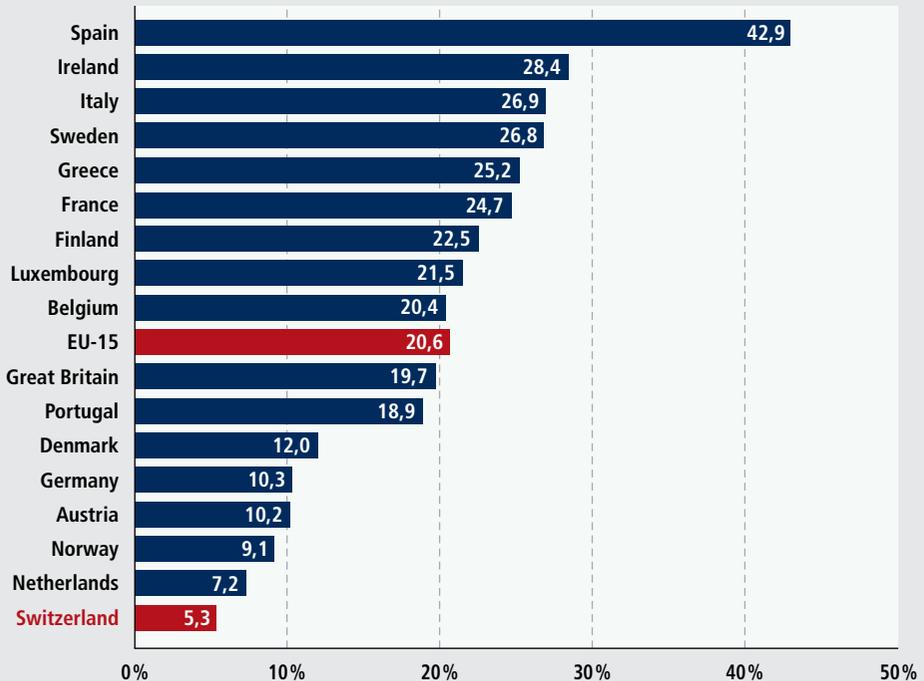
Ratio in percentage between the ages of 18 – 24 without secondary level II qualification (unskilled youth) in Europe (2007)



Countries which already know the apprenticeship system (dual system), do have it easier in general to enable young people a customized complete apprenticeship with degree: for example Switzerland, Denmark, Austria, Germany, the Netherlands. In contrast, countries in Southern Europe and Great Britain which do not offer this Dual system with practical vocational or occupational training, have difficulties in enabling young people a degree.

3.3 International comparison amongst youth: Countries with VET system have the lowest youth unemployment

Rate of unemployed youth in percentage 15 – 24 years in Europe (EU, autumn 2009)



Countries with VET system have a lower rate of youth unemployment than all others: Switzerland, Holland, Denmark, Germany. The VET system facilitates a quicker integration of the youth in the labour market. Countries with only theoretical education at secondary level II such as Finland, the Latin countries and southern Europe have significantly higher rate of youth unemployment.

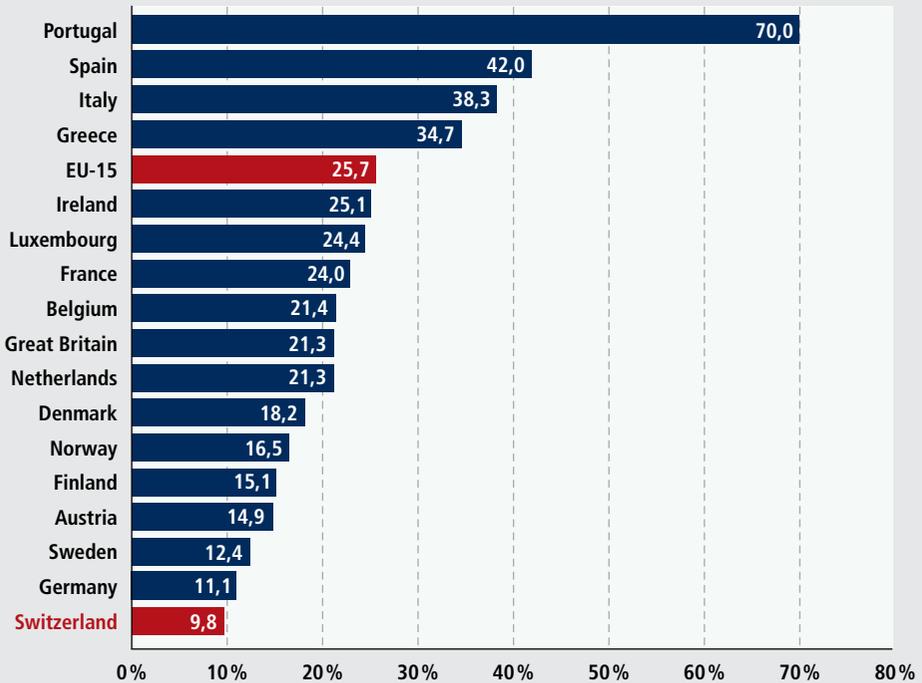
Unemployment amongst adults

- *An International Comparison*
- *Unemployment rates by status of education*



3.4 International comparison amongst adults: Switzerland has the lowest ratio of unskilled workers

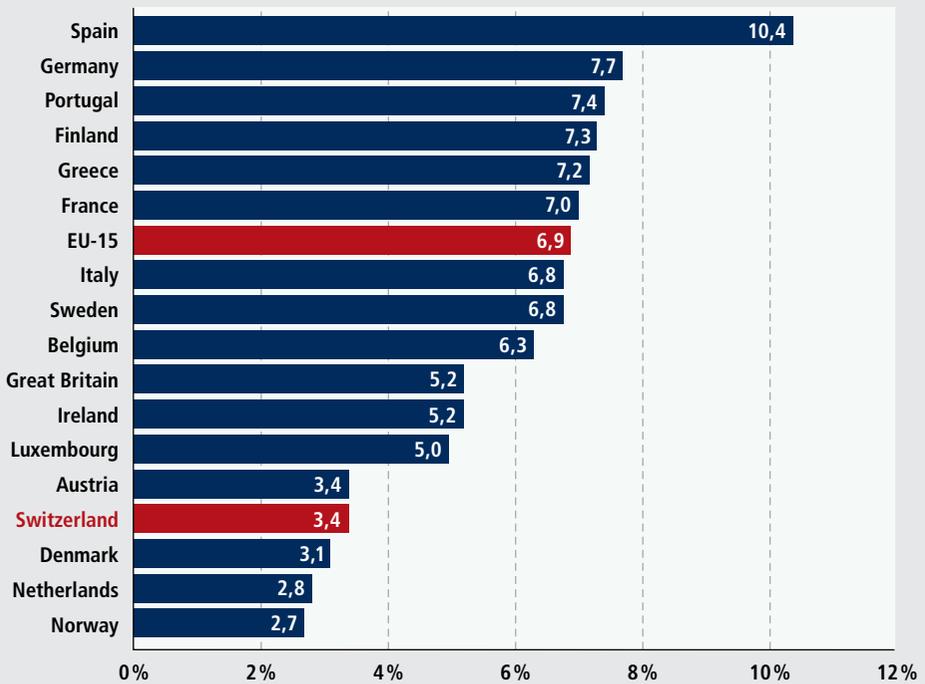
Ratio of adult working population without post – compulsory education between 25 – 54 years in West Europe (2008)



Compared with the European countries (EU-15, excluding new members from the former eastern block) Switzerland has the lowest ratio of employed adults without professional qualification, namely 9.8%. The Swiss VET system enables even drop-outs from school and employees to achieve professional qualification.

