

Chapter 1

The State of Regions in Switzerland

Regions form an important part of the Swiss state. This chapter presents an assessment of regional performance in Switzerland. It first describes the economic characteristics and institutional role of Swiss regions. It then assesses their strengths and challenges in an international perspective. Next it turns to the inter-linkages between regions, in order to highlight possible policy needs. The chapter concludes by identifying the main policy implications, which will be analysed in Chapters 2 and 3.

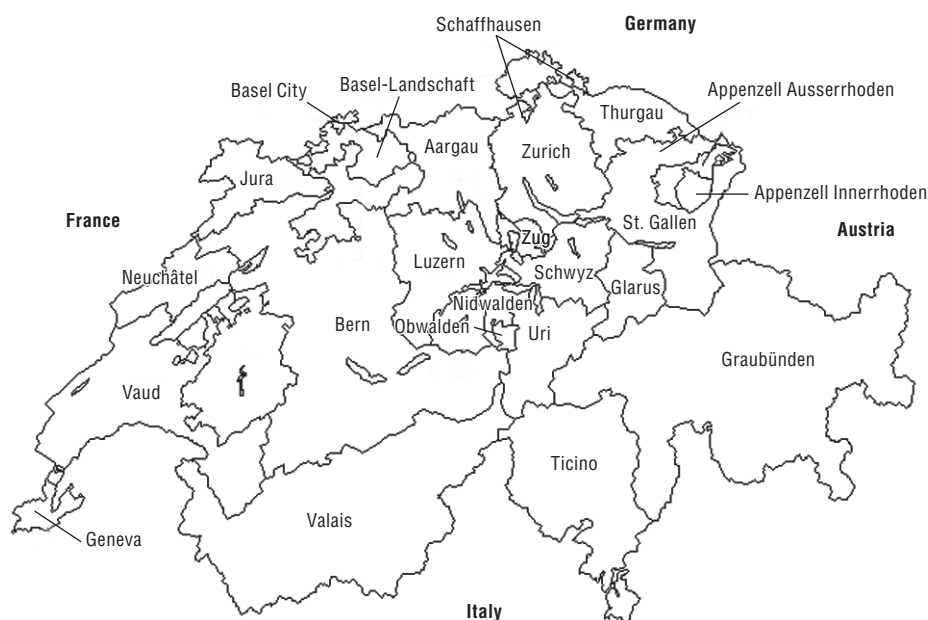
Key messages of Chapter 1

- **Regions in Switzerland are doing well in many respects.** They have high levels of GDP per capita, low unemployment rates and some regions show impressive growth rates. In addition, regions in Switzerland are not confronted with the traditional development problems of many regions in the OECD, especially rural and remote regions, such as de-population, ageing and limited access to services.
- **An important challenge is regional labour productivity growth.** Several regions show lagging labour productivity rates, which drags down the overall labour productivity growth rates of Switzerland. Some of this lagging growth is connected to the sectoral specialisations of regions (in particular rural regions) and the lack of high-tech employment in some regions. Stimulating labour productivity growth in these regions is an important challenge for regional development policies in Switzerland.
- **Regions in Switzerland have become increasingly inter-linked: functional realities now go beyond cantonal boundaries.** People and companies get more connected in wider areas, as illustrated by commuting flows, continuity in economic specialisations, patent links and business links. Especially around the main urban centres in Switzerland, a limited number of large functional regions are emerging that cross several cantonal boundaries. The economic flows also extend over the national borders to form cross-border functional regions. This has consequences for regional policies, implemented at cantonal level in Switzerland.

1.1. Regions in Switzerland: a multi-layered picture

Switzerland is a federal country in which many responsibilities are delegated to cantons. Cantons play a large role in policy making and implementation in Switzerland, including in regional economic policies. Many cantons make regional development plans that form the strategic framework for economic development in the canton. In addition they make implementation programmes for the New Regional Policy (NRP) which include main initiatives within the field of regional economic development. There are 26 cantons in Switzerland (Figure 1.1). The second sub-national level of government consists of municipalities, of which there were 2 569 in Switzerland in February 2010.

Figure 1.1. Cantons in Switzerland



For reasons of international comparison, cantons are in this review considered to be regions, as well as the *Grandes Régions* that are constituted by an aggregation of several cantons. There are several ways of defining regions, but not all of them facilitate international comparison. Regions throughout the OECD are categorised in the *OECD Regional Database* at two aggregation levels: TL2 (Territorial Level 2) and TL3. The higher level consists of large regions, whereas the lower level is composed of small regions. The level of cantons constitutes the so-called TL3 level; the level of seven *Grandes Régions* is at the TL2 level. In 2009, there were 1 681 TL3 regions in the OECD and 335 TL2 regions. All the seven *Grandes Régions*, with the exception of Zurich and Ticino, comprise several cantons (Figure 1.2). These *Grandes Régions* only serve for statistical purposes and do not actually exist as institutions.¹ In the Swiss context, the term “region” is also often used to indicate a territorial unit at sub-cantonal level. As there are no internationally comparative data available at this aggregation level, these territorial units will in this review not be referred to as regions, but as sub-cantonal regions. In this review, reference will also be made to functional areas; these are areas that are defined by functional relations of people and firms: a functional area can be considered to exist where commuting, business linkages and knowledge linkages are high. As will be illustrated in Section 1.4, functional realities do often not

Figure 1.2. *Grandes Régions in Switzerland*

Source: Statistics Switzerland.

coincide with administrative boundaries of regional and even national governments, nor do they necessarily correspond to intra-or inter-regional cooperative arrangements.

A relatively large share of the Swiss population lives in intermediate regions; a smaller part in predominantly urban or rural areas. The *OECD Regional Database* uses a regional typology that categorises regions (at the TL3 level) in three types: predominantly urban, intermediate and predominantly rural regions. Using this typology, Switzerland consists of 7 predominantly urban cantons, 12 intermediate cantons and 7 predominantly rural cantons. This typology is based on a set of criteria, the most important of which is population density.² Most of the urban cantons are concentrated in the north of Switzerland, while most of the rural cantons are located in the south, which is also the alpine part of the country (Figure 1.3).³ There is a large degree of correlation between population density and topographic conditions in Switzerland: the least populated territories being located in mountainous areas. The share of the Swiss population living in predominantly urban areas is 41%; this is slightly below the OECD average of 46%. At the same time the rural

Figure 1.3. **Regional typology of Switzerland (2008)**

Note: The regions indicated in dark are predominantly urban regions, the regions in lighter shades are intermediate regions and the regions in the lightest shades are predominantly rural regions.

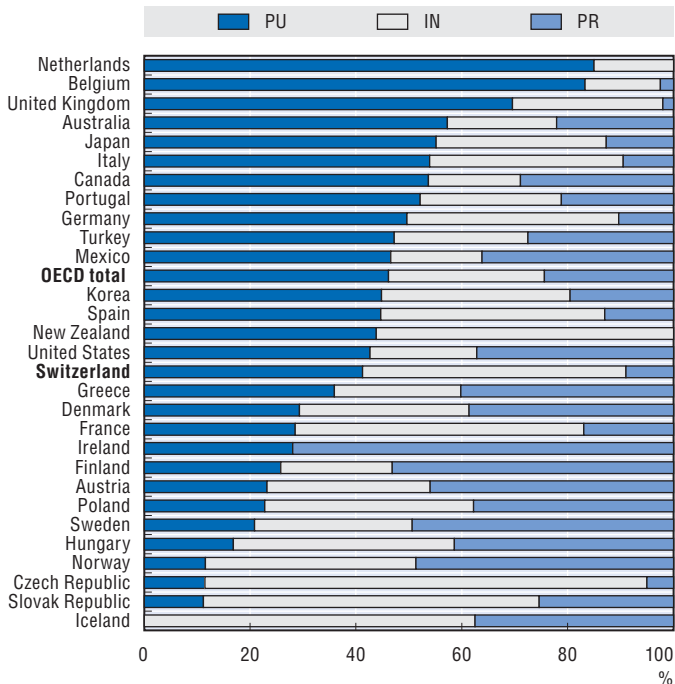
Source: Based on data from the OECD Regional Database.

population share is 9%; clearly below the average in OECD countries (24%). Consequently, the share of the Swiss population living in intermediate regions (50%) is relatively large compared to the average in OECD countries (30%) (Figure 1.4). The distribution of land across Swiss regions is different from the average in OECD countries: the land surface of rural regions in Switzerland takes up a much smaller share (39%) of the total land surface in Switzerland than the average in OECD countries (80%). At a higher aggregation level of *Grandes Régions*, Switzerland appears to have two urban regions (Zurich and North-West Switzerland), one intermediate region (Ticino) and four regions of mixed nature, made up by both rural and intermediate cantons (Espace Mittelland, Eastern Switzerland and Central Switzerland), or a mix of urban, rural and intermediate cantons (Région Lémanique).⁴

1.2. Characteristics of regions in Switzerland

1.2.1. Regions do not have de-population or acute ageing problems

Rural cantons in Switzerland, unlike rural regions in several OECD countries, show no de-population trends. The population growth over 1990-2007 is more or less similar for urban (13.6%), intermediate (11.4%) and rural cantons (12.9%) in Switzerland (Table 1.1). There is a large variety within these three categories of regions. The only canton with some de-population is the predominantly urban canton of Basel City (-3.7%); other cantons with relatively small population growth rates are the rural cantons of Glarus (1.3%)

Figure 1.4. **Typology of TL3 regions in OECD countries (2005)**

Note: PU indicates predominantly urban regions, IN indicates intermediate regions and PR indicates predominantly rural regions.

Source: OECD (2009), *OECD Regions at a Glance 2009*, OECD Publishing, Paris.

and Uri (2.0), as well as the intermediate canton of Bern (2.2%). The largest population growth has taken place in the urban canton of Zug (28.5%) and the intermediate canton of Schwyz. Growth rates in predominantly rural cantons are less varied, but solid as well with high population growth rate in the rural canton of Valais (19.7%). Regions in OECD countries show large variation in population growth trends, but the large majority of these TL3 regions show population growth patterns between -20% and $+40\%$ over the period 1995-2006. Swiss regions fall in this range: they show no exceptional population growth rates from an international perspective, but show no de-population tendencies in contrast to a substantial number of regions in the OECD, in particular rural and remote regions (Figure 1.5). Switzerland is in this respect relatively unique: among OECD countries only Belgium, Ireland and the Netherlands shows less regional de-population tendencies. Apart from strong demographic growth in Switzerland, limited regional de-population might be explained by relatively limited inter-cantonal mobility in Switzerland and a relatively equal distribution of the different age groups over the country.

