Monograph:
Kupiszewski, M., Schuler, M., Reichle, M. et al. (2000) Internal Migration and Regional Population Dynamics in Europe: Switzerland Case Study. Working Paper. School of Geography , University of Leeds.

School of Geography Working Paper 00/02

WORKING PAPER 00/02

INTERNAL MIGRATION AND REGIONAL POPULATION DYNAMICS IN EUROPE: SWITZERLAND CASE STUDY

Marek Kupiszewski[1,2]
Martin Schuler[3]
Marc Reichle[4]
Helen Durham[1]
Philip Rees[1]

[1]School of Geography
The University of Leeds
Leeds LS2 9JT, UK

[2]Institute of Geography and Spatial Organisation
Polish Academy of Sciences
Twarda 51/55
00-818 Warsaw, Poland

[3]Institut de recherche sur l'environment construit (IREC)
Ecole polytechnique fédérale de Lausanne (EPFL)
1001 Lausanne, Switzerland

[4]Office fédérale de la statistique
2001 Neuchâtel, Switzerland

PUBLISHED NOVEMBER 2000

For further copies contact the Working Paper Secretary,
School of Geography, University of Leeds, Leeds LS2 9JT
Telephone 0113 233 3300

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This paper reports on internal migration and regional population dynamics in Switzerland. It examines briefly the main population trends in the last century and then turns to more detailed examination of internal migration patterns and trends in three years, 1984, 1994 and 1996 and compares them. First, inter-cantonal migration is investigated in the context of the life course. On the communal level population change patterns and underlying in-, out- and net migration are examined. An attempt is made to link migration with such variables as population density, level of unemployment, prevailing language and with a functional classification of the urban system. The methodology used is the same as in a number of other studies, making the results as comparable as possible with the results of other studies of migration in European states (Rees and Kupiszewski 1999).

ACKNOWLEDGMENTS

This report is supported by the Economic and Social Research Council U.K. through research grant R000237685 on Internal Migration and Population Change in Europe: A Comparative Study with support from the Council of Europe (Directorate of Social and Economic Affairs, Population and Migration Division).

1. CONTEXT

This study, funded by a research grant of the Economic and Social Research Council on *Internal Migration and Population Change in Europe. A Comparative Study*, is part of the continuation of a research project on *Internal Migration and Regional Population Dynamics in Europe* commissioned to the School of Geography of the University of Leeds by the Council of Europe and the European Commission over the period 1995-1998. Within the ESRC project ten countries evenly distributed across Europe will be studied, adding to earlier ten case studies completed within the Council of Europe and the European Commission funded project, providing in total 20 case studies based on a unified methodology and analysing internal migration in each country using a fine flevel of geographical units. Most comparative studies of migration in Europe (se Rees and Kupiszewski 1999 for a review) have used relatively large regions, equivalent to level 2 in the NUTS (Namenclature les Usute's du Territaives Statistiŝtique). The aim is to produce results across countries that are as comparable as possible, keeping in mind differences in how migration is defined and in how migration data are acquired by National Statistical Offices.

The focus of this study and others in the series is on migration flows within Switzerland. This component of regional population transformation has been neglected in comparative, cross-national studies, compared with the attention that mortality, fertility and international migration components have received. This neglect probably stems from a lack of an international database of interregional flows. The Statistical Office of the European Communities (EUROSTAT) holds rudimentary information for larger regions (NUTS1, NUTS2) but only for European countries which are members of the European Union (EU). The people of Switzerland have regularly expressed a wish to remain outside the EU. This study thus demonstrates that there is a wealth of information about internal migration

collected and made avaialble by National Statistics Offices such as L'Office fédérale de al Statistique, Neuchâtel.

The aim of the Study is to describe the structure of internal migration in Switzerland (that is, between which places and types of places are migrants being exchanged, which places and types of places are gaining migrants on balance and which are losing) and the contribution of internal migration to regional population change compare with the other components. The structures which can be described depend critically on the spatial scale at which they are analysed. In general, we carry out the analysis at the finest scale for which data are available, because it is only at a small scale (e.g. communes) that we can see many of the processes of population redistribution expressed. The structure of internal migration also varies over time: the study seeks to establish what significant changes have occurred between the mid - 1980s and the mid - 1990s.

The paper is divided into the following further sections. In section 2 we review the recent history of internal migration and population change in Switzerland. Section 3 reviews the data and methods of analysis used to determine the structure of internal migration. Section 4 describes the pattern of internal migration at the larger, canton scale for different life stages (represented by broad age bands) while section 5 examines population change and its components for communes. The next four sections explore the relationship between population dynamics at the commune scale and structural classifications of communes: by position in the urban system in section 6, by population density class in section 7 and by unemployment band in section 8. In each case the dependent variable of interest is either population change as a whole or net internal migration. The next two sections of the report look at migration flows between rural and urban areas (section 9) and Switzerland's linguistic regions (section 10). The last section of the report summarises and discusses our principal findings.

2. POPULATION CHANGE IN SWITZERLAND AND THE ROLE OF INTERNATIONAL MIGRATION

In this section of the paper we review the history of population change in Switzerland over a century and a half, and pay particular attention to the role of international migration in the 20th century in contributing to the Swiss population.