3.5 International comparison amongst adults: Rate of unemployment is lower in countries with VET system

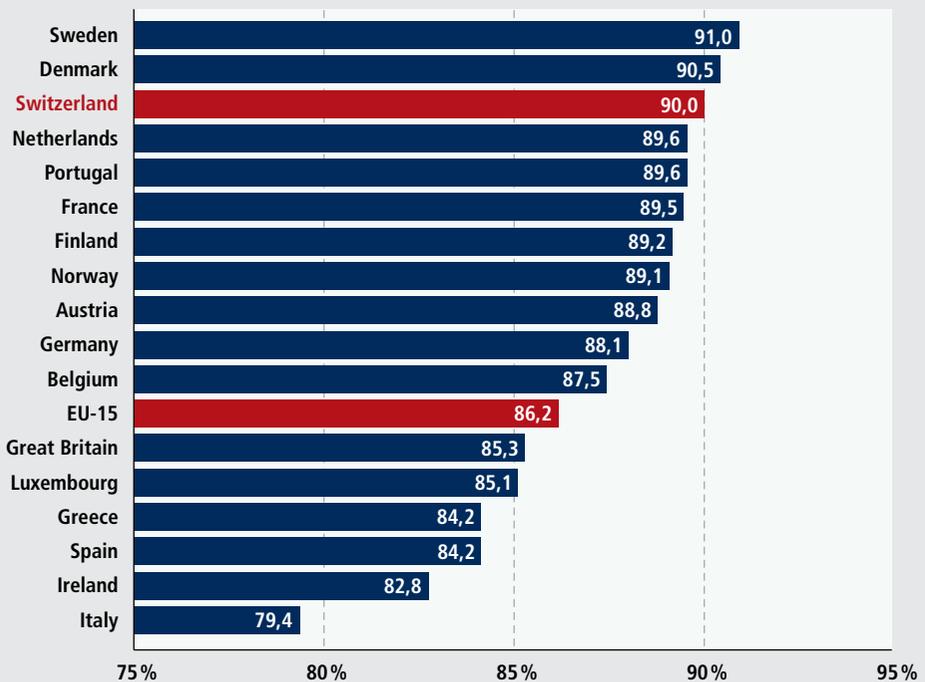
Percentage of unemployment rate amongst adults between 25 – 49 of working population in West Europe (EU-15, 2008)



Countries with low unskilled workers quota also indicate a low rate of unemployment: Switzerland, Austria, Holland and Germany (enormous difference between east and west). Norway is a statistical exceptional case (fishery, crude oil exporter)

3.6 International comparison amongst adults: Better the VET qualification higher guaranteed integration into the working life

Percentage of employed population among adults between 25 – 49 years (= employment ratio) in Western Europe (EU-15, 2008)

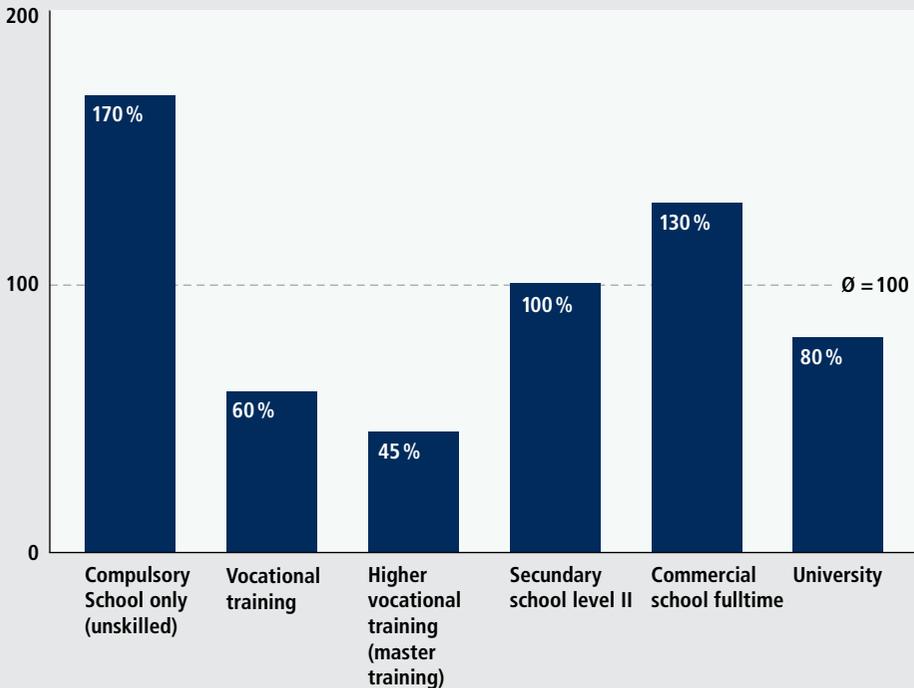


Countries with a labour market closer to an educational system and VET system have a higher rate of employment. Early retirements from 50 onwards are excluded here. The employability is strongly influenced both through the VET system and integration of working women.

3.7 *Employees with vocational training are the least vulnerable to be unemployed*

Rate of unemployment amongst the various educational qualifications; Statistically evaluated result of population survey conducted in 2000 (total population census)

Compared to average rate of unemployment (= 100%)



Employees with basic compulsory education without apprenticeship or further education ("unskilled") have 70% above average rate of unemployment. In average VET-graduates have 40% lower unemployability as the work force (=100%). On the other hand, a purely academic education leads to a higher rate of unemployment than graduates of apprenticeships.

3.8 Economic fluctuations target the unskilled workers more than people with professional qualifications

Unemployment based on various educational level in economic process

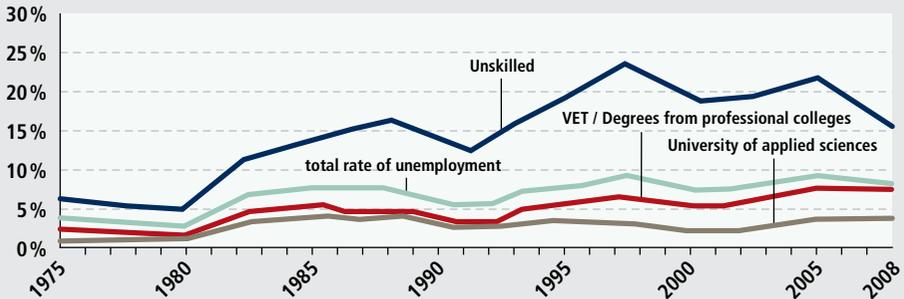
Switzerland

Level of unemployment based on various educational level in economic process, 1991-2006



West Germany

Rate of unemployment based on qualification groups in economic process, 1995-2004



Educational training is the decisive factor how the economic cycle affect employment: During a rapid economic growth unskilled workers will be disproportionately employed. Yet, in a recession, they act as "economic cycle buffer" and are frequently disproportionately dismissed – like the economic principle says: last in - first out.