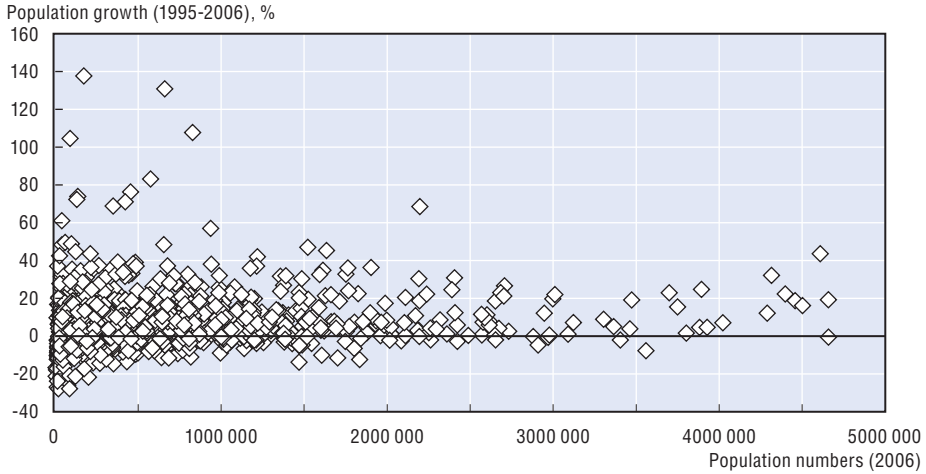
Table 1.1. **Population growth (1990-2007) in Swiss cantons (%)**

	Population growth 1990-2007 (%)
Predominantly urban cantons	13.6
Geneva	15.9
Solothurn	10.2
Basel City	-3.7
Basel-Landschaft	16.5
Aargau	17.0
Zurich	13.3
Zug	28.5
Intermediate cantons	11.4
Vaud	16.1
Bern	2.2
Fribourg	26.9
Neuchâtel	6.4
Schaffhausen	4.1
Appenzell Ausserrhoden	2.7
St. Gallen	11.0
Thurgau	16.2
Luzern	13.6
Schwyz	27.6
Nidwalden	22.2
Ticino	14.7
Predominantly rural cantons	12.9
Valais	19.7
Jura	5.3
Glarus	1.3
Appenzell Innerrhoden	11.6
Graubünden	9.9
Uri	2.0
Obwalden	18.1

Source: Data from the OECD Regional Database.

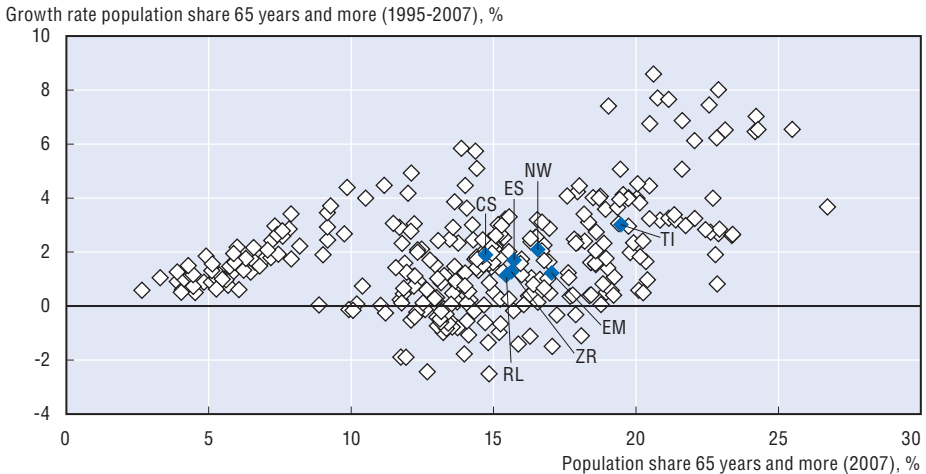
Ageing presents a challenge for some Swiss regions, although not more pronounced than in many OECD regions. At the TL2 level, the region with the highest share of population of 65 years and older is Ticino (19.4% in 2007); this is also the region with the largest increase of elderly population over 1995-2007 (three percentage points). All other TL2 regions in Switzerland have elderly population shares between 15% and 17% with increases of elderly population between one and two percentage points over 1995-2007 (Figure 1.6). There is no difference in ageing patterns of different types of regions: the population share of 65 years and older is almost similar in predominantly urban cantons (16.3% in 2008), intermediate cantons (16.7%) and predominantly rural cantons (16.8%). The canton with the highest share of elderly population (65 years and older) is Basel City (20.7% in 2008), whereas the lowest share of elderly people is found in the intermediate canton of Fribourg (13.6%).

Figure 1.5. **Population growth (1995-2006) in TL3 regions in the OECD**



Source: Data from the OECD Regional Database.

Figure 1.6. **Ageing in TL2 regions in Switzerland and OECD (2007)**



Note: The regions indicated in blue are the Swiss *Grandes Régions*. The regions in lighter colour are the other TL2 regions in the OECD. TI stands for Ticino, NW for North-West Switzerland, EM for Espace Mittelland, ES for Eastern Switzerland, ZR for Zurich, RL for Région Lémanique and CS for Central Switzerland.

Source: OECD Regional Database.

1.2.2. Economic specialisations of regions in line with international practice

Several economic specialisations in Switzerland, such as agriculture, natural resources, wood products, energy and construction, can be associated with rurality in Switzerland. Rural cantons in Switzerland are in general very

specialised in these economic sectors as compared to the national average, intermediate cantons are specialised in these, but to a lesser extent, and urban cantons are generally under-specialised in these sectors, as is the case in most OECD countries. Specialisation is here defined by the employment share of these sectors compared to total cantonal employment, in comparison to the national average employment share in this economic sector. These specialisation tendencies are clearest in agriculture and wood products: all rural cantons are specialised in these sectors, whereas all urban cantons are under-specialised in these.⁵ In addition, rural cantons are generally specialised in hotels and restaurants, generally similarly under-represented in intermediate and predominantly urban cantons. Predominantly rural cantons, however, are under-represented in education and arts, whereas intermediate and urban cantons are close to the national average on this (Table 1.2).

Economic sectors that are found mostly in urban areas are R&D, financial services, information and communication, wholesale trade and commercial services. Urban cantons are in general clearly specialised in these sectors, while intermediate cantons are under-represented in these and rural cantons even more under-represented in these sectors. This does not mean that all urban cantons have employment shares in these industries that are higher than the national average: in each of the sectors mentioned five of the seven urban cantons were specialised, but two showed employment shares lower than the national average. In several of the sectors mentioned (information and communication, financial services, commercial services) these were cantons that are predominantly urban according to OECD definitions, but more suburban in reality (Solothurn and Aargau). In all the above-mentioned sectors, rural cantons are systematically under-represented: all of the predominantly rural cantons have employment shares in wholesale trade, information and communication, financial services, commercial services and R&D that are substantially lower than the national average.

Intermediate cantons are also specialised in some of the more traditional economic sectors, such as the textile industry, food industry, machinery and public administration, under-represented in both urban and rural areas. There is however some amount of variation between intermediate cantons in these sectors: some of them show specialisation whereas others show under-representation. The sectors in which a clear majority of intermediate cantons is under-represented are financial services and transport and communication.⁶ A considerable share of economic sectors does not seem to be related to the distinction between urban and rural areas. This is the case for electronics and optical instruments, trade and reparations of cars and motorcycles, retail trade and health. The average share of employment in these sectors is more or less similar according to predominantly urban, intermediate and predominantly rural cantons.

Table 1.2. **Specialisation coefficients in different types of regions in Switzerland**

	Predominantly rural cantons	Intermediate cantons	Predominantly urban cantons
Sectors dominant in more rural cantons			
Agriculture	1.93	1.35	0.46
Natural resources	1.56	1.11	0.78
Wood products	1.65	1.22	0.64
Energy	1.56	0.98	0.92
Construction	1.51	1.04	0.87
Hotels and restaurants	1.87	0.96	0.88
Sectors dominant in more urban cantons			
Research and Development	0.39	0.69	1.44
Financial services	0.52	0.70	1.41
Information and communication	0.41	0.88	1.24
Wholesale trade	0.54	0.87	1.23
Commercial services	0.63	0.88	1.19
Education	0.79	1.00	1.04
Arts	0.80	0.99	1.05
Sectors dominant in intermediate cantons			
Textile industry	0.84	1.40	0.61
Food industry	0.98	1.20	0.79
Machinery	0.69	1.18	0.87
Public administration	0.94	1.16	0.84
Sectors not related to urban-rural distinction			
Electronics and optical instruments	0.89	1.02	1.00
Trade and repairation of cars and motorcycles	1.11	1.04	0.94
Retail trade	1.12	1.05	0.93
Health	0.96	1.05	0.95

Note: A specialisation coefficient of 1.00 indicates that the rate of local employment in that sector as share of total local employment is exactly the same as the national rate of employment in that sector as share of total national employment. A score higher than 1.00 means that the local employment share in that sector is higher than the national share in that sector: the canton is specialised relative to the national average. A score lower than 1.00 means that the local employment share is lower than the national average: the canton is in that case under-represented in this sector.

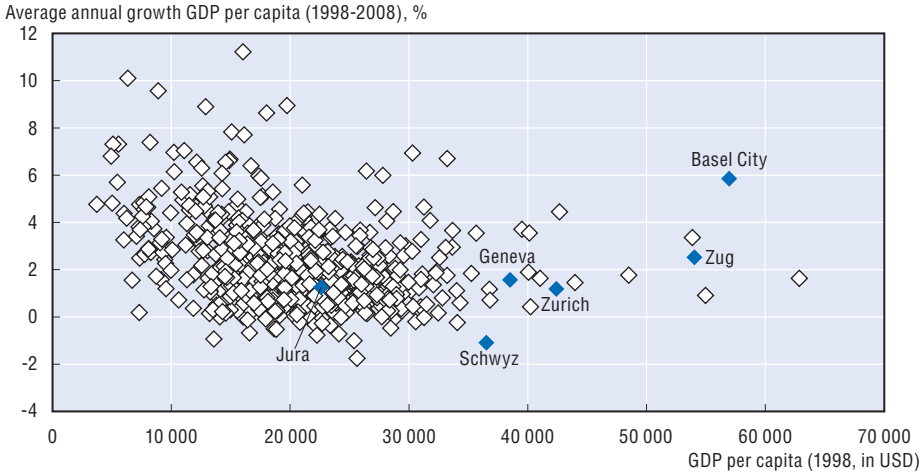
Source: Based on data from Statistics Switzerland.

1.3. Strengths and challenges of Swiss regions

1.3.1. Good economic performance of Swiss regions

Swiss regions compare well with regions in other OECD countries on a variety of economic indicators, including GDP per capita and unemployment. GDP per capita of Swiss regions is higher than a large share of OECD regions, even for the Swiss regions with lowest GDP per capita, such as the Jura. GDP per capita growth for most Swiss regions does not deviate much from the general trend in most OECD countries, although Basel City managed to realise GDP per capita growth rates over 1998-2007 that were unmatched by OECD regions with the same income level (Figure 1.7). Unemployment rates are low in Swiss regions, in comparison with regions in OECD countries (Figure 1.8). In addition to that, regions in Switzerland manage to export a relatively large share of their goods and services.

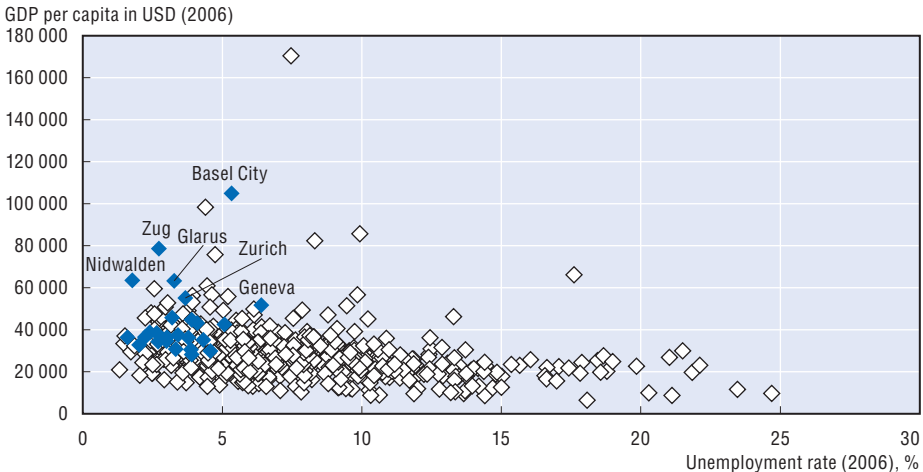
Figure 1.7. **GDP per capita (1998) and growth of GDP per capita (1998-2007) in OECD TL3 regions**



Note: For reasons of visibility, not all cantons in Switzerland are indicated in the figure, but only the cantons with minimum or maximum values (indicated in blue).