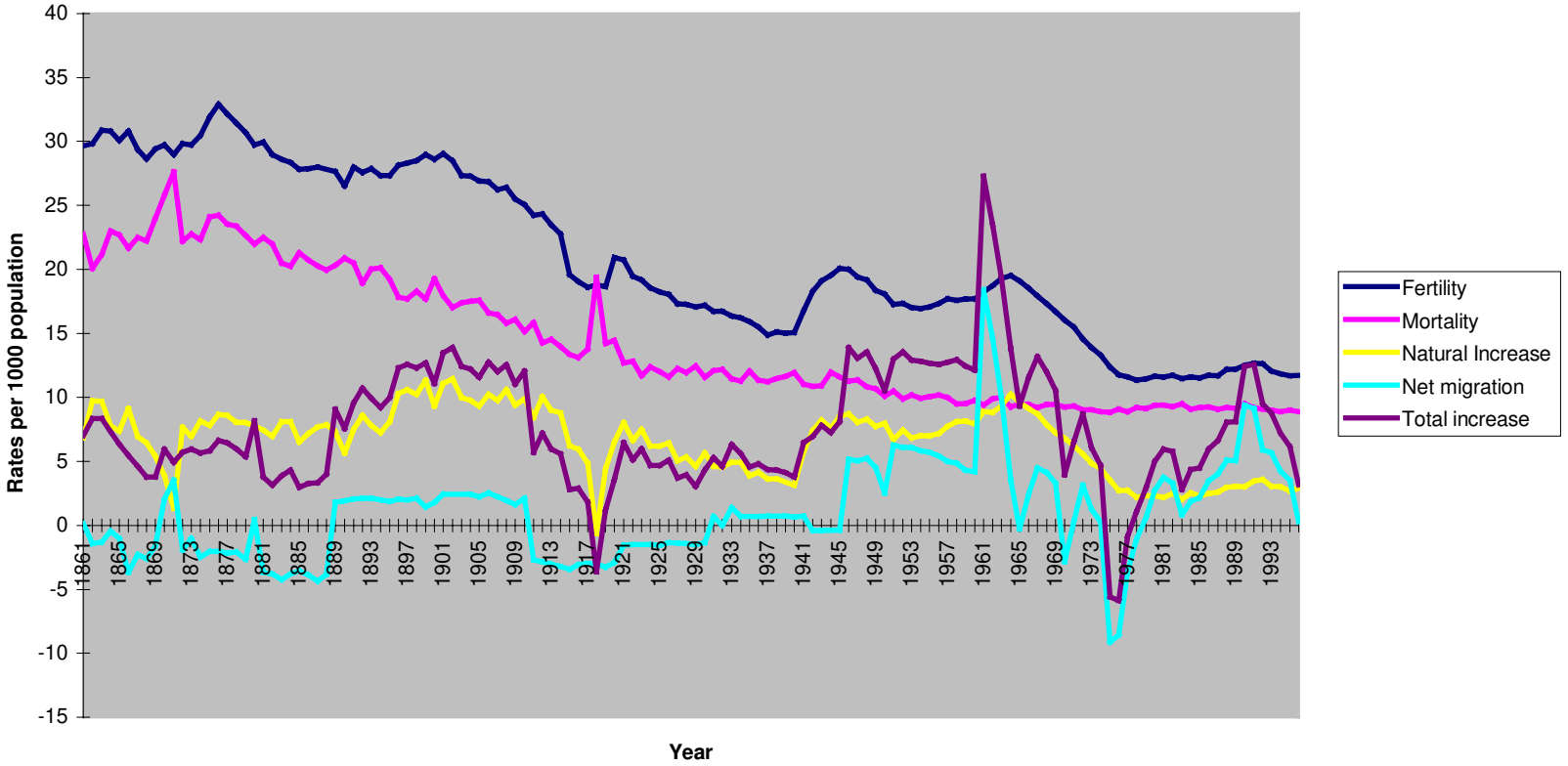
2.1 Mortality and fertility

Over the period from 1837 until 1997 the population of Switzerland more than tripled from 2.2 million to 7.1 million (Bundesamt für Statistik 1998). This growth is in line with population increase in other West-European countries. The 20th century population growth of Switzerland was remarkably regular and, unlike in many other European countries, not hampered by war-time losses. Most of the time in the second half of the 19th century the crude birth rate oscillated around 30 per thousand inhabitants and crude death rate exceeded 20 per thousand, producing a natural increase rate between 5 and 11 per thousand (Figure 1). The only exception was 1870-1871, which witnessed exceptionally high mortality, bringing down the natural increase to only 1.36 in the latter year.

The 1870s initiated a slow but steady decrease in mortality rates that was followed by reduction in fertility rates at the turn of century. The period of the First World War witnessed a rapid decrease in fertility and an increase in mortality, resulting in the only occasion in 1918 in a negative natural increase over 125 years -. The war period was followed by a post-war baby boom and a steady decrease of fertility, mortality and natural increase over the entire inter-war period.

During the Second World War Switzerland experienced higher than average natural increase, in particular in the second half of the War, being completely unaffected by the surrounding turmoil. Higher natural increase was the result of a rapid increase in fertility in early 1940s. The demographic boom, with high fertility and slowly declining mortality, lasted for over twenty years.

Figure 1: Mortality, fertility, net migration, natural increase and total increase rates (per 1000 population), Switzerland 1861-1996.



Source: Calot 1998.

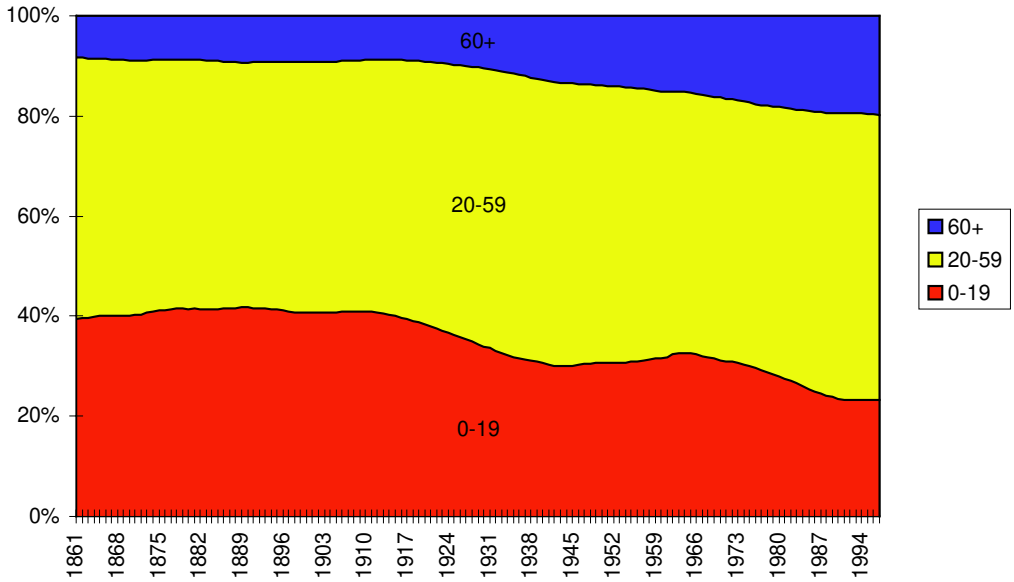
The decade from the mid-sixties to the mid-seventies witnessed decisive reduction of fertility and levelling out of mortality. These trends stabilised in the second half of the 1970s and persist until the present. Life expectancy increased remarkably in the 20th century, rising from 54.5 years for men and 57.5 for women in 1920-1921 (Frei, Wanner, Cotter 1998) to respectively 75.7 and 81.9 years in 1995 (Council of Europe 1997).