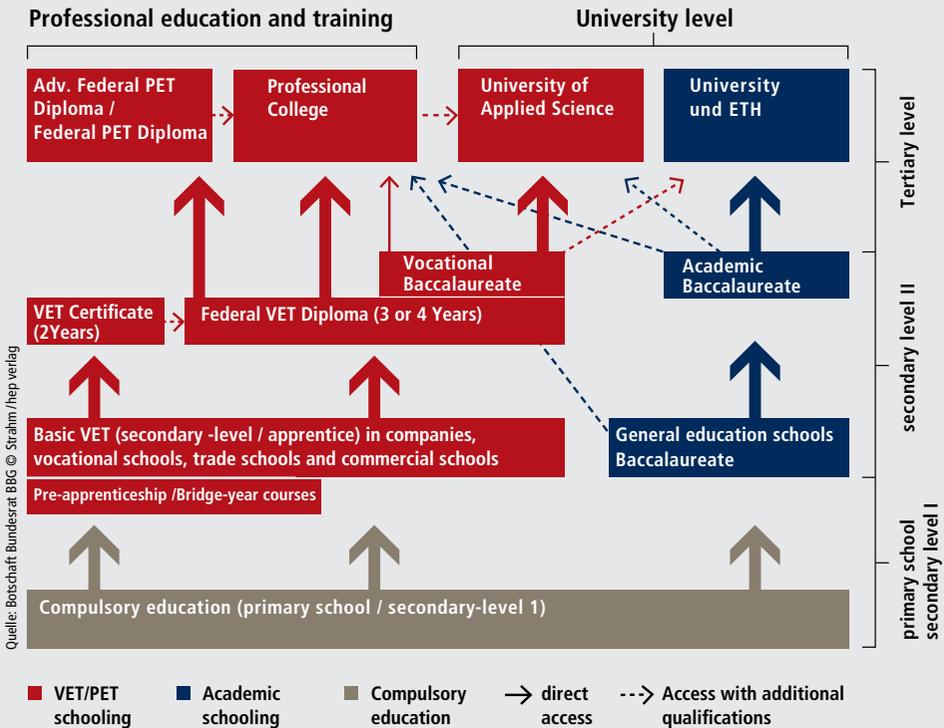
4 Swiss System of Vocational Education and Training

- *Systematic educational system of Switzerland*



4.1 The Swiss education system with theoretical and practical education and training

The official systematic education model and different possibilities of achieving it



The above diagram shows the official systematic efficient education model of Switzerland.

Red: The theoretical and practical education with basic vocational training (With the Swiss federal certified diploma), Vocational Baccalaureate, Higher Technical Colleges and specialized colleges equivalent to University standard.

Blue: The entirely academic oriented education with Baccalaureate entry into University or Federal Technical Institute.

Both educational ways are “equally weighted but different” side by side. The interchangeability within and among the various ways of education is a key: Every diploma opens further education possibilities.

4.2 Professional guidance – the decisive link between civil society and school and the world of employment

Legal and institutional classification of tasks in the key function of the professional guidance and integration in the labour market.

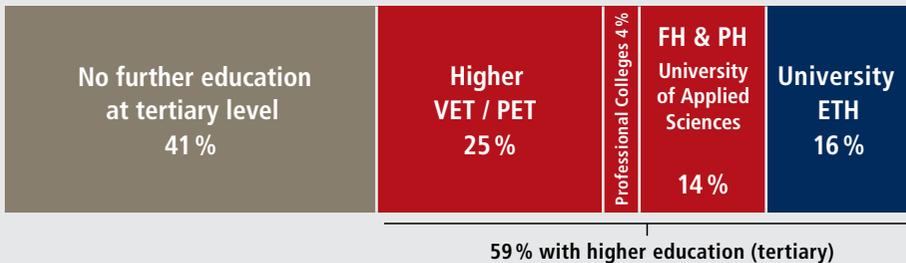


Professional guidance and individual coaching are key functions of effective and lasting integration of young adults, unemployed, foreigners and disabled in the labour market. This main task is carried out with the help of four different federal laws through various departments, which requires coordination and inter institutional cooperation (IIZ). The social aid is regulated at cantonal level.

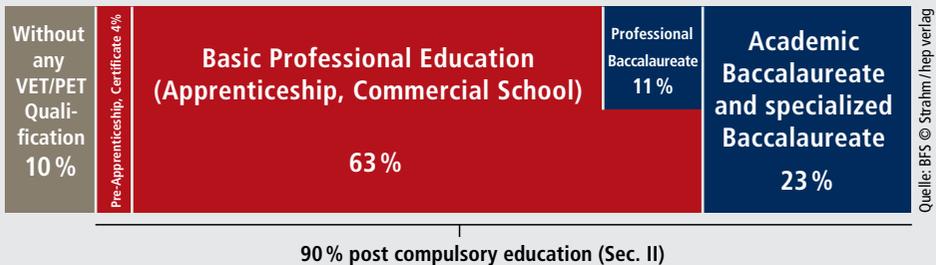
4.3 The strength of Switzerland: Practical training oriented Qualifications are quantitatively predominant

Estimated ratio of education qualifications at secondary level II and tertiary level in percentage for the entire 2008.

Qualifications at tertiary level (above 20 years)



Qualifications at secondary level II (16 –20 years)



■ Courses with part practical training ■ Fulltime School

In 2008 on the secondary level II (between 16 and 20 years) from the same age group, approximately 63% graduated with Federal VET diploma EFZ or similar certification. 10% without any post-compulsory education, 4% Federal VET Certificate or pre-apprenticeship; and 23% with an Academic Baccalaureate or Specialized Baccalaureate.

Tertiary level : 59% of all young people, per year, 16% graduated at University (Master and Bachelor), 14% at a University of Applied Sciences or at a University for Educational Sciences, 4% at a professional college and 25% with a higher VET (Federal Diploma of Professional Education and Training or similar). Double counting Bachelor/Master is excluded here.

4.4 One Mission – Three Partners



The Teaching points of vocational education (apprenticeship)

- At Industry or enterprise: 3 to 3½ days per week
- At Vocational College: 1 to 1½ days per week

Depending on business and industry

- Optional college: in addition ½ to 1 day per week; or during one year after completing their apprenticeship leads to vocational Baccalaureate.
- Inter-courses: 1-2 weeks per year (organized by trade associations).

4.5 Training Arrangements

Vocational education and training (VET)

- In-company training
- In-school education
- Industry courses

Professional education and training (PET)

- National professional examinations for the Federal PET Diploma and Advanced Federal PET Diploma
- Professional colleges

Continuing education and training (CET)

4.6 List of Trades under the Swiss Dual System Apprenticeship Education and Training Scheme: 243 Trades in 22 Vocational Fields

Example: 17 Trades in the Vocational Field “Metal, Machines”

- Engineering Construction Technician
- Gunsmith
- Optical Systems Technician
- Foundry Moulder
- Foundry Process Operator
- Mechanical Engineering Technicians
- Cutler/Knife Maker
- Metal Worker
- Sheet Metal Worker
- Micromechanic
- Flat Polisher (watches,jewellery)
- Machine Mechanic
- Blacksmith/Farrier
- Technical Model Maker
- Industrial Watchmaker
- Watchmaker-Repairer
- Watchmaker-Restorer

Example: 7 Trades in the Vocational Field “Nutrition”

- Baker - Confectioner
- Butcher
- Confectioner - Pastry Maker
- Food Technologist
- Dairy Technologist
- Flour Miller
- Oenologist

Example: 24 Trades in Economy and Administration

- Office Clerk
- Car Trade Office Clerk
- Public Administration Clerk
- Bank Clerk
- Chemistry Administrator
- Service and Administration Clerk
- Commercial Clerk
- Hotel Clerk
- Whole Sale Administrator
- Freight Forwarder
- Communication Administrator
- Industrial Clerk
- Food Industry Administrator
- Notary Clerk
- Civil Service Administrator
- Public Transport Clerk
- Post Office Clerk
- Private Insurance Administrator
- Travel Agency Clerk
- Health Insurance Administrator
- Health Service Administrator
- Transportation Administrator
- Real Estate and Trust Administrator
- Management Assistant in Advertising