Source: Based on data from the OECD Regional Database.

Figure 1.8. **Unemployment rates (2006) in OECD TL3 regions**



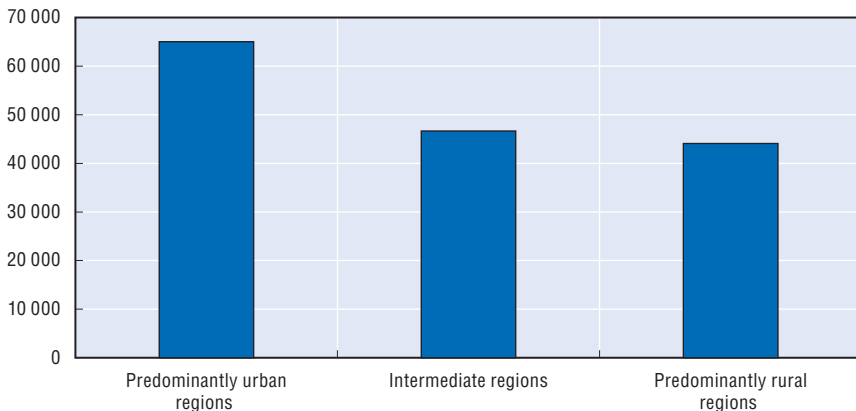
Note: Swiss cantons are indicated in blue.

Source: Based on data from the OECD Regional Database.

Urban regions in Switzerland have on average considerably higher GDP per capita than other regions in Switzerland. The average GDP per capita was CHF 65 035 for predominantly urban regions in 2005 (the last year for which GDP per capita data for canton are available); this is CHF 46 651 for intermediate

regions and CHF 44 081 for predominantly rural regions (Figure 1.9). These average numbers are hiding a considerable amount of variety: the predominantly urban canton Basel City had the highest GDP per capita (115 178), but other predominantly urban cantons have considerably lower incomes (Solothurn had GDP per capita of CHF 46 844 for example), whereas some intermediate (Nidwalden) and predominantly rural regions (Glarus) have attained a level of GDP per capita that is higher than the average for predominantly urban cantons (Nidwalden had GDP per capita of CHF 73 286 and Glarus of CHF 73 236).

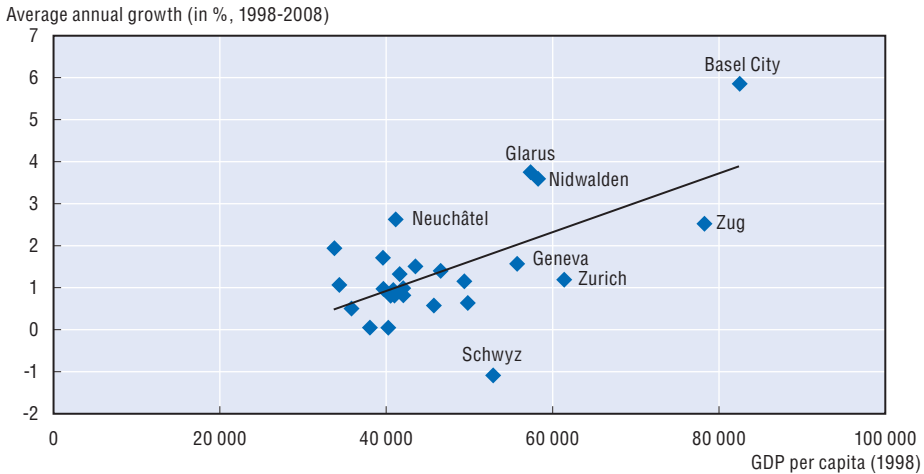
Figure 1.9. **Average GDP per capita (in CHF) in different types of regions in Switzerland (2005)**



Source: Own calculations based on data from Statistics Switzerland.

Economic growth is also higher in urban regions in Switzerland. Over 1998-2008, the GDP per capita of predominantly urban regions grew by 15.7%, against 11.2% in intermediate regions and 11.7% in predominantly rural regions. The only canton in Switzerland that witnessed a reduction of GDP per capita in this period was the intermediate canton of Schwyz. The canton with the highest growth in GDP per capita was Basel City (58.5% growth over 1998-2008). Both Geneva and Zurich witnessed growth of GDP per capita that was smaller than the average for urban regions in Switzerland (Figure 1.10).

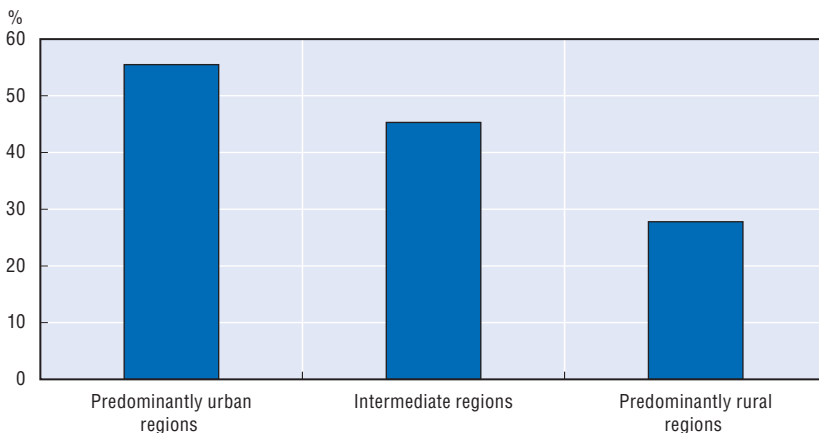
Unemployment is not more concentrated in rural areas, as is the case in several OECD countries. As a matter of fact, the unemployment rate in predominantly rural areas in 2006 was lower (at 3.15%) than those in predominantly urban areas (3.96% on average) and intermediate regions (3.91%). The lowest unemployment rate was attained in the predominantly rural region Appenzell Innerrhoden (1.5%), the highest unemployment rate in the predominantly urban region of Geneva (6.36%). The unemployment rates

Figure 1.10. **GDP per capita level and growth in Swiss cantons (1998-2008)**

Source: Own calculations based on data from Statistics Switzerland.

in the other main urban centres in Switzerland is above the national average (3.87% in 2006) in the case of Basel City (5.3%) and slightly below in the case of Zurich (3.64%) (data from the *OECD Regional Database*).

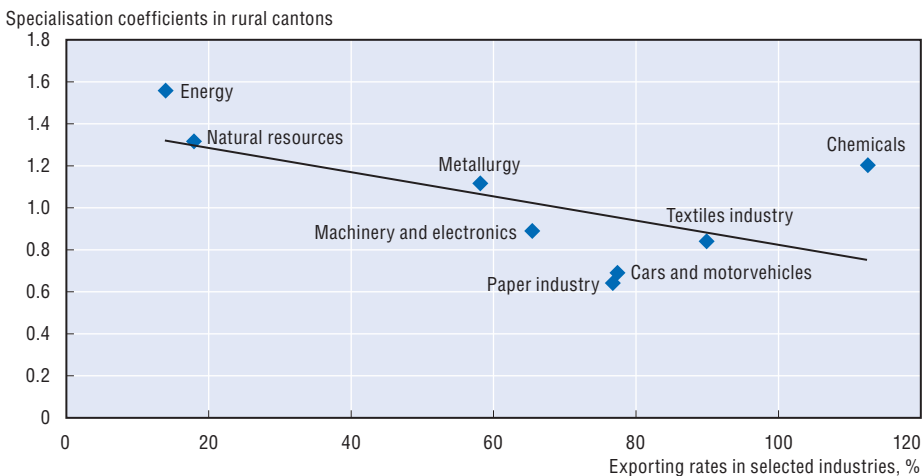
Urban regions have been more successful in exporting than other regions in Switzerland. On average they exported 55% of their GDP in 2008, whereas export shares were 45% for intermediate regions and 27% for predominantly rural regions in Switzerland (Figure 1.11). The largest exporters of goods in

Figure 1.11. **Export shares of different types of regions in Switzerland**

Source: Own calculations based on data from Statistics Switzerland.

Switzerland are the urban canton of Basel City, with an export share of 188% of GDP, and the intermediate canton of Neuchâtel (export share of 106% in 2008). Zurich is a relatively small exporter of goods (although it has a strong position in exporting services, such as financial and business services) in relative terms (22% of GDP in 2008), but the lowest export share is reached in the predominantly rural region of Appenzell Innerrhoden (15%) (based on data from UBS Suisse, 2009). These exporting patterns are to some extent related to economic specialisations of different regions in Switzerland. Rural cantons are specialised in economic sectors that in general have slightly lower exporting rates (Figures 1.12, 1.13 and 1.14).

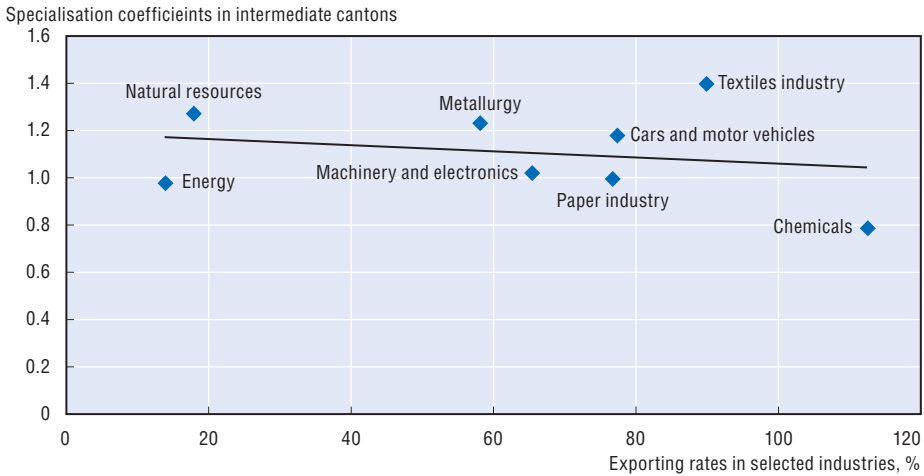
Figure 1.12. **Sectoral specialisation and exporting rates in rural cantons**



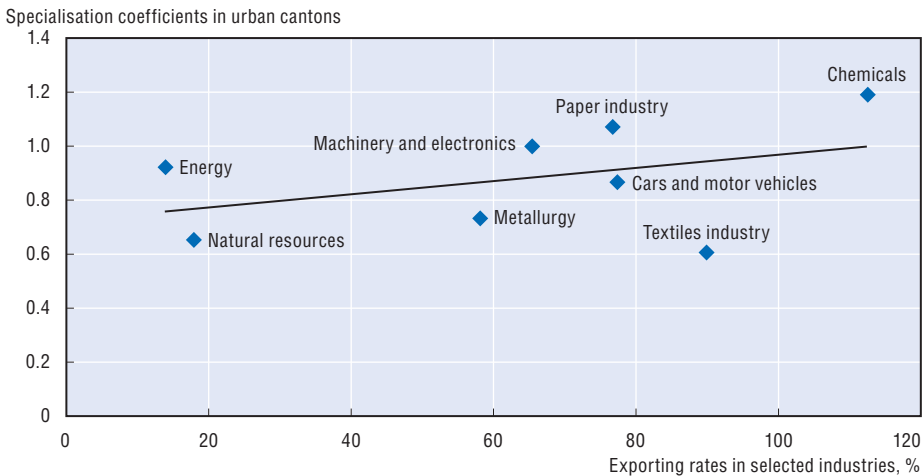
Source: Based on data from Statistics Switzerland.