2.2 The Evolving age structure

Over the whole period after the First World War we observe the ageing of the Swiss population (Figure 2). The process has gained momentum in the last three decades (Figure 2, Table 1). In 1970 the population share of 0-19 years old stood at 31%; in 1996 it was only 23%. At the same time the share of those aged 65 and over increased from 11% to 15% and the share of aged those 80 and over, with special medical and care requirements rose from less than 2% to almost 4%, more than doubling. Figure 2 shows that the proportion aged 20 to 59 years has been remarkably stable over time. The shift in the age structures is due to the increase in the share of elderly population accompanied by simultaneous reduction of the share of the youngest age group.

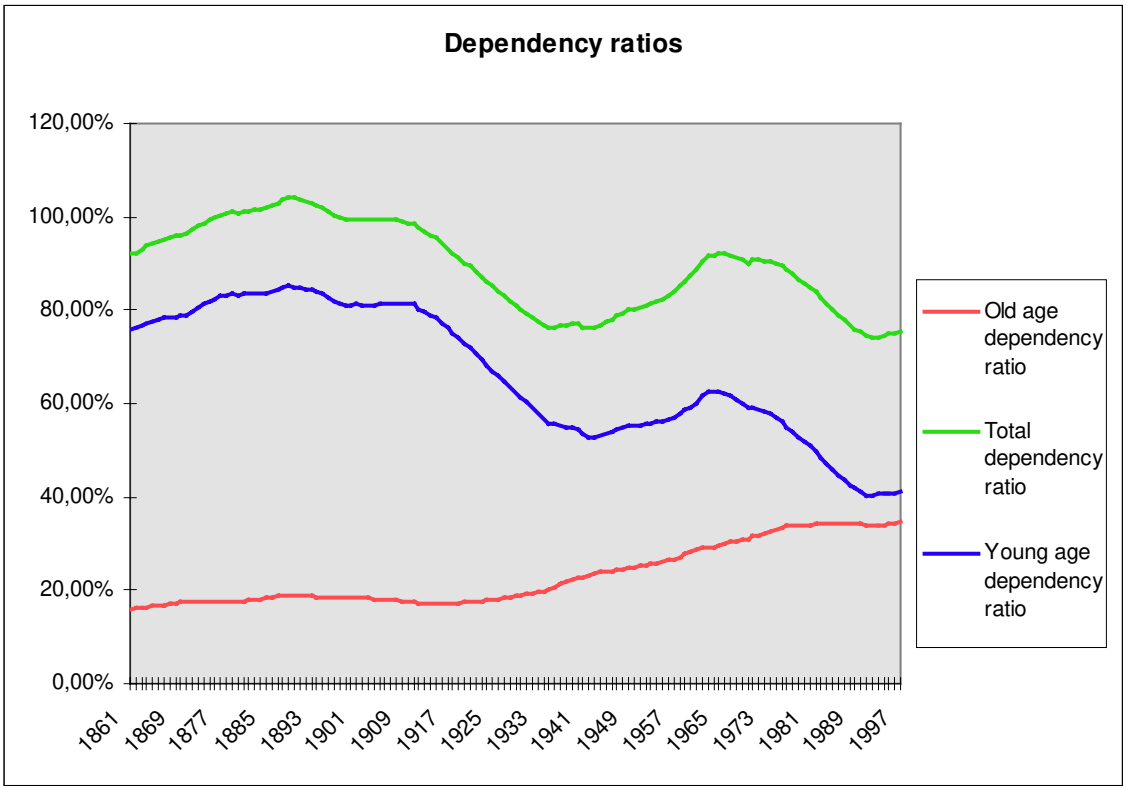
Total dependency ratio, the population aged 18 or under and 60+ the population of the aged 20 to 59 expressed as a percentage, has been following basically the wavy pattern of young age dependency ratio with ups at the turn of century and in 1970s and downs in the 1940s and 1990s (Figure 3). However the young age dependency ratio shows a decreasing tendency, whereas the total dependency ratio oscillates around a horizontal trend in the 20th century. This is due to a steady increase in the old age dependency ratio, which more than doubled from 17% during the First World War to 35% in 1997. As a result the old age dependency ratio approached the young age dependency ratio in the 1990s.

Figure 2: Evolution of age structure of Swiss population 1861-1996



Source: Calot 1998

Figure 3: Dependency ratios of Swiss population 1861-1996



Source: Calot 1998

Table 1: Evolution of the age structure of the Swiss population 1970-1996

Age groups	1970	1975	1980	1985	1990	1993	1994	1995	1996
					Population (1000s)				
0–19	1920.6	1870.4	1744.5	1617.9	1579.7	1621.6	1633.4	1646.9	1653.1
20–39	1843.0	1886.9	1914.2	2007.2	2107.0	2180.9	2181.5	2173.5	2151
40–64	1718.8	1757.2	1797.7	1941.8	2080.6	2147.1	2172.4	2197.7	2222.1
65–79	600.9	672.6	710.4	708.8	733.1	746.9	753.1	764.1	774.4
80+	109.8	133.9	168.5	209.0	250.2	272.0	278.5	280.1	280.7
Total	6193.1	6321	6335.2	6484.8	6750.7	6968.6	7019	7062.4	7081.3
					Percentage share				
0–19	31.01	29.6	27.5	25.0	23.4	23.3	23.3	23.3	23.3
20–39	29.8	29.9	30.2	31.0	31.2	31.3	31.1	30.8	30.4
40–64	27.8	27.8	28.4	29.9	30.8	30.8	31.0	31.1	31.4
65–79	9.7	10.6	11.2	10.9	10.9	10.7	10.7	10.8	10.9
80+	1.8	2.1	2.7	3.2	3.7	3.9	4.0	4.0	4.0

Source: Bundesamt für Statistik 1998.