5 Wages and Employability



5.1 *VET is the best social protection*

Statistical syntheses:
VET/PET and Social status are intertwined

VET/PET Graduate

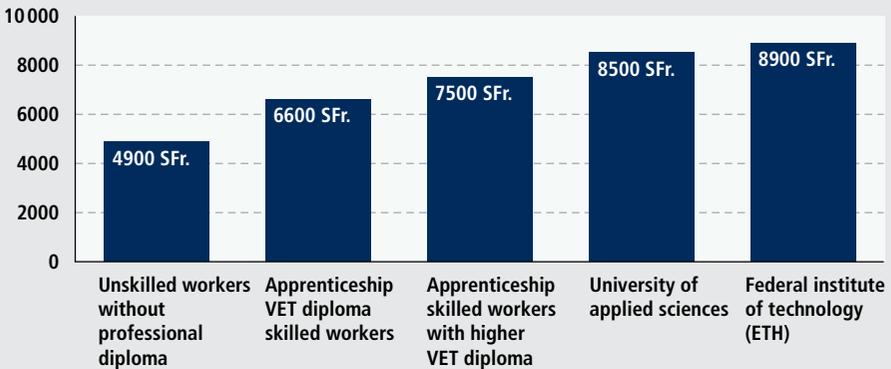
- ▶ **Earns initially at least SFr.1,000 more per month than an unskilled worker.(1 SFr.=1 U\$)**
- ▶ **Runs three times less the risk of being unemployed.**
- ▶ **Runs 2.5 times lower risk of becoming a welfare recipient.**
- ▶ **Is better equipped to cope with the restructuring processes in the globalised term.**
- ▶ **Has possibility of further education with career prospect.**

The social value of the vocational education and training is statistically proven: Higher wages thanks to higher productivity, much lower unemployment- and social aid risk, better mastering of quick economical structural changes that represent current economic trend. For VET graduates, VET Baccalaureate, Professional colleges, higher professional college, University of Applied Sciences and further tertiary education and professional career are widely opened.

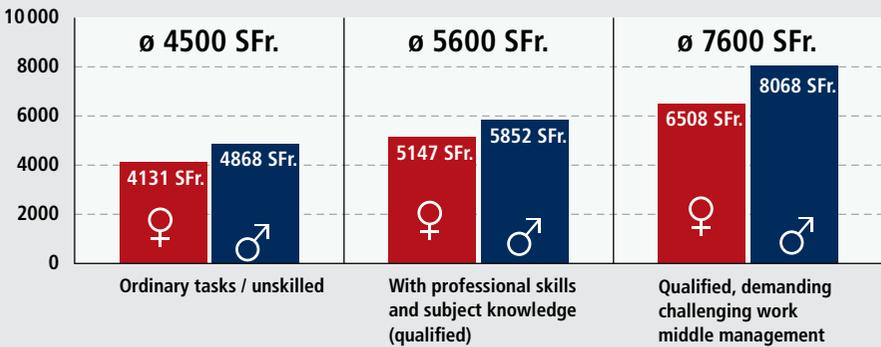
5.2 Apprenticeship and professional further education it is worth it

Gross monthly pay according to level of educational qualification and required standards

SFr. Machine, Electronic and Metal Industry (average 13 month salary) 2008



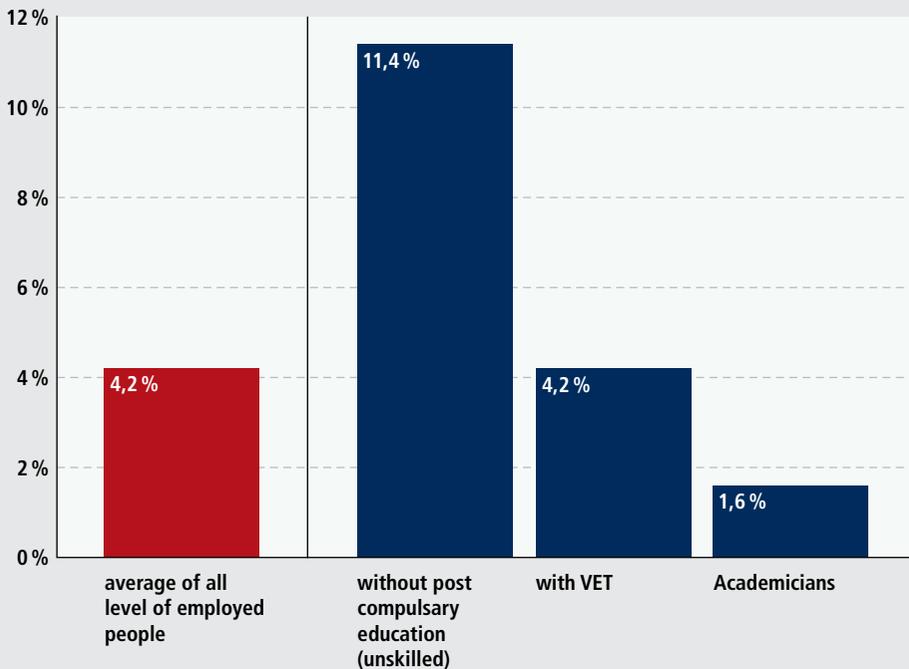
SFr. Total economy (average, full time, 12 month salary) 2008



One who completes an apprenticeship successfully, earns at least SFr. 1,000 per month, more than an unskilled worker. A special education (for example higher professional college) earns additionally CHF.1,000 monthly salary and a graduate from the university of applied sciences again earns initially SFr. 1000 more. Graduates from both, University of applied sciences and Universities/ETH earn almost same after graduation. However, women in private businesses get 16-20% less salary than men in the same function.

5.3 *Insufficient initial training poses the biggest poverty risk in the labour market*

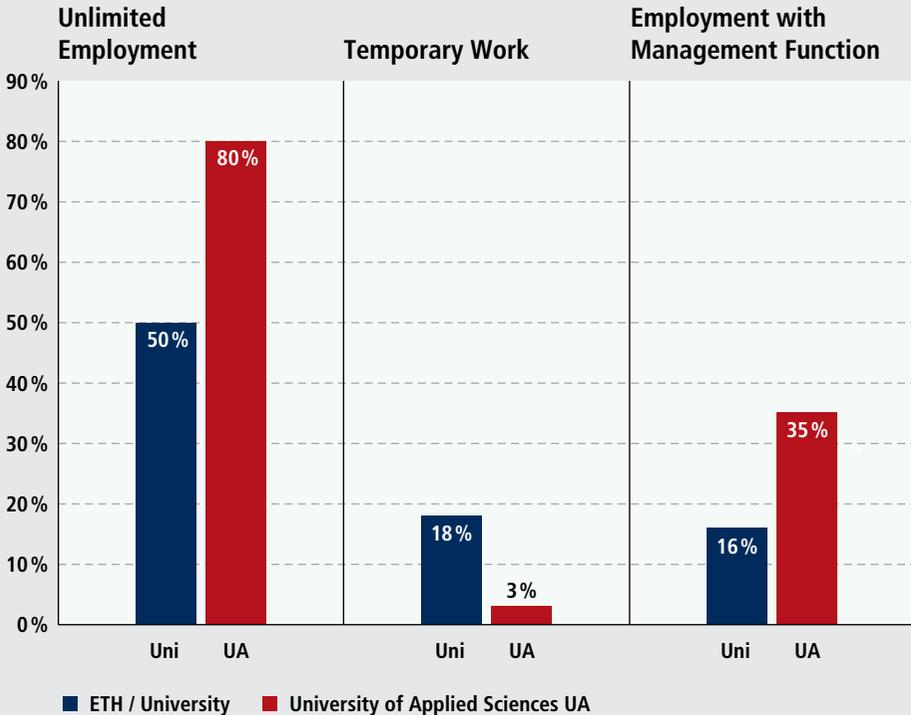
Ratio of the “working poor” according to educational status 2005
(working poor = full time employed people who live in poverty)



Employees having successfully completed apprenticeship, (within a poverty quota of 4.2%), are approximately 2.7 times less poorer than employees without any post compulsory education (“unskilled”) with a poverty percentage of 11.4%. “Working Poor” are people with a full time employment, who live under the poverty threshold (SKOS). The most important feature in preventing “working Poor” is completing a basic vocational education and training. In the population group of single parents poverty is yet more strongly represented as a result of part-time employment.