1.3.2. Strongly developed human capital and innovation

The labour force in Swiss regions is highly qualified and employment is highly knowledge intensive. In comparison with regions in the OECD, a large share of the labour force in Swiss regions has tertiary education, in particular in Région Lémanique (36.1% in 2006) and Zurich (37.7%) (Figure 1.15). This highly skilled labour force is comfortably absorbed due to the high shares of knowledge intensive jobs in Swiss *Grandes Régions*, especially in Zurich (knowledge intensive services) and North-West Switzerland (where a large share of the employment is classified as “high- and medium-high-tech manufacturing”). Around 49% of total employment in Zurich consists of knowledge intensive services; only very few regions in the OECD have a higher share of these (including Stockholm, London and New York) (Figure 1.16). North-West Switzerland is scoring relatively high on the share of high and medium high-tech manufacturing (9.8% in 2006), although some regions are considerably more dominant in these sectors

Figure 1.13. **Sectoral specialisation and exporting rates in intermediate cantons**

Source: Based on data from Statistics Switzerland.

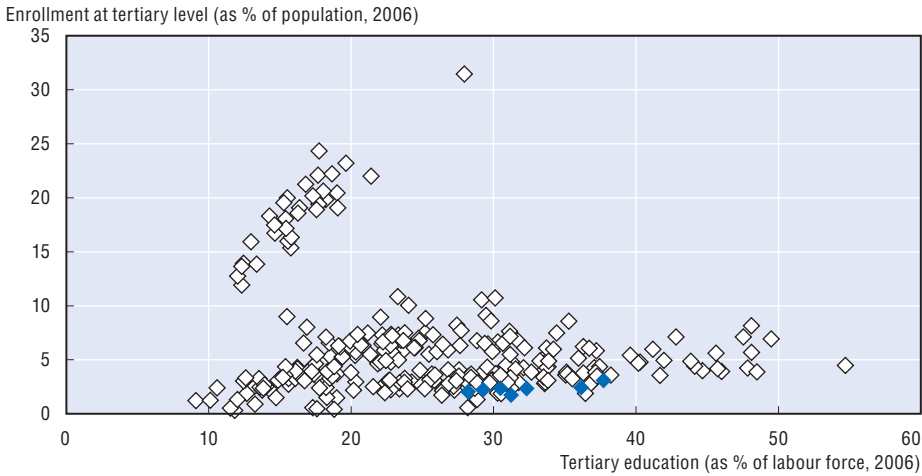
Figure 1.14. **Sectoral specialisation and exporting rates in urban cantons**

Source: Based on data from Statistics Switzerland.

(e.g. Baden-Wuerttemberg with a share of 17.7% high- and medium-high-tech manufacturing. Other Swiss regions with high scores on high-tech manufacturing (Eastern Switzerland and Espace Mittelland) score relatively lower on knowledge intensive services employment.

Regions in Switzerland score very high on patent applications. This is the case both when the origin of the application or the origin of the inventor is taken as the base. The ten leading cantons in Switzerland all belong to the

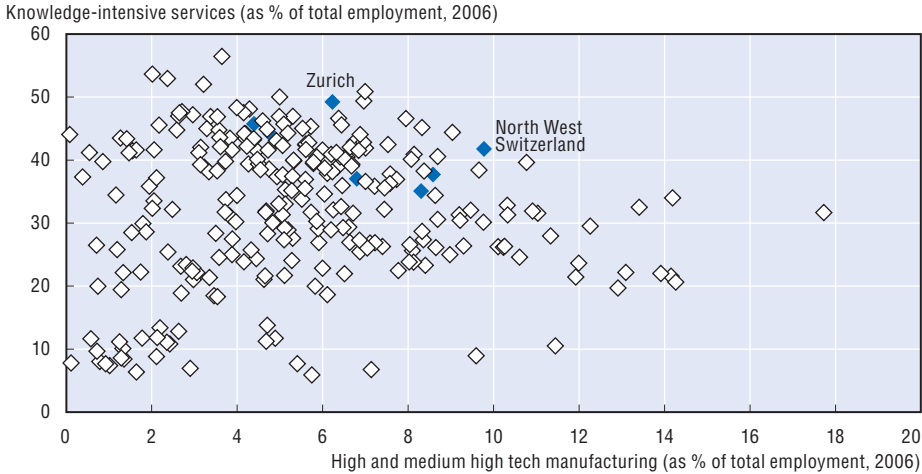
Figure 1.15. **Tertiary education attainment in Swiss regions (2006)**



Note: The regions indicated in blue are the Swiss *Grandes Régions*. The regions in lighter colour are the other TL2 regions in the OECD.

Source: OECD Regional Database.

Figure 1.16. **High-tech manufacturing and knowledge-intensive services employment in OECD regions**

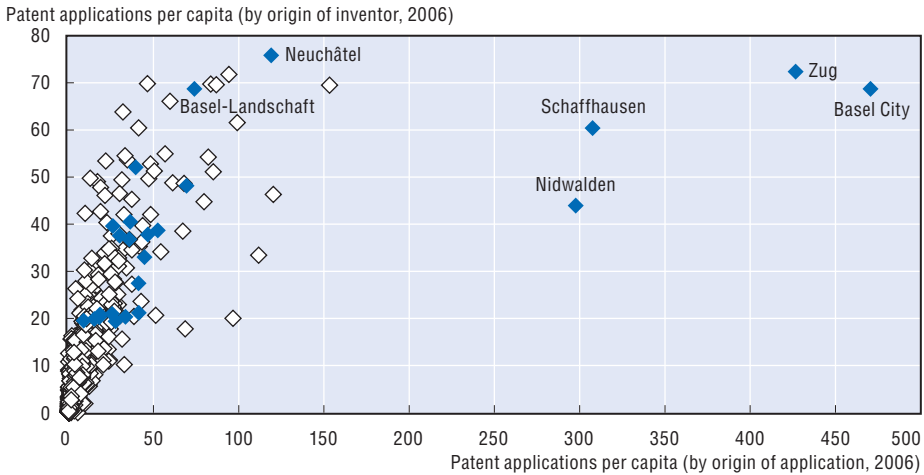


Note: The regions indicated in blue are the Swiss *Grandes Régions*. The regions in lighter colour are the other TL2 regions in the OECD.

Source: OECD Regional Database.

leading OECD regions in this respect; these are cantons such as Basel City, Zug, Schaffhausen and Neuchâtel (Figure 1.17). Other cantons in Switzerland score lower on this indicator, but still considerably higher than many other regions in the OECD. High patent applications could indicate a high capacity to transform

Figure 1.17. **Patent applications per 100 000 inhabitants in OECD TL3 regions (2006)**

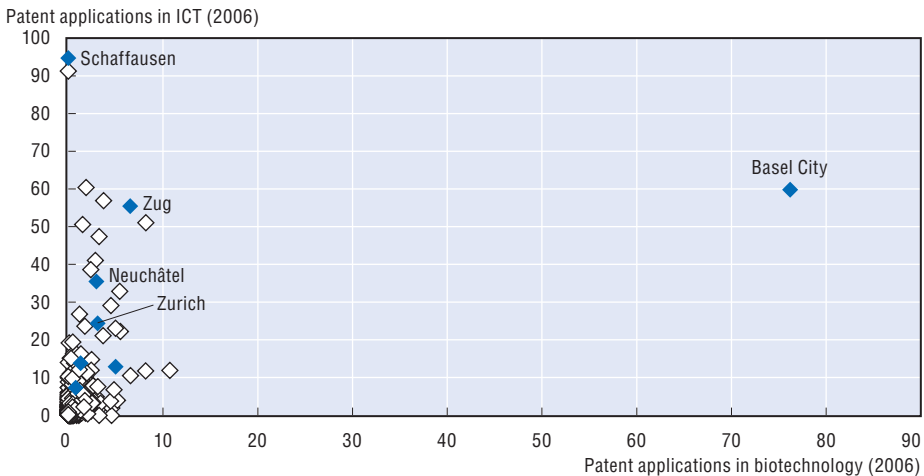


Note: The regions indicated in blue are the Swiss cantons. The regions in lighter colour are the other TL3 regions in the OECD.

Source: Own calculations based on data from Statistics Switzerland and the OECD Patent Database.

knowledge into inventions that can be commercialised. Several regions in Switzerland are leading innovators in sectors such as biotechnology, ICT and green technologies (Figures 1.18 and 1.19). Basel was applying for eight times

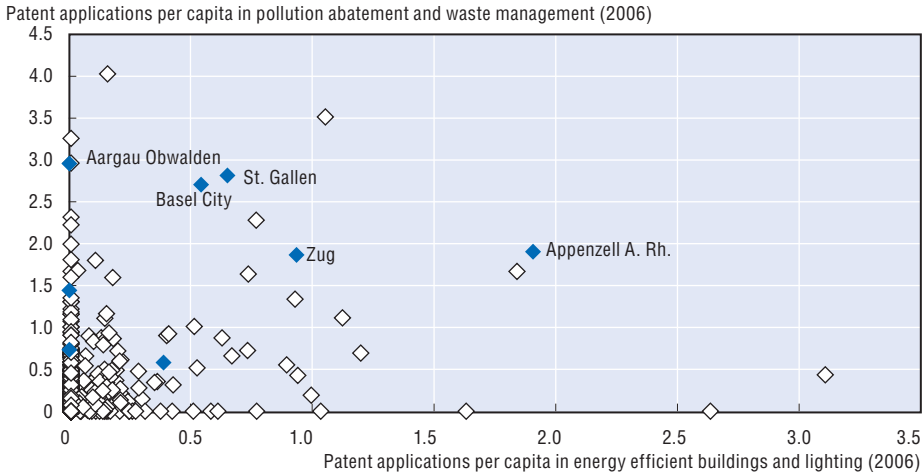
Figure 1.18. **Patent applications per 100 000 inhabitants in biotechnology and ICT (2006)**



Note: The regions indicated in blue are the Swiss cantons. The regions in lighter colour are the other TL3 regions in the OECD.

Source: Own calculations based on data from the OECD Patent Database and the OECD Regional Database.

Figure 1.19. **Patent applications per 100 000 inhabitants in green technologies (2006)**

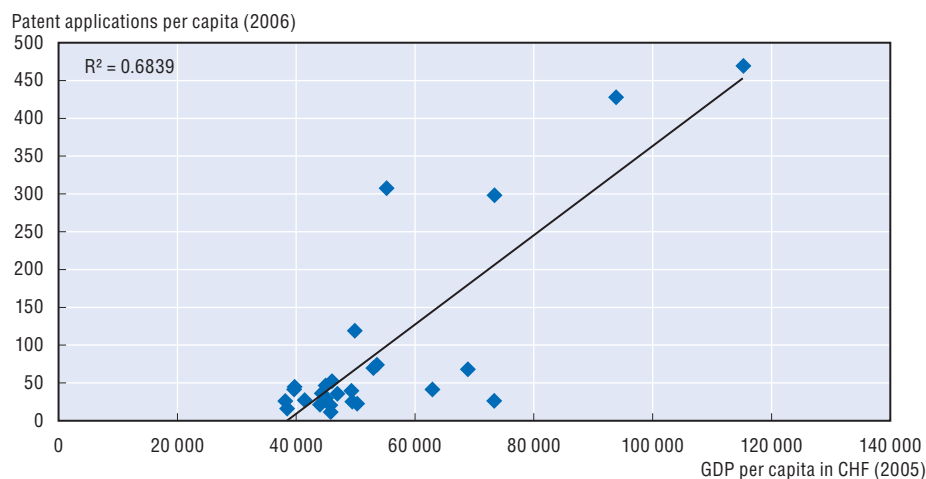


Note: The regions indicated in blue are the Swiss cantons. The regions in lighter colour are the other TL3 regions in the OECD.