2.3 The role of international migration in the population dynamics of Switzerland

For a long time, from the 15th century until 1888, Switzerland was a country of out-migration (Hoepflinger 1986; Huissoud, Schuler, Steffen 1996). At the turn of century the in-migration to Switzerland increased rapidly (Figure 1) due to an economic upturn, bringing the share of foreign nationals, mainly Germans and Italians, to the highest in Europe (Hagmann 1966). Censuses in 1900 and 1910 show respectively 11.6% and 14.7% of foreign nationals (Table 2). The World War I and post-War unrest forced many foreigners to return to their countries of origin. The inter-War period also resulted in the reduction of the foreign born population, bringing its share to 5.2% in 1941 (Hoepflinger 1986, Table 2).

The Swiss economy, untouched during the World War II, profited from post-War development. The late 1940s and 1950s witnessed an unprecedented economic boom fuelled by the reconstruction of war torn neighbours and the generous financial support of the Marshall Plan. This increased demand for labour, which was partly supplied from abroad. In this period Switzerland applied a policy of almost unrestricted access of foreigners to her

labour market. The only limiting factor was a principle of rotation, which did not allow a foreigner to work for a period of more than the ten years which was, in theory, necessary to apply for permanent residence (Leimburger 1992).

Table 2: The Foreign population in Switzerland according to national censuses (1860-1990) and ESPOP (1996)

Year	Immigrants (000s)	% of total population
1860	114	4.5
1870	152	5.7
1880	211	7.4
1888	230	7.9
1900	383	11.6
1910	552	14.7
1920	402	10.4
1930	356	8.7
1941	224	5.2
1950	285	6.0
1960	585	10.8
1970	1080	17.2
1980	945	14.8
1990	1245	18.1
1996	1369	19.3

Source: Hoepflinger 1986, Bundesamt für Statistik 1986, 1998.

At the end of 1950s the policy of rotation was abandoned and replaced with quota system. The Swiss economy, which at the time was experiencing an increase in the importance of the tertiary sector and transformation of blue collar workers into white collar workers, needed manual labour, especially in the construction and manufacturing sectors. Leimburger (1992) noted that the latter neglected modernisation of production processes and solved the need for increased production simply by employing more labour. The share of foreign population in 1960 almost doubled in comparison to the share in 1950). In 1970 it was nearly three times higher than in 1950. Since the mid-1960s Switzerland has operated an extremely regulated migration policy including cantonal quotas for new migrants which are roughly proportional

to the number of the already resident foreign population (Huissoud, Schuler and Steffen 1996). The oil crisis of 1973 sent many foreigners back home, but the turmoil of the late 1980s and early 1990s (the transition from communism in Central and Eastern Europe, in particular) brought large numbers of immigrants back to Switzerland, so that foreigners reached a record high 18.1% share of total population in the Census of 1990. Since then the share of foreigners increased further to 19.3% in 1996 (Table 2).

The rejection of the rotation policy at the end of 1950s opened a gate for permanent migrants, who were able to apply for naturalisation in Switzerland. This resulted in an increasing number of naturalisations over the period 1962-1977 reaching nearly 15 thousand in the last year of this period. In the 1980s the number of naturalisations reduced due to increasing attractiveness, for the holders of European Community passports, of unified labour market of the European Community, but also as a result of the ten years gap imposed between in-migration and the right to apply for naturalisation. As Switzerland has accepted, since 1991, the principle of double nationality, we observe a rapid growth of naturalisations reaching over 18 thousand in 1996. A majority of those taking Swiss citizenship are still Italians, but number of in-migrants from Turkey and former Yugoslavia successfully applying for Swiss citizenship is strongly increasing. The Swiss legislation for naturalisation is still quite restrictive and complicated; in fact, approval has to be obtained at the three institutional levels of the Confederation, canton and commune.

Apart from labour in-migration, Switzerland has experienced a sizeable inflow of asylum seekers. Between 1988 and 1997 some 237 thousand applications were lodged, making Switzerland the seventh largest receiver of asylum seekers in Europe, with a success rate in 1997 equal to 22% (UNHCR 1998).

On the other hand assimilation into Swiss society is facilitated by the fact that immigrants arriving in Switzerland are predominantly Europeans and from neighbouring countries, but

both the share of non-Europeans and the geographical spread of Europeans is rising (Table 3). In 1970 Italians accounted for over a half of the resident foreign population, but their share had reduced to slightly over a quarter in 1996. Similarly shares of Germans and Spaniards have dropped though not as much. In total the share of citizens of neighbouring nations (Italy, France, Austria and Germany) dropped from 74.5% in 1970 to 39.0% in 1996. At the same period of time the share of Yugoslavs increased to 29% of the foreign population, citizens of Portugal to 11% and Turks to 6%. The increase of the geographical spread of immigrants is evident as, in consequence, must be their cultural diversity.

The statistical data presented above shows that Switzerland is one of the countries whose demography is now profoundly dependent on the demographic behaviour of the non-native population. Not only the share of foreign population in Switzerland is very considerable - Leimburger (1992) noted that between 1945 and 1990 migration gains accounted for 36% of the increase of resident population - but also the natural increase of the local population differs substantially from that of the foreigner population. Switzerland witnessed decreasing, but still positive natural growth in the last two decades oscillating around 3‰. In 1996 the increase stood at 2.8‰, but for Swiss nationals the natural increase was 0.5‰ whereas for foreigners it was 12.8‰.