5.4 Entrance into work force after completion of studies is relatively easier for Professional College Graduates

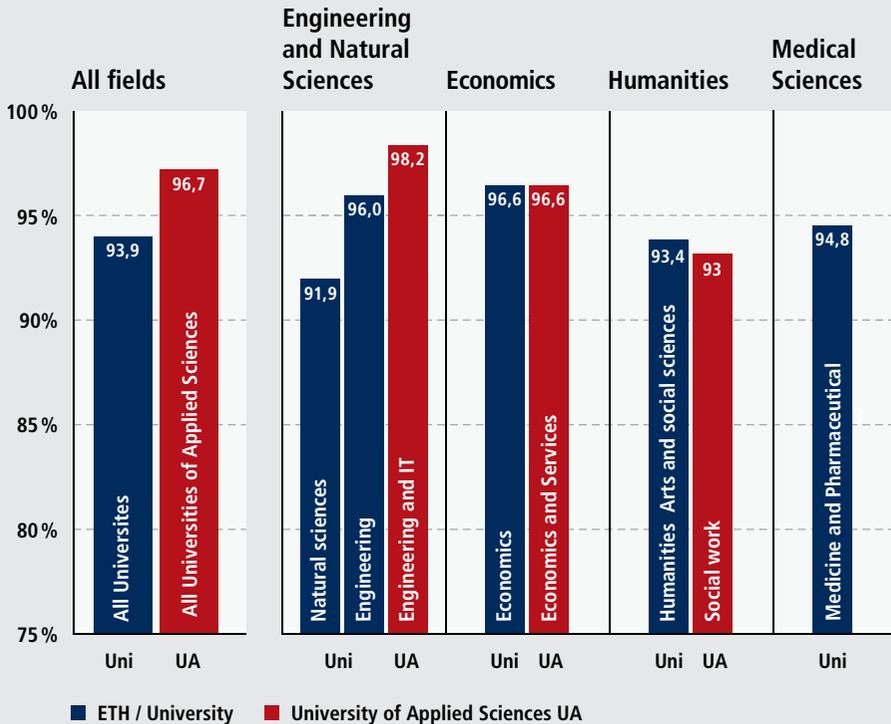
Professional situations for fresh University Graduates and Graduates of Universities of Applied Sciences 1 year Post Graduation, 2003



Graduates from universities of applied sciences usually have already completed an apprenticeship, as a result, they are more in demand than graduates from universities. One year after graduation, former have 80% indefinite employment, the latter only 50%. 18% of the university graduates additionally do temporary practical work. 35% of the graduates of universities of applied sciences, a year later have already been appointed into a managerial function, while university graduates less, than half as many are appointed for such posts.

5.5 The labour market prefers Professional College Graduates

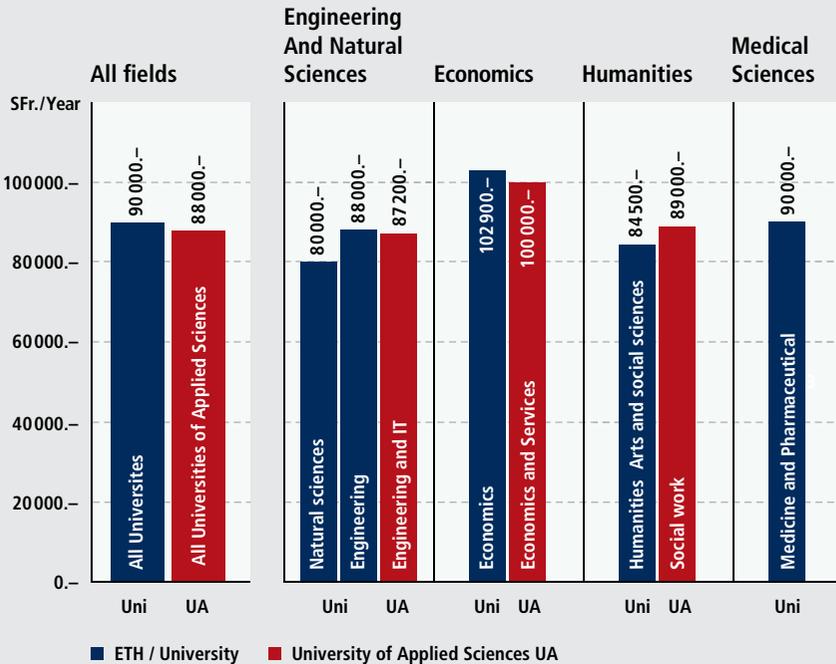
Professional situation for University and University of Applied Sciences Graduates 5 year post Graduation , 2007



The labour market requires in average more graduates of university of applied science than university graduates. Five years after graduation from university of applied sciences, 96,7% of these are appropriately employed and 93,9% from university.. Above all doctors and lawyers who graduated at universities show strong employability, probably because of their practical bound studies.

5.6 University and Professional College Graduates earn approximately the same amount

Gross-yearly income post 5 year Tertiary Qualification (average), 2007.



University- and University of Applied Sciences graduates five years later earn approximately the same amount of salary. The average gross annual income are almost equally high in the frame of the usual income dispersion. (The median value or median income indicates the income, whereby half of the individual cases lie above and the other half below it.)

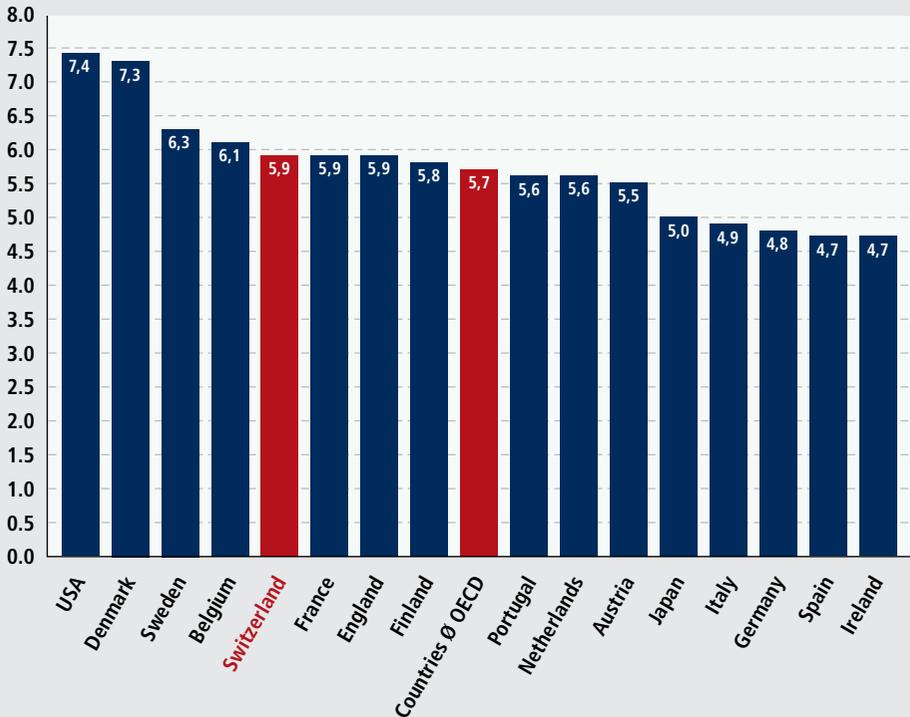


6 Costs of Vocational Education and Training



6.1 Concerning the total Education Expenditure amongst the industrialized countries Switzerland ranks close to average

Total public and private Education Expenditure indicated in percentage against GDP, 2006

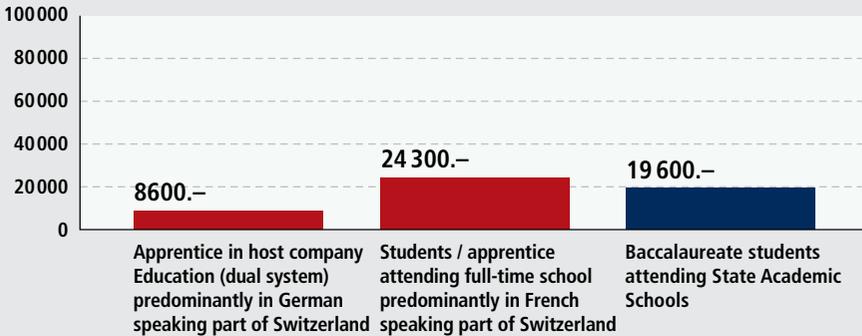


The entire educational expenditure, measured against Switzerland's GDP of 5.9% it lies in the middle of the OECD countries. This comparison value does not say much about the efficiency and labour market suitability of the educational systems. Over all the educational expenditure is being dealt by public sector. Only in the USA, the educational expenses are being held by the private sector that is more than 1% of the GDP.