Source: Own calculations based on data from the *OECD Patent Database* and the *OECD Regional Database*.

more biotechnology patents per capita in 2006 than the other leading regions in the OECD. Together with Schaffhausen, Zug, Neuchâtel and Zurich, it is also one of the leading regions ICT patent applications per capita. Swiss regions are also at the forefront of inventions in green technologies, such as energy efficiency and pollution abatement. Appenzell Ausserrhoden and Zug score very high on patent applications per capita in energy efficiency in buildings and lighting, whereas Aargau, Obwalden, St. Gallen and Basel City are amongst the leaders in pollution abatement and waste management.

Urban regions in Switzerland have considerably more patent applications than other regions in Switzerland. Half of all patent applications in Switzerland in 2006 came from predominantly urban regions; also in relative terms predominantly urban cantons have more patent applications: 93.4 patents per 100 000 inhabitants in 2006, against 48.5 in intermediate regions and 22.2 in predominantly rural cantons. In absolute terms most patent applications originated from the predominantly urban cantons of Zurich (870 in 2006) and Basel City (869). The cantons with the highest share of patent applications per inhabitant are the predominantly urban cantons of Basel City (469 per 100 000 inhabitants in 2006), Zug (428) and the intermediate canton of Nidwalden (298). Patent applications per capita in Switzerland are correlated with GDP per capita: richer cantons tend to have more patent applications. It has not been possible to establish the direction of causality of this relationship (Figure 1.20).

Figure 1.20. **Relation between patents and GDP per capita in Swiss cantons (2006)**

Source: Own calculations based on data from Statistics Switzerland and the OECD Patent Database.

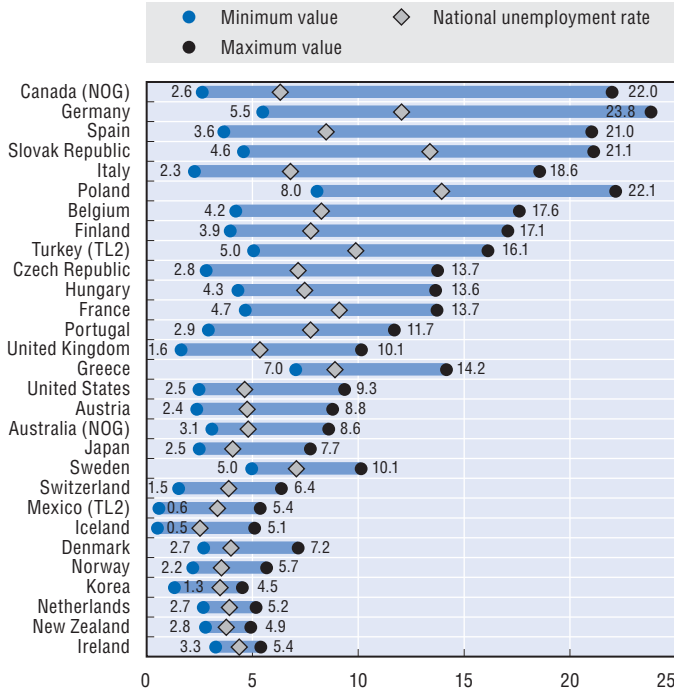
1.3.3. Relatively limited inter-regional disparities

The differences between regions in Switzerland are relatively small in comparison with OECD countries. Switzerland is one of the OECD countries with the lowest regional differences in employment growth, with a range from 0% to 2% (only Denmark and Belgium had smaller differences in this respect). Regional differences in unemployment rates ranged from 1.5% to 6.4%, which is relatively low compared to most OECD countries (Figure 1.21). The Gini index of TL3 regional unemployment rates in Switzerland is similar to the OECD average. Regional variation in long-term unemployment rates in 2006 was relatively low in Switzerland. Regional differences in (age-adjusted) mortality rates in Switzerland are among the lowest in OECD countries and the regional variation in the number of physicians per 1 000 inhabitants is one of the lowest among OECD countries.

1.3.4. Regional labour productivity as a main concern

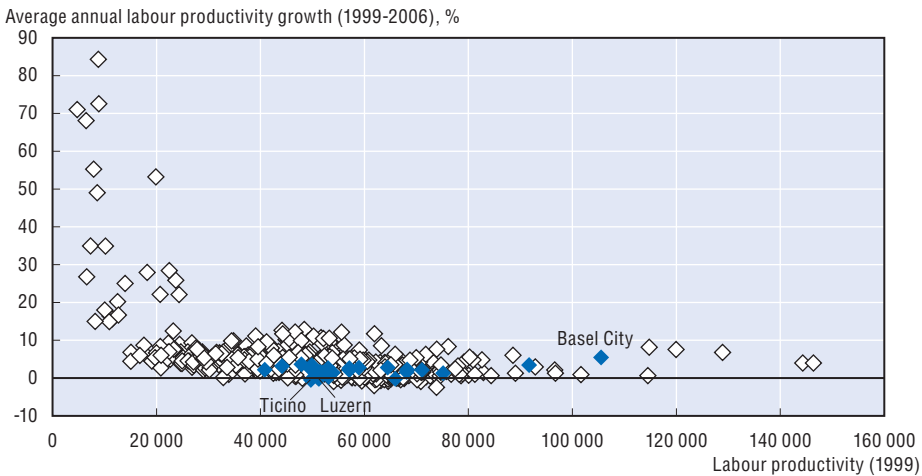
Despite strong performance on several economic indicators, several Swiss regions lag with respect to labour productivity growth. With the exception of the cantons of Basel City and Zug, most cantons in Switzerland show productivity growth rates that are relatively low in comparison with other OECD regions, even those with equivalent income levels. The growth in labour productivity over 1998-2005 was on average 2.2% in predominantly urban regions, against 1.7% in intermediate regions and 1.5% in predominantly rural regions, which is well below growth rates in many OECD regions (Figure 1.22). Although there is a

Figure 1.21. **Regional variation (TL3) in unemployment rates (2006)**

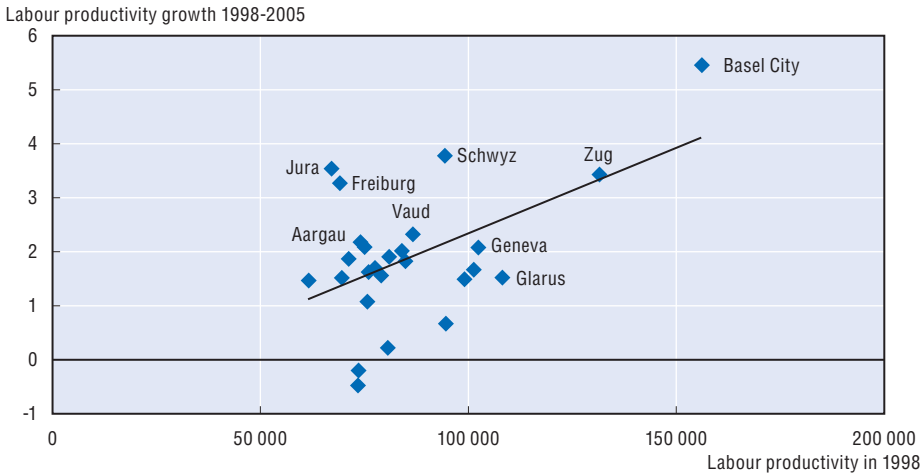


Source: OECD (2009), *OECD Regions at a Glance 2009*, OECD Publishing, Paris.

Figure 1.22. **Labour productivity (2006) and labour productivity growth (1999-2006) in OECD TL3 regions**



Source: Own calculations based on data from the *OECD Regional Database*.

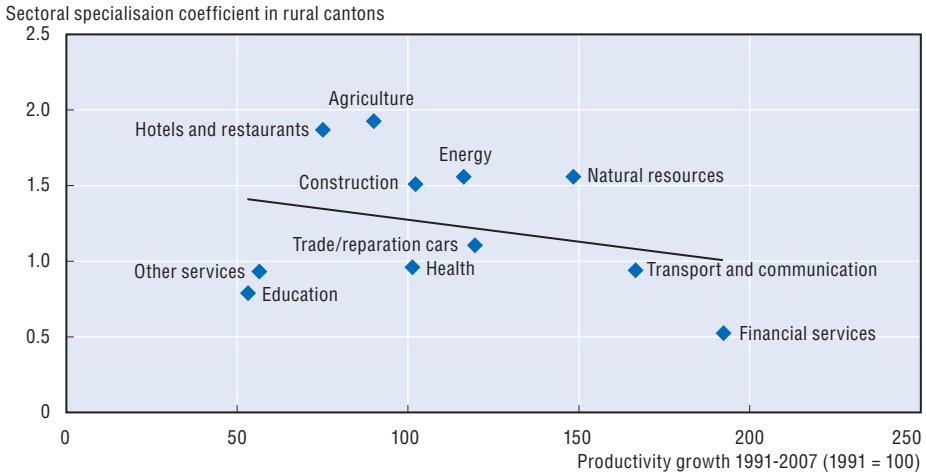
Figure 1.23. **Labour productivity: level and growth in Swiss cantons (1998-2005)**

Source: Own calculations based on data from Statistics Switzerland.

difference in productivity growth rates of 5.7 percentage points between the lowest and highest performing canton in Switzerland, this difference is not exceptional as compared to the variation in regional productivity growth rates in OECD countries.⁷

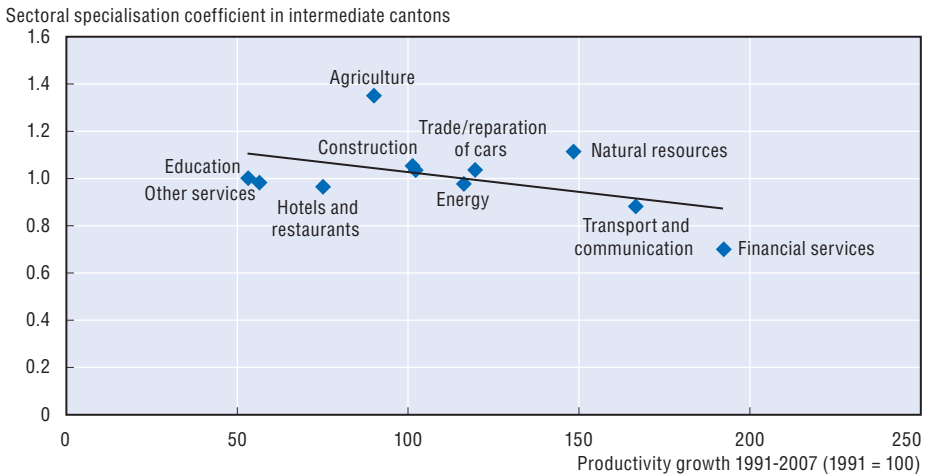
Part of the productivity growth differences between regions can be explained by different regional economic specialisations. Predominantly rural cantons have strong specialisations in some economic sectors that have witnessed low labour productivity growth (even productivity loss) such as agriculture and hotels and restaurants and under-representation in sectors with strong productivity growth such as financial services and transport and communication. These effects are to some extent compensated by specialisations in other sectors with high productivity growth (natural resources and energy) and under-representation in sectors that also had productivity losses, such as education (Figure 1.24). On the whole, however, there is a slight negative relationship between the economic specialisations of rural areas in Switzerland and productivity growth in these sectors. There is a similar negative relationship for intermediate regions: although their specialisation patterns are not the same as those of rural areas, intermediate regions tend to be more specialised in economic sectors with low productivity growth (Figure 1.25). The opposite is the case for urban areas: they are highly specialised in the sectors that tended to show the highest productivity growth over 1991-2007 (financial services, transport and communication), whereas they are under-represented in sectors with low productivity growth, such as agriculture, hotels and restaurants, and construction (Figure 1.26).