Over the entire post-war period the number of births exceeded the number of deaths by 1.6 million and net international migration added 1.1 million (Table 4). In two 5-year periods 1971-1975 and 1976-1980 the balance of net migration was negative, in the latter period cancelling as much as 81% of positive natural increase. In the 1980s and first half of the 1990s net international migration exceeded natural increase, with the former reaching 192% of the latter in 1986-90.

Table 3: The origins of the resident foreign population in Switzerland 1971-1997

	Year 1 January			
Origin	1971	1981	1991	1997
Austria	4.1	3.5	2.6	2.1
France	5.2	5.2	4.6	4.1
Germany	10.9	9.6	7.5	6.9
Italy	54.0	46.2	33.8	25.9
Portugal	0.3	1.2	7.6	10.9
Spain	11.2	10.7	10.4	7.2
Turkey	1.1	4.2	5.7	5.8
Yugoslavia	2.3	4.9		
Croatia				3.2
Federal Republic of Yugoslavia				22.4
Former Yugoslav Republic of Macedonia				3.3
European share among resident foreigners	96.5	94.0	92.0	90.9

Source: Authors' calculations based on the Council of Europe 1997.

Table 4: Fertility, mortality, natural increase, net international migration and total increase in Switzerland in quinquenial periods 1946-1995

Period	Births	Deaths	Natural increase	Net migration	Total increase
1946-1950	434697	248208	186489	102594	289083
1951-1955	417553	246739	170814	145686	316500
1956-1960	457501	254091	203410	123043	326453
1961-1965	538278	272274	266004	257631	523635
1966-1970	524021	283413	240608	68658	309266
1971-1975	438092	283662	154430	-26506	127924
1976-1980	364050	287022	77028	-62763	14265
1981-1985	371716	297908	73808	75783	149591
1986-1990	398289	304885	93404	178950	272354
1991-1995	422055	312822	109233	195933	305166
1946-1996	4449259	2853661	1595598	1061046	2656644

Source: Calot 1998.

Calot (1998) argues that the impact of international migration on the size of Swiss population is much higher when the natural increase of migrants is taken into account. Based on the assumption that both mortality and fertility of migrants is equal to those of Swiss population he estimates that in the post-war period the number of births from immigrant mothers equalled to 0.9 million whereas the number of deaths of immigrants equalled 0.13 million. This brings the post-war migration-induced population gains of Switzerland to 1.7 million, almost a quarter of 1996 population. Calot's assumptions are, as he himself noted, quite weak: in reality migrants are younger than resident population, therefore their mortality is lower and their fertility is higher than this of indigenous population. Therefore this calculation of Calot (1998) still underestimated the actual impact of foreigners on population change in Switzerland.

3. DATA EMPLOYED AND METHODS USED

In the previous section the national picture of population change in Switzerland was reviewed over the long term. To study the way in which the population of Switzerland is changing internally, requires use of detailed statistics on population distribution and internal migration. The nature of the data available in the 1980s and 1990s, the period of study, is described, and the methods for analysing change reviewed.

To date, Switzerland does not have a National Population Register, even if quite a lot of cantons and most communes (municipalities) have local registers. Outside of the Census, Swiss statistical authorities have been producing annual population data since 1874 (Office fédérale de la statistique 1996). In 1981 Switzerland introduced a system for the registration of demographic events, called ESPOP, that allows the construction of annual population accounts by community, based on the number of births, death, in-migrations and out-migrations. Migration statistics are handled on three geographical levels: intracantonal, intercantonal and international, and by sex, nationality and partially by age groups (Huissoud, Schuler and Steffen 1996).

3.1 Geographical units used

In this study two systems of geographical units, an upper and a lower, have been used. These two systems form a hierarchy: units at the lower level nest within units at the upper level. At the upper level of hierarchy we used data for 26 cantons. Figure 4 shows the boundaries of cantons and their German and French names. At this level data on inflows and outflows by age were available, allowing the analysis of migration by life course stage. We compared migration patterns by age for 1984, 1994 and 1996.

Figure 4: The cantons of Switzerland

The lower level of the hierarchy consists of the 2903 communes (their number is slightly decreasing from year to year). For communes only data on total inflows and outflows were available. The Federal Statistical Office of Switzerland (Office fédéral de la statistique) made data for the three years available to the authors. In addition use is made of the regional level as defined in *Historical statistics of Switzerland* (1996), mostly for descriptive purposes.

Data on unemployment by commune was available for 1995 and a functional classification of Swiss communes for 1990 (Joye *et al*, 1988, Schuler 1997) was recalculated to 1997 spatial division for use.

3.2 Mapping techniques and problems

Mapping techniques used in this study have been explained fully in Rees, Durham and Kupiszewski (1996). Below we specify some problems encountered applying these techniques to the Swiss data.

For mapping purposes we purchased the Swiss digital administrative boundaries map of communes, as it was in 1991 and 1995, from Megrin, an umbrella organisation of national cartographic institutes in Europe. We decided, however, to base all calculations on 1997 division, which we were able to reconstruct overcoming some problems described below.

During the recalculation of the 1984 and 1994 data to the 1997 administrative division we encountered a problem with matching some data from various sources with the administrative boundaries of communes in the canton of Thurgau. This canton is in the middle of a major rearrangement that started in 1993 and is due to finish in 2000; this involves mainly merging of communes. Thurgau consisted of 80 communes in 1990, many of which have been fragmented, reorganised, renamed once and recoded once or twice. It was extremely difficult to incorporate all the subsequent changes to produce a map of Switzerland that accurately represented the administrative structure at commune level in 1997. This means that for some

of communes of canton Thurgau the population density map and other maps showing intensity of various phenomena may be affected. There are some territories without inhabitants attributed to more than one commune. For these territories values of all variables have not been defined.