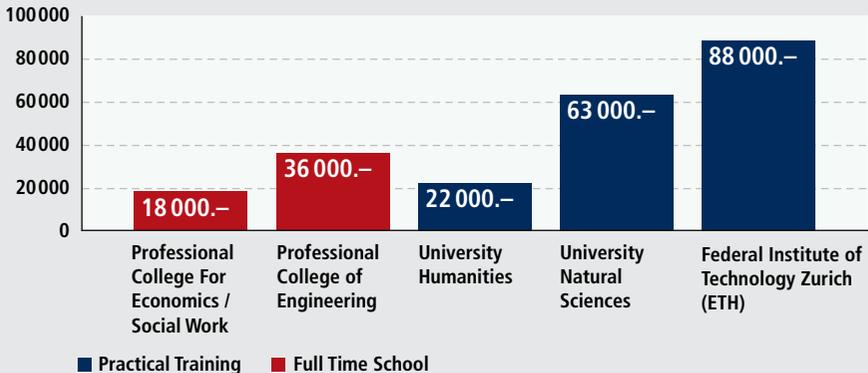
6.2 The Educational System is cost effective for the state

Yearly expenditure incurred by the public treasury per apprentice or student for (the part of) the school education, 2003 / 2005

SFr. Yearly expenditure per Student Secondary Level II



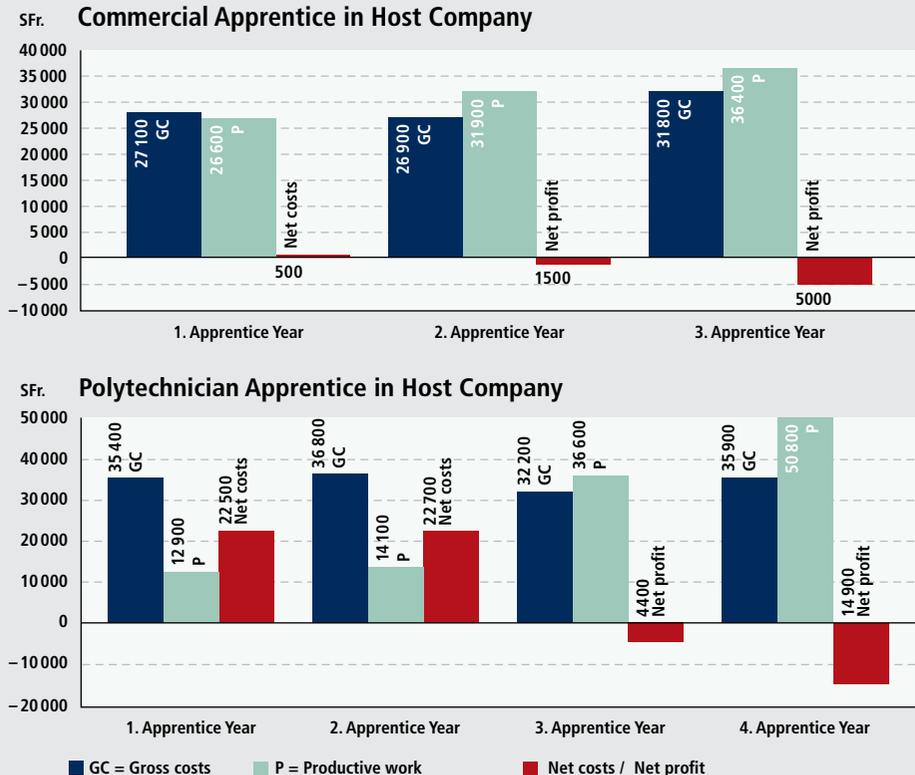
SFr. Yearly expenditure per Student Tertiary Level



In company training and education is not only practical and labour market aligned, but is rather economical for the state. The vocational education schools cost the cantons calculated in Swiss average (dual system) only SFr. 8'600 per student, full time vocational schools on the other hand cost SFr. 24'000 and for selective schools approximately SFr. 20'000 per student and year.

6.3 Apprentice compensate the education expenditure in Host Company partly through productive work

Gross expenditure of host company, productive performance of apprentice in company and difference = net expenditure respectively net profit of host company during the apprenticeship, 2006.



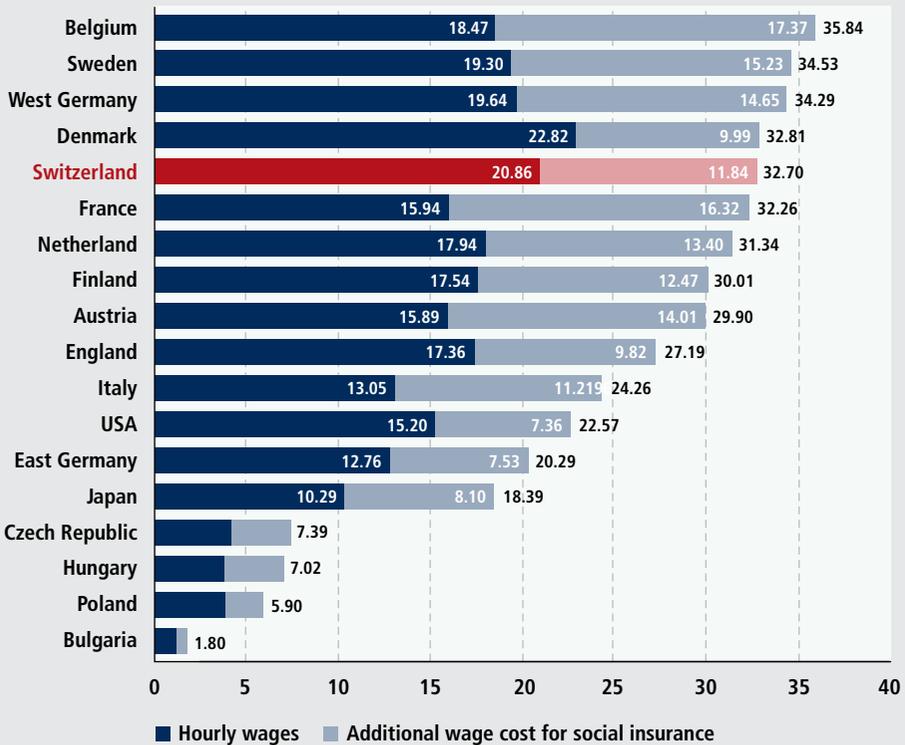
A commercial apprentice in the 1st year costs the host company SFr. 27'100 for salary, instructor expenditure, material etc. However, he performs productive work worth CHF 26,600 for the company: Therefore net costs of SFr. 500 remain. Over the entire three-year apprenticeship, the net profit amounts to about SFr. 6'000 (calculation: - SFr. 500 + SFr. 1'500 + SFr. 5'000). Analogous reads the lower diagram for Polytechnician-apprentice.