Figure 1.24. **Sectoral specialisation and productivity growth in rural cantons**



Based on data from Statistics Switzerland.

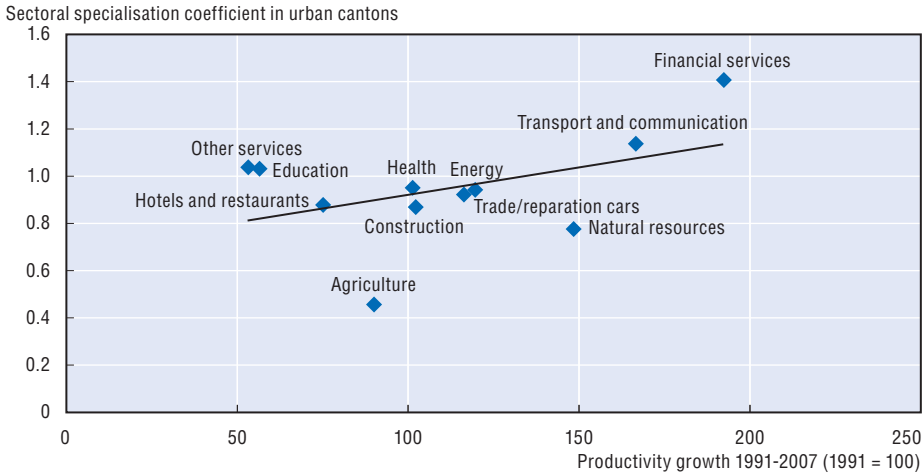
Figure 1.25. **Sectoral specialisation and productivity growth in intermediate regions**



Source: Based on data from Statistics Switzerland.

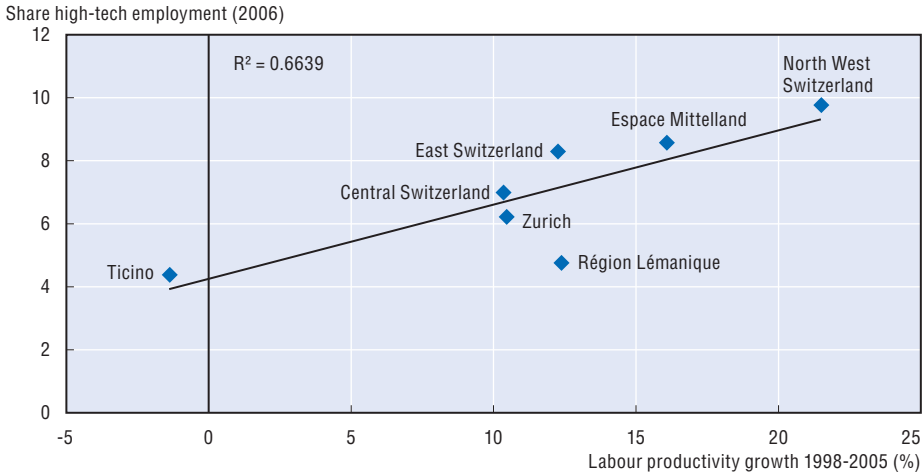
In addition, there is a strong correlation between the share of high- and medium-high-tech employment in 2006 and the productivity growth over 1998-2005 in the seven *Grandes Régions* (TL2 level) in Switzerland (Figure 1.27). In addition, there are marked differences in productivity growth patterns in

Figure 1.26. **Sectoral specialisation and productivity growth in urban cantons**



Source: Based on data from Statistics Switzerland.

Figure 1.27. **Productivity growth and high-tech employment in Swiss Grandes Régions**



Source: Own calculations based on data from Statistics Switzerland and the OECD Regional Database.

different economic sectors. The primary sector witnessed a productivity loss of 10.2% over 1991-2007, whereas the secondary sector grew more productive by 41.8% over the same period (16% for the tertiary sector). These differences are even larger on a lower sectoral aggregation level, with large productivity gains in

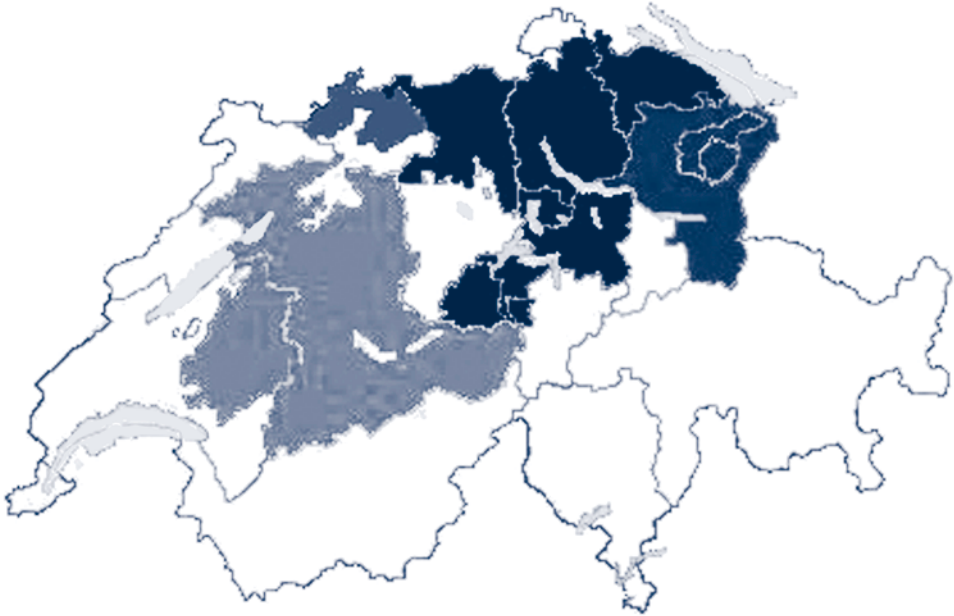
insurance (+104%), financial services (+80%), transport and communication (+66%) and the manufacturing industry (+59%). Large productivity losses took place in education (-47%) and hotels and restaurants (-25%). As these sectoral data are not disaggregated at cantonal level or the level of *Grandes Régions*, it is not possible to establish their inter-relation with productivity growth at cantonal level or at the level of *Grandes Régions*.

1.4. Inter-linkages between regions

Analysis of inter-linkages between regions can provide indications to what extent administrative boundaries reflect functional realities. These functional realities refer to the way people and firms behave in space. Functional regions are those areas in which most vital activities of people take place, such as living, working, consumption and production, as well as those of firms, such as where they get the inputs for their production process (such as labour, knowledge, materials and intermediary products). Functional regions can be linked by commuting patterns, trade flows, travel for recreation and entertainment. They could also be determined by shopping regions centred on malls or supermarkets, area served by branch banks, and ports and their hinterlands. Functional regions in many cases do not reflect administrative boundaries or inter-governmental (inter-cantonal or inter-municipal) co-operative arrangements (for example in economic promotion or other areas). For reasons of data limitations, four indicators of functional regions will be looked at in this review: i) commuting flows; ii) continuity in economic specialisations; iii) knowledge spillovers; and iv) business linkages. The datasets used in this analysis take the canton as unit of analysis. Although the analysis is thus not able to determine in great precision the boundaries of functional areas (as they might encompass whole cantons but only parts of other cantons), they give an indication of the extent to which functional regions in Switzerland cross cantonal boundaries. A very precise demarcation of functional regions would also be illusory as they would differ per criterion used.

1.4.1. Commuting

Commuting flows indicate the existence of at least three large metropolitan labour markets in Switzerland. Commuting forms one of the elements of the OECD definition for functional metropolitan regions: neighbouring regions that have a net commuting rate of 10% or higher are in this definition considered to be one functional labour market area. In 2000, Switzerland counted 12 cantons with a net commuting rate higher than 10% (that is higher than 10% or lower than -10%). They make up three different integrated labour markets: one around Basel, Bern and Zurich (Figure 1.28).⁸ Net commuting flows in the other cantons do not exceed the threshold of 10% and can thus be considered to contain one (or more) integrated labour markets.

Figure 1.28. **Functional labour market areas in Switzerland (2000)**

Source: Own calculations based on data from Statistics Switzerland.

This might be a question of time: the inter-cantonal commuting flows have increased between 1990 and 2000, raising the number of cantons with net commuting rates above 10% from 9 to 12. Commuting data for 2010 are not yet available, but might confirm the increased tendency of inter-cantonal commuting (Table 1.3). Although there are substantial commuting flows from Vaud to Geneva, these commuting flows are not large enough to qualify as a functional labour market area. If gross commuting rates would be taken into account, rather than net commuting rates, the picture remains the same. Outward commuting rates higher than 10% of the cantonal labour force occur in those cantons that also have net commuting rates higher than 10% (or more accurately, lower than -10%).

Commuting data also indicate poly-centricity and large cross-border flows. Although Zurich is still the main employment magnet, other urban cores, such as Zug and St. Gallen attract considerable number of commuters (Figure 1.29). Although the Aargau canton shows out-commuting to both Basel and Zurich, the Basel-Zurich area cannot be considered one functional labour market yet. In addition, the labour markets of major metropolitan areas in Switzerland are often integrated with those in neighbouring regions in other countries than Switzerland. Cross-border labour flows are particularly large in Ticino, Basel City

Table 1.3. **Net commuting rates in Swiss cantons**

	1990 (%)	2000 (%)
Zurich	9.8	11.8
Aargau	-12.5	-13.5
St. Gallen	0.3	0.0
Thurgau	-10.6	-13.2
Schwyz	-16.9	-19.2
Schaffhausen	-4.9	-7.5
Zug	13.4	17.8
Luzern	-2.5	-1.8
Solothurn	-5.7	-9.0
Bern	1.2	2.5
Basel City	41.5	43.2
Basel-Landschaft	-24.1	-20.1
Glarus	-1.8	-3.2
Graubunden	-1.3	-1.4
Vaud	-3.6	-3.5
Fribourg	-9.1	-12.2
Appenzell Ausserrhoden.	-14.6	-15.7
Nidwalden	-13.2	-17.7
Ticino	0.6	0.4
Geneva	7.8	8.9
Valais	-1.8	-4.0
Uri	-4.6	-9.2
Obwalden	-7.4	-10.5
Neuchâtel	0.0	-0.3
Appenzell Innerrhoden	-13.7	-16.6
Jura	-6.3	-8.7

Source: Own calculations based on data from Statistics Switzerland.

and Geneva, where cross-border workers represent more than 20% of the local labour force. In Ticino, there were around 44 400 cross border workers in 2009 (27% of labour force), mainly from Italy. In Geneva, the number of cross border labour flows was 53 000 (representing 22% of the labour force), mainly from France); and in Basel City the number of cross-border workers was 30 600 (20% of labour force), mainly from Germany. Other cantons with a substantial number of cross border workers are Jura (18% of labour force), Basel-Landschaft (15%), Schaffhausen (12%) and Neuchâtel (10%).⁹ From an international comparative perspective, these are very high shares of cross border employment: cross border employment rates in Europe tend not to reach 1% in most cases, with Luxembourg being one of the exceptions with a cross-border commuting of around 5% of total regional employment (Mathä and Wintr, 2008).