All sorts of changes than went on in 1996 and 1997, which we managed to identify, have been taken into account. With all the information we have received we could make maps which, with reservation specified above, match the 1984, 1991, 1994 and 1996 data to 1997 administrative boundaries of communes. It is essential, when studying spatial population change, to create a time series for harmonised geographical units. The creation of such a temporally consistent data series poses challenging problems in all previous case studies (Rees and Kupiszewski 1999). Relatively little attention has been given to this problem by national statistical offices until very recently (see Wilson and Rees 1999 and Blake, Bell and Rees 2000 for discussions of the issues).

3.3 Variables used

A number of variables and indicators are used in the study and described briefly below.

3.3.1 Population and population change data

Population count by commune comes from ESPOP and shows the number of people permanently inhabiting each commune. Therefore *de jure* population is obtained. The numbers were recalculated to 1997 administrative divisions for the purpose of the analysis of population growth and comparison of internal migration rates in the1980s and 1990s.

3.3.2 Migration

Migration data are registered by ESPOP. For communes in-migration and out-migration totals by sex were available, and for cantons in addition migration was classified by the age dimension. The data were collected for 1984, 1994 and 1996.

3.3.3 Births and deaths

Data on births and deaths registered by ESPOP. Numbers for 1996 have been used in this study for calculation of birth, death and natural increase rates.

3.4 Key indicators employed

3.4.1 Population density

Population density was calculated from 1996 count of population and digital administrative map of Switzerland obtained from Megrin. Population density may serve as an approximation of the degree of urbanisation. This measure was used for the sake of comparability with studies of other countries.

3.4.2 Unemployment

The measure of unemployment in Switzerland available to us differs from ones available in the majority of countries. We have data on the average number of unemployed in 1995 and total population calculated as an average of 1994 and 1996 total populations rather than economically active population, that is the population at risk of being unemployed. In order to estimate the share of unemployed in the economic active population, which is a standard measure, it was assumed that in all regions the share of economically active is the same as in Switzerland in 1995, that is 53%. Rates were recalculated accordingly.

3.4.3 Functional classification and rural – urban division

A functional classification of geographical units is a multivariate classification aimed at determination of the principal functions units perform within the spatial organisation of a country. Most commonly used classifications emphasise the characteristics of units on the urban to rural continuum and their relation to urban cores.

The 1997 classification of Swiss communes was based on classification by Joye *et* al. (1988) and Schuler (1997) and took into account administrative changes that occurred

between 1990 and 1998. For 1997 we updated the communes that have been reorganised since 1990 and assigned them new typology indicators.

To summarise, the typology is based on the administrative structure in 1990 with updates to the structure in 1997. The migration data is for 1996. The map boundaries are those for 1995 adapted to 1997. The accuracy of the data is therefore not perfect but the best we could do with the resources available. We believe that the trend of developments has been preserved, even if in a case of a particular commune the data may be somewhat inaccurate.

The functional classification has nine classes: urban centres, suburbs, rich, periurban, tourism, industrial, non-urban commuters, mixed and agricultural. In addition a classification into rural and urban communes has been prepared, which used the functional classification. The first four classes were reclassified as urban, the latter five – as rural. Few communes classified as rich better suit a rural description, but despite that they were classified as urban. Based on this simple assumption migration flows between the rural and urban Switzerland have been calculated.

4. THE PATTERN OF INTERNAL MIGRATION BETWEEN CANTONS THROUGH THE LIFE COURSE, 1984, 1994 AND 1996

While analysing regional patterns of migration in Switzerland, we have to be aware of the impact of the heterogeneity of geographical structure and the influence of the institutional and administrative delimitation of the cantons on the results obtained. There is a large difference in size between the cantons: the population of Zürich is almost 100 times that of Appenzell Innerrhoden; Graubünden, the largest canton is 194 times of the area of Basel-Stadt, the smallest one.

The correlation between administrative and functional units is often very limited. To justify this statement we examine the relation between the five biggest cities and agglomerations and the cantons to which these cities belong. The canton Basel-Stadt with the area of 37 km^2 corresponds to the historic town centre. The canton of Genève corresponds to part of the urban agglomeration; the full urbanised area extends into the canton of Vaud and France. The canton of Zürich, an urban one, is smaller than the agglomeration and smaller than the functional urban region, the commuting field of which extends over the whole of eastern Switzerland. Finally, Berne and Lausanne, towns of some 130000 inhabitants and agglomerations of 300000 inhabitants, are situated in larger cantons with important rural parts. These misadjustments between the administrative boundaries, which are mostly inherited from history, and the changing shapes of functional regions, governed by a mixture of overlapping processes, such as industrialisation, commuting or infrastructure development, makes the analysis of intercantonal migration a difficult task.

In central and eastern Switzerland, cantons are comparatively small and partly in the zone of influence of Zürich, resulting in intercantonal migration intensity higher than elsewhere. Part of migration is of local type. The southern and south-western cantons, except Genève, are quite large and heterogeneous, containing both rural and urban populations.

Swiss cantons are substantially differentiated with varying official languages, confessions, cultures, geographic features and degree of urbanisation. All these characteristics may have some impact on migration patterns and should be taken into account at the stage of interpretation. Table 5 shows the basic characteristics.

A number of issues relating to this variation are important.

- What are the effects of linguistic difference on migration? There are four linguistic areas of very different extent: 17 German monolinguistic cantons, 4 French monolinguistic regions, 1 Italian monolinguistic canton, 3 mixed French/German and one three-language canton (Graubünden).
- What are the effects of geographical differentiation, i.e. the difference between the highly urbanised Moyen-Pays (Mittelland) with all important centres of the country and the mountainous regions of the Jura and Alps?
- One of the old cultural divisions of the country is the confessional cleavage, which cuts across the linguistic pattern. Is religion still a factor that orients migration flows?
- Finally, Switzerland underwent a very early process of industrialisation, but this took place in only a part of the country (Jura, central and eastern part of Mittelland); this old economic structure still has some influence on demographic evolution.

Some of these issues will be dealt with in this study.