7 Swiss productivity and International competitiveness



7.1 Swiss produce with high labour costs, like other Western Europeans

Cost in Euro per man-hour in the industry 2005
(labour cost = hourly wage + wage costs for social insurance)



In comparison with other countries Switzerland produces with high industrial labour cost. In spite of high hourly wages, Switzerland is not the most expensive production location, because additional wage costs (wage percent for social insurances) are lower than in other European countries. In 2005 Swiss industry calculated in average 25.50 Euro or approximately SFr. 40 cost, per man-hour. Eastern Europe showed only 4-5 Euro.

7.2 The global positioning of the Swiss Export Industry in High-Tech merchandise

Country ranking based on the ratio of High-Tech exports in various industries, 2002

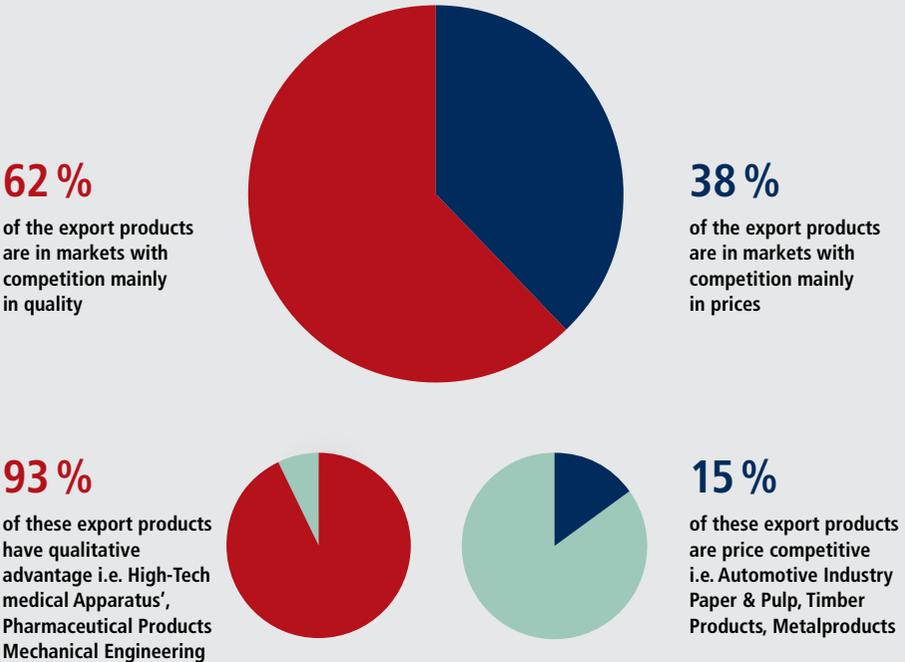
	Rank	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Scientific Instruments		CH	D	S	J	DK	US	E	F	SF	GB	I	NL	B	A
Pharmaceutical		CH	DK	B	I	A	E	F	S	GB	D	US	NL	J	SF
Chemical		E	CH	B	F	D	I	DK	GB	NL	US	A	J	S	SF
Mechanical Machines		CH	I	B	S	E	D	J	US	A	F	GB	SF	NL	DK
Aviation and Astronautics		F	US	D	I	GB	E	S	A	CH	DK	B	NL	J	SF
Electrical Machines		J	A	D	GB	S	B	I	US	E	NL	DK	CH	F	SF
Electronics		SF	S	J	A	GB	DK	US	E	D	F	I	B	NL	CH
Information Technology		NL	J	B	GB	US	D	E	A	DK	F	I	S	SF	CH

Quelle: KOF-ETH © Strahm/ hep verlag

The contribution of high-tech in major industrial goods is the deciding factor for the competitiveness of a high income country. The Swiss industry is highly specialized in scientific instruments (precision equipment, medical gadgets, top quality watches), in pharmaceutical and chemical products and mechanical machinery production (machine tools etc.). However, in other fields it is not so well positioned. (The country ranking has been according to the RSCA- Index, Revealed Symmetric Comparative Advantage, considering the advanced technology in the respective export sector).

7.3 The global positioning of the Swiss industry with qualitative advantage cutting edge in the world market

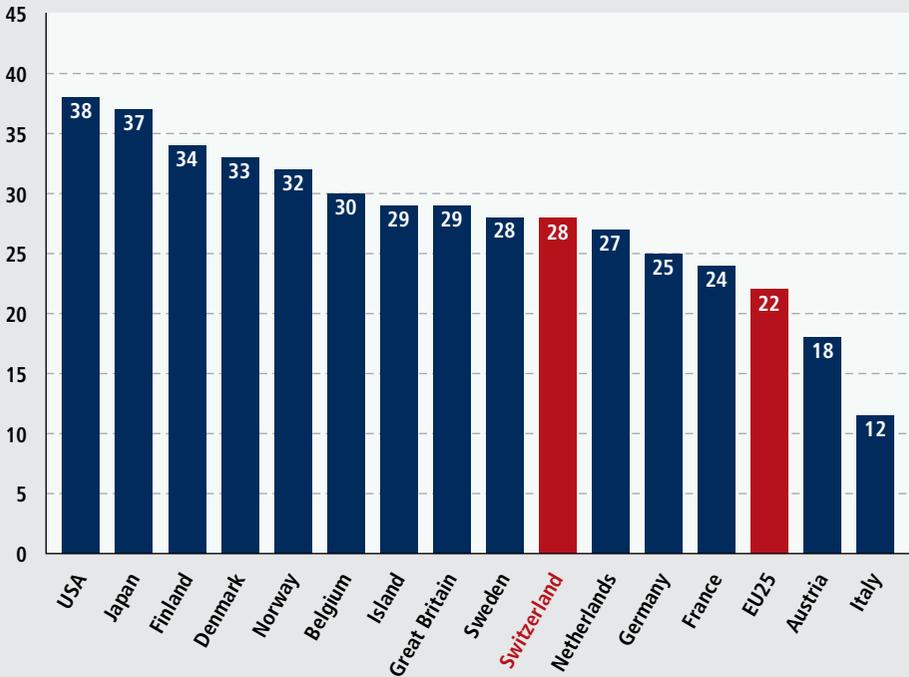
Ratio of the Swiss exports which have international competitiveness both in quality and price, 2005



Switzerland with its high income and price remains well positioned on the global market due to its competitive quality advantage and not through pricing. 62% of its exports enter the international markets in which qualitative and innovative competitive advantages are decisive. 93% of Swiss products in these markets have advantage in quality. However, 38% of Switzerland's exports are in global markets where price competition is decisive, and from that, only 15% really have a price advantage.