Figure 1.29. **Main commuting flows between cantons (2000)**

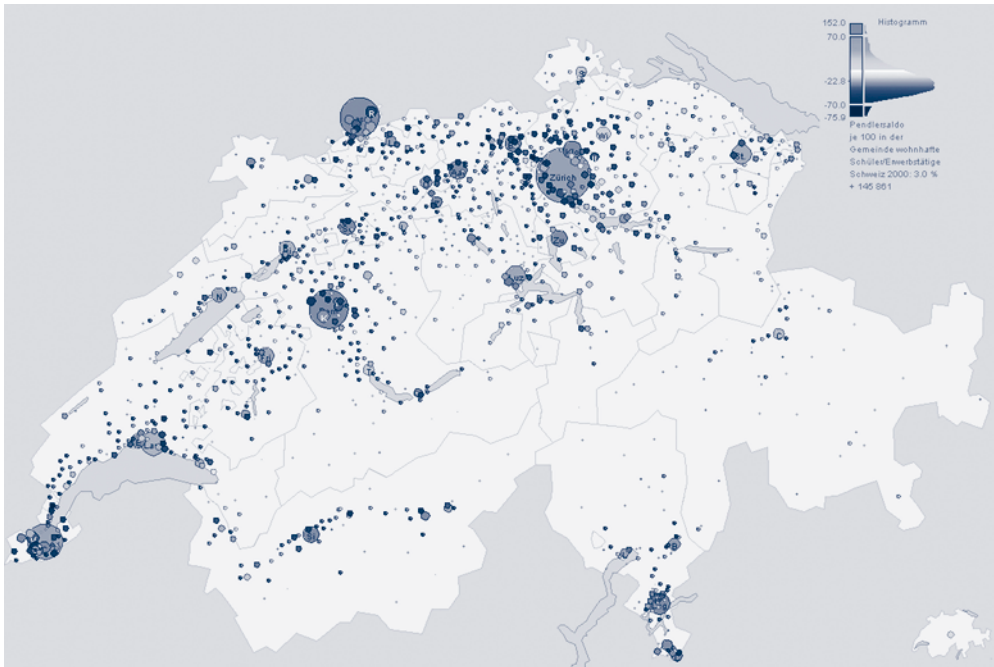
Source: Own calculations based on data from Statistics Switzerland.

Labour markets in the more remote rural and intermediate areas are more fragmented. In these cantons no substantial commuting flows from or towards other cantons can be identified. More detailed analysis, which is available on a variety of different territorial units in Switzerland (such as 175 districts, 140 spatial planning territorial units, 55 agglomerations, etc.), reveals a more nuanced picture. Some cantons, such as Graubünden, have sub-cantonal labour market areas, without a clear employment node that attracts commuters from throughout the canton or beyond (Figure 1.30).

1.4.2. Continuity in economic specialisations

Several cantons in Switzerland have overlapping economic specialisations, which sometimes follows the boundaries of the aggregation level of the *Grandes Régions*: e.g. all cantons in the *Grande Région* of North-West Switzerland are specialised in chemicals, pharmaceuticals and plastics, research and development and transport and communications, those in *Région Lémanique* are specialised in health, in *Espace Mittelland* in metallurgy¹⁰ and three out of five cantons in *Espace Mittelland* have very strong specialisations in electronic products and optical instruments. The economic specialisation of cantons in Eastern Switzerland and Central Switzerland is to a great extent similar: all

Figure 1.30. **Net commuting flows in municipalities in Switzerland (2000)**



Note: Figure Indicates the number of net commuters as share of working and school-going population.

Source: Statistics Switzerland.

cantons in these two *Grandes Régions* are specialised in agriculture and wood products.¹¹ In addition, five out of seven cantons in Eastern Switzerland are specialised in textiles industries and all cantons in Central Switzerland, with the exception of Zug, are specialised in construction.

At a more refined level of economic specialisation, several of these *Grandes Régions* in Switzerland also have specialisations in common, most notably Zurich, Espace Mittelland and Central Switzerland. Sectors are here defined by their size, specialisation and focus, using methodology and data from the European Cluster Observatory.¹² In Switzerland, economic specialisations in 12 different economic activities have been identified, most convincingly in financial services (Zurich), biopharmaceuticals (North-West Switzerland), transportation and logistics (Espace Mittelland), information technology (Zurich) and metal manufacturing (Espace Mittelland).¹³ The economic specialisations in any Swiss *Grandes Région* overlap with those found in other Swiss *Grandes Régions*. Striking similarities in economic specialisations can be found between Zurich, Espace Mittelland and Central Switzerland; they all have three economic specialisations in common with each other (finance and medical devices for all three; transportation and

logistics for Zurich and Espace Mittelland; production technology for Espace Mittelland and Central Switzerland; and aerospace for Zurich and Central Switzerland). This could indicate that these economic specialisations spread out over a wider area than defined by the boundaries of the seven *Grandes Régions*. Regions with relatively limited economic specialisations in common with other Swiss regions are Région Lémanique and Eastern Switzerland.

There is also a clear pattern of spatial specialisation in Switzerland when it comes to economic functions. Firm branches with senior management functions are mostly located in the cores of international cities such as Zurich and Basel. Branches with research and development functions are located in places with high densities of potential partners and competitors, for example the high-tech industry in the Jura region. Branches with distributive functions are located close to customers or in places with low costs and well-developed traffic access, such as many smaller agglomerations in Switzerland's Central Plateau. This functional specialisation pattern can also be observed in one single industry: *e.g.*, the financial services industry concentrates in city centres of larger cities, but in more suburban municipalities of metropolitan areas for back office activities. Within the financial services industry there is functional specialisation: Zurich largely dominates commercial and investment banking, whereas Geneva and Lugano focus more on private banking and asset management.

European regions with similar economic profiles as the different Swiss *Grandes Régions* could be considered their "competitors". Similarity of economic profile has been identified by listing all the European regions that have similar economic specialisations as Swiss *Grandes Régions*. In order to determine the real competitors, only the first ten European regions with the strongest export position in each economic specialisation have been taken into account. It is assumed that strong competition in export markets also indicates a strong European or international competition on the inputs (people, investments) for the economic activities.

Several *Grandes Régions* in Switzerland, especially Zurich, Espace Mittelland and Central Switzerland, have the same European "competitors". These three regions have the same European regions competing for talented people and investments in the same economic sectors: Tübingen, Karlsruhe, Freiburg, all having at least three economic specialisations in common with the three Swiss *Grandes Régions*. The clusters in which they compete are: production technology, medical devices and analytical instruments. Eastern Switzerland is to some extent connected to these three Swiss regions, in that it shares Stuttgart and Dortmund as main competitors with Espace Mittelland and Central Switzerland (Table 1.4). These European regions are in many cases neighbouring regions of the Swiss regions, which indicate the existence of cross-border functional economic regions.

Table 1.4. **European regions with similar sectoral specialisations as Swiss regions**

Zurich	Espace Mittelland	North-West Switzerland	Central Switzerland	Ticino	Eastern Switzerland
Tubingen	Tubingen	Lyon	Tubingen	Paris	Stuttgart
Karlsruhe	Karlsruhe	Antwerp	Karlsruhe		Dortmund
Freiburg	Freiburg		Freiburg		
Kiel	Plovdiv		Stuttgart		
	Stuttgart		Wurzburg		
	Dortmund		Kiel		

Note: The listed regions are all regions that have two or more clusters in common with the respective Swiss *Grandes Régions*. In this calculation only the ten regions with the strongest export position in each cluster are taken into account. The Région Lémanique does not have European regions that have two or more clusters in common, so is not indicated in this figure. The names for the regions in question are indicated by their largest city in order to increase the recognisability of the regions. The sectoral specialisations taken into account in these calculations are those that have three or two stars as provided by the European Cluster Observatory; these specialisations include: finance, medical devices, hospitality, transportation and logistics, metal manufacturing, production technology, analytical instruments, biopharma, power generation, tobacco, chemical products and IT.

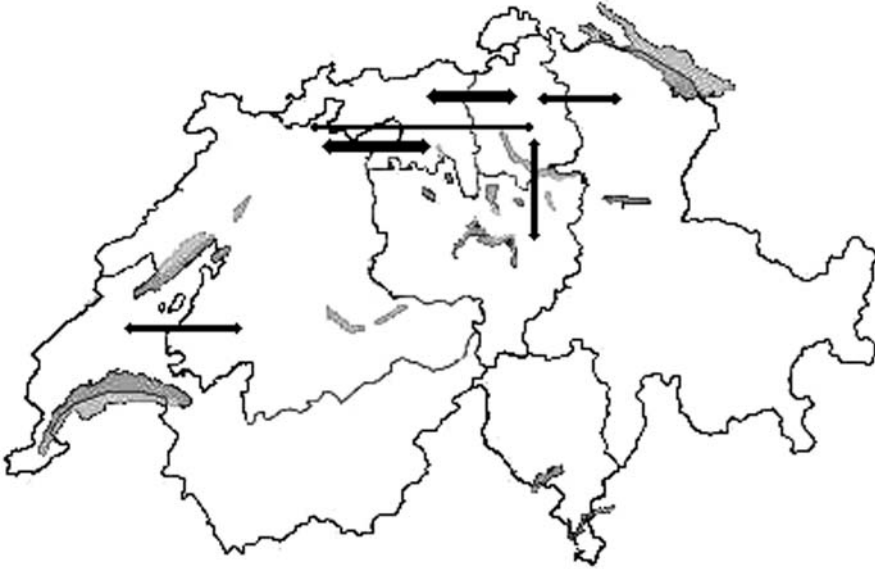
Source: Own calculations based on data from the European Cluster Observatory.

1.4.3. Knowledge spillovers

A way to capture inter-regional knowledge spillovers is through co-patent patterns. Co-patents are patent applications done by several actors, which can be located in the same region, another region in Switzerland, or regions in foreign countries. Co-patents indicate co-operation in the commercialisation of knowledge, and could thus indicate the links that exist between regions with regards to exchange of knowledge and innovations. Regional co-patent data for Switzerland are available at the level of the seven *Grandes Régions* in the *OECD Patent Database*, on which the analysis below is based.

Zurich and North-West Switzerland (in which Basel is located) have high shares (more than half) of co-patents with other regions in Switzerland. This is much higher than regions such as Ticino and the Région Lémanique (in which Geneva is located). Only 5% of the co-patents in Ticino in 2007 were with other regions in Switzerland; this was 26% in the Région Lémanique. Both of these regions have high rates of co-patents with actors within their region and with foreign regions; most extreme in Ticino (with 89% of co-patents within the region and 95% with foreign regions). In the Region Lemanique there are two times more intra-regional co-patents than inter-regional ones.¹⁴

Most of the inter-regional links through patents are with neighbouring regions. In absolute terms, the most important regional linkages through co-patents in 2007 were between North-West Switzerland and Zurich; North-West Switzerland and Espace Mittelland; and Zurich with Eastern Switzerland (Figure 1.31). This would suggest relatively high functional relationships between the larger metropolitan areas of Zurich and Basel. The

Figure 1.31. **Inter-regional co-patent linkages in Switzerland (2007)**

Source: Own calculations based on the OECD Patent Database.

links between Région Lémanique with Zurich and North-West Switzerland (Basel) are marginal, as are the links of Ticino with all other regions in Switzerland, and the links of Eastern and Central Switzerland with all regions other than Zurich.

Some regions in Switzerland (Région Lémanique and North-West Switzerland) have more patent links with foreign regions than with other regions in Switzerland. Their foreign co-patents represent 59% and 51% respectively of co-patents in their region. In absolute terms North-West Switzerland has the highest number of co-patents with foreign regions. Relatively lower shares of international co-patents were found in Central Switzerland, Espace Mittelland and Eastern Switzerland.

Foreign co-patent data confirm the existence of a large functional metropolitan area in northern Switzerland. The main foreign regions with which actors in three regions in Switzerland (Espace Mittelland, North-West Switzerland and Zurich) are linked through co-patents are remarkably similar: Baden-Wuerttemberg, Bayern and Alsace the dominant partner regions for all these three regions, making up between 30% and 60% of their foreign co-patents. They also show many similarities with the regions Central Switzerland and Eastern Switzerland, although these regions also have links with other regions. Swiss regions that show quite distinct co-patent patterns are Région Lémanique and Ticino. The Région Lémanique has more

partner regions with French regions, in particular with Rhones-Alpes, whereas the co-patent links of Ticino are dominated by the region of Bayern, with limited relations with a variety of other regions (Table 1.5). The similarity of co-patent patterns for many of the northern Swiss regions indicates that their international knowledge networks overlap to a large extent and could thus, also from this perspective be considered, one functional region.