Table 5: The diversity of Swiss cantons

Canton German/French (Italian) name	Code	Relationship to natural (physical) regions	Official languages	Historic confession	Big towns	Medium size towns	Important rural parts	Neighbour countries
Zürich/Zurich	ZH	Moyen-Pays	German	Protestant	Zürich	Winterthur		D
Bern/Berne	BE	Jura, Moyen-Pays, Alpes	German, French	Protestant	Bern	Biel/Bienne, Thun		
Luzern/Lucerne	LU	Moyen-Pays, Alpes	German	Catholic		Luzern		
Uri/Uri	UR	Alpes	German	Catholic				
Schwyz/Schwytz	SZ	Moyen-Pays, Alpes	German	Catholic				
Obwalden/Obwald	OW	Alpes	German	Catholic				
Nidwalden/Nidwald	NW	Alpes	German	Catholic				
Glarus/Glaris	GL	Alpes	German	Mixed				
Zug/Zoug	ZG	Moyen-Pays, Alpes	German	Catholic		Zug		
Freiburg/Fribourg	FR	Moyen-Pays, Alpes	French, German	Catholic		Freibourg/Fribourg		
Solothurn/Soleure	SO	Jura, Moyen-Pays	German	Mixed		Solothurn, Olten		F
Basel-Stadt/Bâle-Ville	BS	Plaine du Haut-Rhin	German	Protestant	Basel			F, D
Basel-Landschaft/Bâle-Campagne	BL	Plaine du Haut-Rhin, Jura	German	Protestant				F, D
Schaffhausen/Schaffhouse	SH	Jura, Moyen-Pays	German	Protestant		Schaffhausen		D
Appenzell Ausserrhoden/Appenzel Rhodes Extérieure	AR	Alpes	German	Protestant				
Appenzell Innerrhoden/Appenzell Rhodes Intérieure	AI	Alpes	German	Catholic				
St. Gallen/St-Gall	SG	Moyen-Pays, Alpes	German	Mixed		St.Gallen		D, A, FL
Graubünden/Grisons	GR	Alpes	German, Romansch, Italian	Mixed		Chur		FL, A, I
Aargau/Argovie	AG	Moyen-Pays	German	Mixed		Aarau, Baden		D
Thurgau/Thurgovie	TG	Moyen-Pays	German	Mixed		Frauenfeld		D
Tessin/Tessin (Ticino)	TI	Alpes, Plaine du Pô	Italian	Catholic		Lugano, Bellinzone		I
Waadt/Vaud	VD	Jura, Moyen-Pays, Alpes	French	Protestant	Lausanne	Vevey, Yverdon		F
Wallis/Valais	VS	Alpes	French, German	Catholic		Sion		F, I
Neuenburg/Neuchâtel	NE	Jura, Moyen-Pays	French	Protestant		Neuchâtel, La Chaux-deFonds		F
Genf/Genève	GE	Moyen-Pays	French	Mixed	Genève			F
Jura/Jura	JU	Jura	French	Catholic				F

Note: Underlined canton names are the form used in the text.

It is well known that migration intensities differ profoundly according to the age of migrants. Rogers and Castro (1981) provided a model based tool of description of migration intensities and consequently a possibility to compare various age specific curves of migration intensities. Studies conducted later (Rees and Kupiszewski 1999) demonstrated that not only do intensities differ very much, but also directions of flows change substantially with age. This section aims to identify the driving forces behind the net migration patterns in 1984, 1994 and 1996. We will attempt to highlight the differing patterns of migration by life-course stage and cantons both attractive and unattractive for migrants at various stages of life. Migration flow data by five year age groups obtained from the Swiss Office fédérale de la statistique for the twenty six cantons have been summed into six broad age groups, which correspond to different life course stages. The broad age groups are as follows:

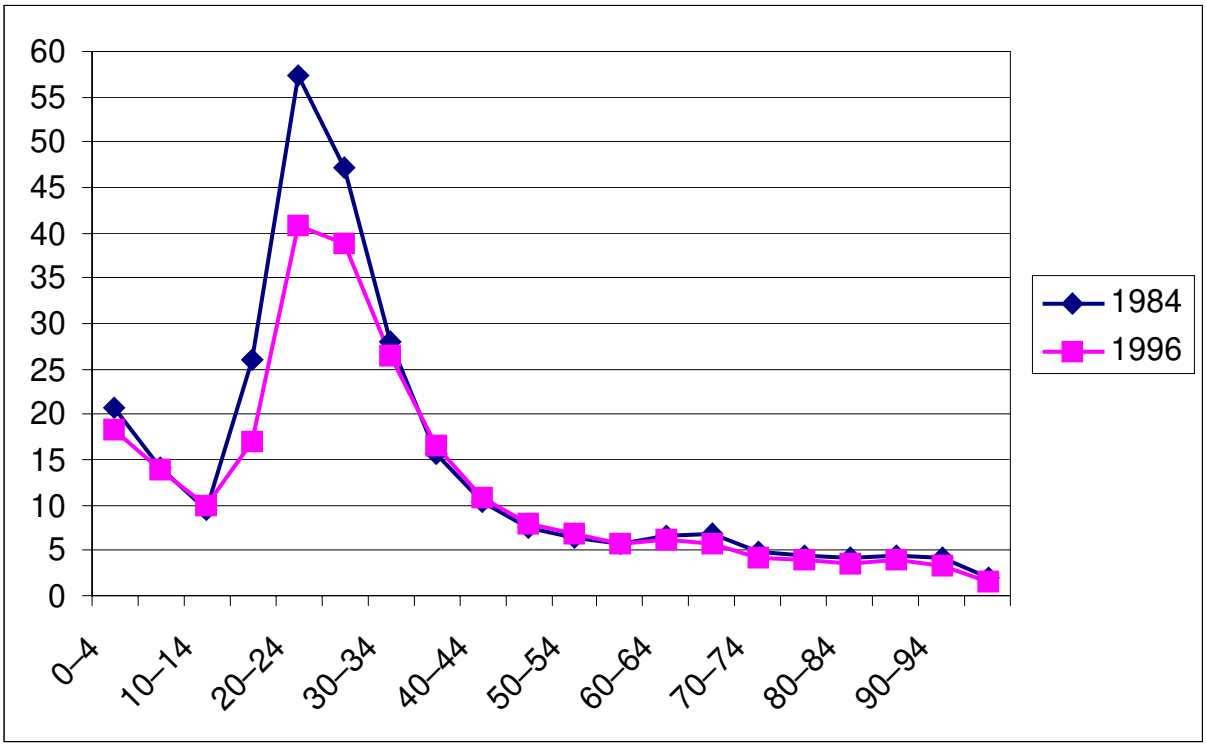
Ages	*Description*
0-14	the childhood ages
15-29	the adolescent and young adult ages
30-44	the labour force and family ages
45-59	the older labour force ages
60-74	the retirement ages
75 and over	the elderly ages