7.4 *In Switzerland relatively lower percentage of the population have academic qualification*

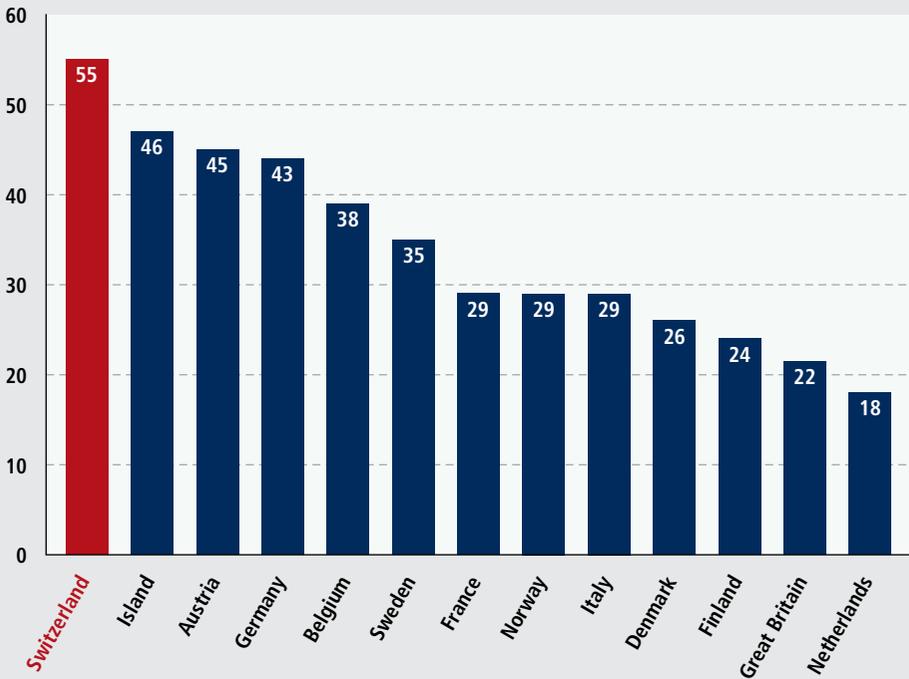
The percentage of people with Tertiary education from university taken between the ages 25 to 64, 2005



Compared to OECD-Industrialized countries Switzerland has a relatively lower ratio of people with higher Tertiary education (University, ETH, Professional High School). On the other hand, Switzerland has higher ratio of work force with specialized practical training (apprenticeship, Higher Professional School) and people who participate in further education during their professional life.

7.5 *Despite lower number of academicians still highest number of innovative enterprises*

The percentage of small and middle enterprises, which pursue and encourage innovation, 2002/2005



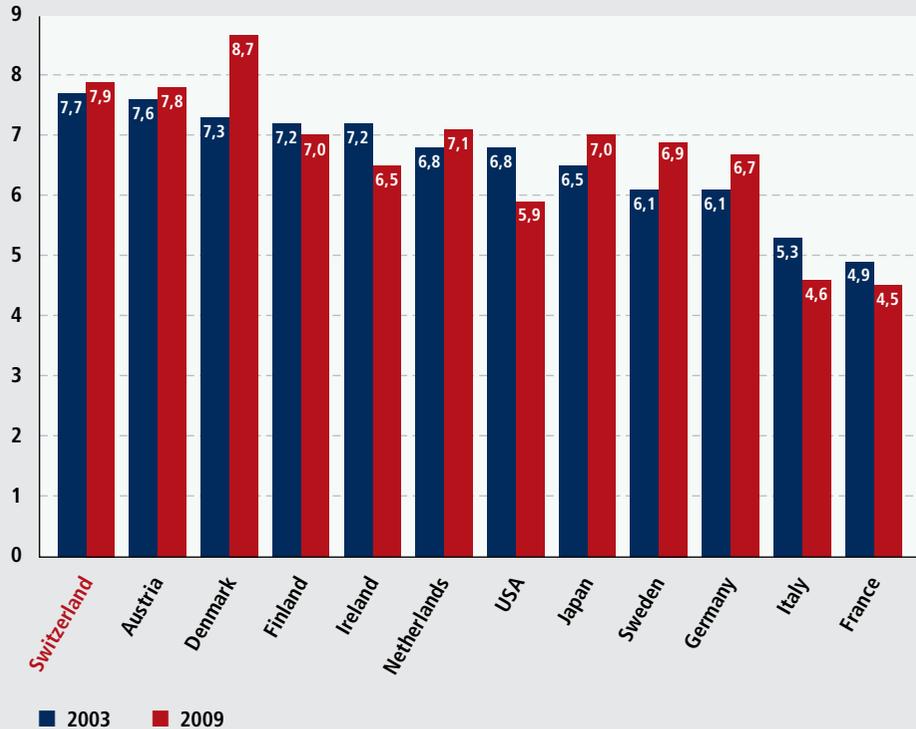
A paradox: Even though Switzerland has relatively less University graduates with higher ratio of innovative SMEs, Switzerland still tops the European countries. The explanation lies clearly in its educational system. Small enterprises are provided with qualified skilled professionals, who bring innovation along with their practical and theoretical skills.

Additionally, an important part is played by higher ratio of adults who participate in further and continuing education (Switzerland: ranked third in Europe).

7.6 Willingness to work amongst employees in countries with VET is highly rated

Country comparison of workers motivation based on assessment by International managers in a survey conducted 2003 and 2009

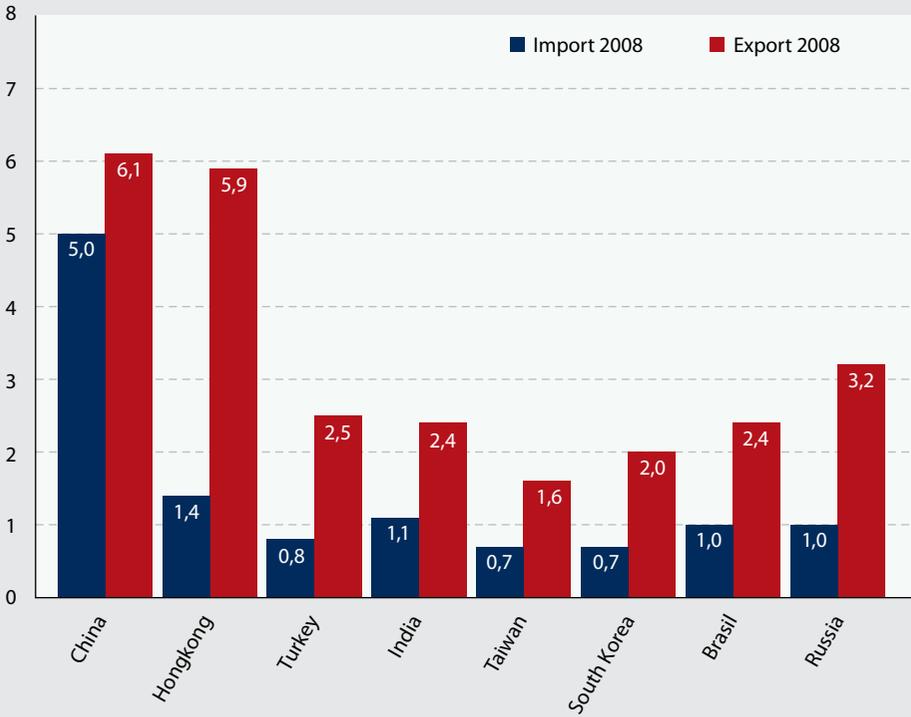
10 = highest mark



The Swiss employee's work motivation is assessed with very high grades. This conclusion was derived from the survey conducted in which approximately 4000 international managers participated within a framework of international competitiveness for 60 production plants for the IMD World Competitiveness Center (Lausanne). Hence, the early and systematic educational integration through the VET system plays a vital role for work ethics.

7.7 *Despite high wages globalization brings more export surplus – due to high quality*

Swiss goods imported and exported with newly industrialized countries and countries in-transition emerging in the world economy, 2008



Switzerland is according to balance of trade the winner of globalization. It exports significantly more to the globalizing countries than it imports. The traditional industries are being displaced by cheap imported goods with advanced technologies (wood, leather, paper, textiles, metal, toys). But at the same time the Swiss industry supplies more with its high price investment goods, instruments, medical and pharmaceutical products and luxury watches than it imports. We deliver expensive precision - they delivers cheap labour products.

Data Sources:

The facts and figures in this book are based on official statistics and data from the Swiss Federal Office of Statistics (BFS), Neuchâtel, Eurostat Brussels, OECD Paris, International Monetary Fund (IMF) Washington, Center for Economic Research at the Swiss Federal Institute of Technology (KOF-ETH) Zurich, and others.

All sources of data are named in the book:
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