Table 1.5. **Main foreign co-patent regions of Swiss regions; and their share of total foreign co-patents (2007)**

Région Lémanique	Espace Mittelland	North-West Switzerland	Zurich	Eastern Switzerland	Central Switzerland	Ticino
Rhone-Alpes (18%)	Baden- Wuerttemberg (23%)	Baden- Wuerttemberg (36%)	Baden- Wuerttemberg (18%)	Baden- Wuerttemberg (22%)	Baden- Wuerttemberg (19%)	Bayern (86%)
Colorado (5%)	Alsace (9%)	Alsac (20%)	Bayern (8%)	Vorarlberg (11%)	Bayern (15%)	Lombardia (2%)
Ile de France (4%)	Bayern (4%)	Bayern (4%)	Alsac (5%)	Liechtenstein (9%)	Rheinland-Pfalz (6%)	Baden- Wuerttemberg (1%)
Vlaams gewest (3%)	Nordrhein- Westfalen (4%)	South-East England (4%)	Nordrhein- Westfalen (4%)	Nordrhein- Westfalen (6%)	Washington (5%)	East Midlands (1%)
Franche- Compte (3%)	Mississippi (3%)	North Carolina (3%)	Colorado (4%)	Berlin (4%)	Alsace (4%)	Piemonte (1%)
Baden- Wuerttemberg (2%)	North Carolina (2%)	Mississippi (3%)	Vorarlber (3%)	Colorado (4%)	Nordrhein- Westfalen (4%)	New Mexico (1%)
Picardie (2%)	Franche- Compte (2%)	Colorado (2%)	Kanto (2%)	Bayern (3%)	Hessen (3%)	Nordrhein- Westfalen (1%)
Bayern (2%)	Rheinland-Pfalz (2%)	Rheinland-Pfalz (1%)	Washington (2%)	Idaho (3%)	South-West England (3%)	Jihozapad (1%)
South-East England (2%)	Colorado (2%)	Rhone-Alpes (1%)	Hessen (2%)	Provence- Alpes-Cote D'Azur (2%)	Missouri (3%)	Moravsko- slezsko (1%)
Ohio (2%)	Kentucky (2%)	Nordrhein- Westfalen (1%)	Schleswig- Holstein (2%)	Mississippi (2%)	Colorado (2%)	Israel (1%)

Source: Own calculations based on data from the OECD Patent Database.

1.4.4. Business linkages

An analysis of economic inter-linkages suggests that there are three to four functional metropolitan areas in Switzerland, plus a limited number of more remote areas. Economic inter-linkages are here expressed by similarities

of the regional business cycles. When business cycles have similar directions over a given time period in different regions (they grow or shrink to a more or lesser extent), these region's economies could be considered strongly inter-linked: that is, they are at the same point of the business cycle. They could be inter-linked because they belong to the same regional markets, because companies in these areas have supply chains that are inter-linked, or because they have similar sectoral profiles with similar vulnerability or resilience towards business cycles. Analysis of the business cycles, using data on average yearly cantonal income per capita over 1990-2005, learns that there are broadly four areas in which cantonal business cycles are highly similar: greater Geneva, greater Bern, greater Basel and greater Zurich (Figure 1.32).¹⁵ Annex A provides detailed figures of cantonal business cycles. The functional areas of greater Basel and greater Zurich are to a large extent inter-related, as illustrated for example by the similarities between business cycles of Basel City and Zurich, St. Gallen and Aargau. Basel City is however also inter-related with other cantons (Jura and Solothurn) that do not show similarities in business cycles with the cantons in greater Zurich. There are seven remaining cantons in which business cycles are relatively unrelated to each other.

Figure 1.32. **Functional areas in Switzerland based on economic inter-linkages (1990-2005)**



Source: Own calculations based on data from Statistics Switzerland.

1.5. Conclusion and implications for policies

The policy challenges with respect to regions in Switzerland are moderate in comparison with those in many OECD countries. The dichotomy between urban and rural areas in Switzerland is relatively limited: most people live in intermediate regions, cities are relatively small and rural areas are not as remote as in many other OECD countries. Although mountains impose certain geographical barriers, areas in Switzerland are not far removed from cities and towns. Inequality between regions is relatively limited and every area can be considered to have access to at least a fair amount of public and private services. Although the GDP per capita in urban regions is higher than in rural areas, its level in all Swiss regions remains very high in comparison with many OECD regions. There is no de-population going on from rural areas (nor from other areas in Switzerland for that matter) and the challenges of ageing are there but less acute than in several other OECD regions. All these elements suggest that various policy challenges that OECD countries face with respect to regional development, are absent in Switzerland.

A clear challenge for successful regional economic performance in Switzerland is labour productivity growth. Regions in Switzerland show considerable variation in this respect. Although some regions, notably Basel City, are very labour productive and continue to show labour productivity growth, several regions in Switzerland show productivity growth rates lagging behind those of many OECD regions. Improving the labour productivity growth of these regions forms the key for the sluggish labour productivity development of Switzerland as a whole. It will also help to overcome some of the regional economic divergence tendencies that have been taking place in the last decade, with some of the highest-income cantons showing the highest economic growth rates. Chapters 2 and 3 will focus on policies that would help to increase productivity growth rates.

Policies to improve regional labour productivity growth will have to take economic differences into account between urban, intermediate and rural areas. These areas have different economic specialisations, which are connected to their characteristics: like elsewhere in the OECD, urban regions tend to be specialised more in labour-intensive, space-extensive services, rural areas in resource intensive goods, agriculture and tourism; and intermediate regions in more traditional manufacturing sectors, such as textiles, food and machinery. These sectoral specialisations have an impact on regional productivity: urban regions tend to be specialised in sectors that are generally more labour productive. In addition to that, there is a clear correlation between high-tech employment, generally concentrated in urban areas, and high-productivity growth. Policies that attempt to increase productivity should take these regional differences into account; regions

would need an adapted diversification, in which comparative advantages are strengthened and in which stimulating new sectors would only make sense as long as it corresponds to existing economic assets and characteristics.

Functional economic relations have developed at a scale that goes beyond most current cantonal boundaries. Commuting, economic activities and knowledge spillovers all take place in an area that is in many instances larger than the canton. These are functional spaces based on economic inter-relations: for example, for many firms, Basel and Zurich are not separate economic areas but one resource pool of potential knowledge, partners and customers. This means that the different sub-national actors (municipalities, sub-cantonal regional areas and cantons) and their policies become increasingly inter-related. This has implications for inter-cantonal and other inter-governmental co-operation mechanisms that are needed, as well as the aggregation level of territorial units for regional policy intervention in Switzerland. These functional regions consist of several centres: they are poly-centric. One of the challenges of regional policies in Switzerland could be to exploit complementarities that are inherent features of this poly-centricity. In the case of Zurich and Basel, this could be the complementary gateway function: Basel for international rail connections, Zurich in the field of air travel. In this context, an essential prerequisite is the efficient transport infrastructure linking the various centres to one another, and linking smaller sub-centres to the international gateways of Zurich and Basel. Smaller agglomerations have to be viewed as complementary centres taking over functions that cannot be provided by cities such as Zurich or Basel. Regional policy in Switzerland could play a role in “managing” these complementarities in order to raise productivity growth in Switzerland as a whole. Chapter 2 will illustrate how regional policies could achieve this.

Notes

1. Région Lémanique consists of the cantons of Vaud, Valais and Geneva; Espace Mittelland consists of the cantons of Bern, Freiburg, Solothurn, Neuchâtel and Jura; North-West Switzerland consists of Basel City, Basel-Landschaft and Aargau; Eastern Switzerland consists of Glaris, Schaffhausen, Appenzell Ausserrhoden, Appenzell Innerrhoden, St. Gallen, Graubünden and Thurgau; Central Switzerland consists of Luzern, Uri, Schwytz, Obwalden, Nidwalden and Zug. Both Zurich and Ticino consists of the canton of the same name.
2. Predominantly urban regions are regions in which less than 15% of the population lives in municipalities with a population density of less than 150 inhabitants per km². Intermediate regions are regions in which 15% to 50% of the population lives in municipalities with a population density of less than 150 inhabitants per km². Predominantly rural regions are regions in which more than 50% of the population lives in municipalities with a population density of less than 150 inhabitants per km².
3. Predominantly urban regions are Geneva, Solothurn, Basel City, Basel-Landschaft, Aargau, Zurich and Zug. Intermediate regions are Vaud, Bern, Fribourg, Neuchâtel,

Schaffhausen, Appenzell Ausserrhoden, St. Gallen, Thurgau, Luzern, Schwyz, Nidwalden and Ticino. Predominantly rural regions are Valais, Jura, Glarus, Appenzell Innerrhoden, Graubünden, Uri and Obwalden.

4. Région Lémanique consists of the cantons of Vaud, Valais and Geneva, which are intermediate, predominantly rural and predominantly urban cantons respectively.
5. With the exception of the urban canton of Aargau that has a specialisation coefficient of 1.04 in wood products and is thus slightly more specialised in this sector than the national average in Switzerland.
6. This applies to 10 out of 12 cantons for financial services and 11 out of 12 cantons for transport and communication.
7. Over 1999-2006 the canton in Switzerland with the lowest productivity growth was Luzern (-0.2%) and the canton with the highest productivity growth was Basel City (5.5%).
8. The case of St. Gallen is a bit peculiar in this respect: although it has substantial out-going commuting flows to Zurich, it has incoming commuting flows from other cantons that are similar in size, resulting in net commuting flows that are below 10%. Considering the extent of the commuting flows, the labour markets of St. Gallen and Zurich could, however, be considered to be inter-linked.
9. The share of cross-border workers in the other cantons is limited, also in the cantons such as Zurich and Bern (0.8% and 0.3% of labour force respectively) (data from Statistics Switzerland).
10. With the exception of Fribourg whose employment share in the sector is slightly below the national average.
11. With the exception of Zug which is not specialised in agriculture, nor wood products.
12. The European Cluster Observatory shows the extent to which clusters have achieved specialised critical mass by employing measures of these three factors, and assigning each cluster zero, one, two or three “stars” depending on how many of the below criteria are met. The “size” measure uses the share of total European employment as an indicator and shows whether a cluster is in the top 10% of all clusters in Europe within the same cluster category in terms of the number of employees. Those in the top 10% will receive one star. The “specialisation” measure compares the proportion of employment in a cluster category in a region over the total employment in the same region, to the proportion of total European employment in that cluster category over total European employment. If a cluster category in a region has a specialisation quotient of two or more it receives a star. The “focus” measure shows the extent to which the regional economy is focused upon the industries comprising the cluster category. This measure relates employment in the cluster to total employment in the region. The top 10% of clusters which account for the largest proportion of their region’s total employment receive a star.
13. The clusters mentioned here are all three star clusters as defined by the European Cluster Observatory.
14. As applications for co-patents can be made with more than two actors, it is possible that co-patents are with actors both from the same region, other Swiss regions and foreign regions. For this reason the different shares do not add up to 100%.
15. Greater Geneva consists here of Geneva, Vaud, Fribourg and Valais; Greater Bern of Bern, Neuchâtel and Luzern; Greater Basel of Basel City, Basel-Landschaft and Jura; Greater Zurich of Zurich, Argau, Zug, Schaffhausen, Thurgau, St. Gallen, Appenzell Ausserrhoden, Appenzell Innerrhoden, Graubünden and Uri.

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