This age grouping is used for analysis of in-migration, out-migration and net migration. This particular definition of broad age groups is used to maintain the comparability with other studies of migration. It should be noted, however, that the age group 15-29 contains population with very different migration patterns: at the age 15-22 inflow to urban agglomeration with tertiary education institutions is predominant. In the age group 23-29 out-migration to suburban and periurban areas is more popular.

To introduce the analysis of migration we will examine the changing pattern of the intensity of migration by age. Figure 5 shows migration rates in 1984 and 1996 for the total

Figure 5: Migration intensity by age, Switzerland 1984 and 1996

Source: Based on data provided by the Swiss Office fédérale de la statistique.



population of Switzerland by 5-year age groups with the oldest age group being 95+. Apparently the shift in migration patterns occurred not only in terms of numbers of migrants, but also in terms of migration intensity in various age groups. The 1996 pattern of migration intensities by age is much flatter than the one of 1984. This is due to very radical decrease in migration rate in the 20-24 age group, from 57 migrants per 1000 to 41 migrants per 100, that is to 71% of 1984 level. Also in the next age group a drop to 82% of 1984 level was observed. Slight reductions in migration intensity between 1984 and 1996 were observed also in the age groups 0-9 years, 30-34, and for aged 55 and more. That means the decrease in the migration numbers between 1980s and 1990s was mostly generated by lowering of migration in the most mobile age groups and to a small extent because lower mobility of children and older people. This drop was partially offset by the increases in migration in the age groups from 35 to 54 and 10-14 years. This translates into small increases in migration of families either in their thirties, migrating with teenage offspring or in the life cycle stage of reduction of family size, when grown up children become independent and separate from their parents.

Internal migration depends in part, on the fluctuating level of economic activity. The intensity of migration decreased during the 1970s until 1983; then increased between 1986 and 1992, since when it has been decreasing. Intercantonal migration has undergone a long term historic diminution since the 1960s. This decrease was strong between 1981 and 1993, with a stable period in the mid 1980s (Huissoud, Schuler, Steffen, 1996). A variety of reasons contributed to this decrease: ageing of population, regional policy measures, decentralization of education system, better possibilities for long distance commuting due to highway construction and an efficient railway system. Perhaps also the desire to remain living in or near the place of origin increased.

Intracantronal migration between communes, largely of residential nature, showed a long term increase. Between 1981 and 1984 it was slow (Huissoud, Schuler, Steffen, 1996). The

major reason of this increase was due to suburbanization and periurbanization processes in urban areas, but was also associated with the growth in smaller urban units.

The following sections will focus on the analysis of intercantonal in-, out- and net migration patterns in 1984, 1994 and 1996. Migration rates have been mapped and in order to compare the changes of migration intensities by age and region, 1996 rates were expressed in percentage of 1984 rates (Table 6).

Table 6: In- and out-migration 1996 rates expressed in percentage of 1984 rates

A. In-migration rates

Canton	In-migration						
Age	0-14	15-29	30-44	45-59	60-74	75+	Total
Zürich/Zurich	99	93	110	90	747	73	88
Bern/Berne	137	69	93	95	93	63	76
Luzern/Lucerne	74	66	97	110	58	76	75
Uri/Uri	80	76	79	110	68	0	77
Schwyz/Schwytz	105	100	98	113	84	86	96
Obwalden/Obwald	84	75	74	76	78	51	74
Nidwalden/Nidwald	84	91	87	84	69	34	81
Glarus/Glaris	79	81	86	127	96	48	83
Zug/Zoug	106	100	113	104	79	61	95
Freiburg/Fribourg	116	110	119	126	109	76	109
Solothurn/Soleure	104	82	122	135	95	88	95
Basel-Stadt/Bâle-Ville	73	94	103	110	97	59	88
Basel-Landschaft/Bâle-Campagne	96	77	116	112	70	72	84
Schaffhausen/Schaffhouse	78	75	81	85	60	62	72
Appenzell Ausserrhoden/ Appenzel Rhodes Extérieure	89	89	94	98	91	85	89
Appenzell Innerrhoden/ Appenzell Rhodes Intérieure	108	74	80	114	80	219	86
St. Gallen/St-Gall	90	83	89	93	75	62	82
Graubünden/Grisons	74	64	68	72	60	56	63
Aargau/Argovie	98	76	104	121	86	93	87
Thurgau/Thurgovie	84	85	87	102	87	77	84
Tessin/Tessin (Ticino)	77	34	70	77	234	390	60
Waadt/Vaud	74	49	91	84	128	278	64
Wallis/Valais	89	68	95	146	145	126	85
Neuenburg/Neuchâtel	85	80	96	112	69	68	82
Genf/Genève	229	46	160	195	137	178	79
Jura/Jura	90	70	93	155	101	91	84

Table 6: Continued

B. Out-migration rates

Canton	Out-migration						
Age	0-14	15-29	30-44	45-59	60-74	75+	Total
Zürich/Zurich	106	77	81	95	99	118	81
Bern/Berne	128	93	91	79	71	86	86
Luzern/Lucerne	85	70	133	148	103	80	85
Uri/Uri	73	81	76	111	82	66	76
Schwyz/Schwytz	95	89	106	107	93	77	89
Obwalden/Obwald	97	80	91	100	88	77	81
Nidwalden/Nidwald	78	79	82	91	80	77	74
Glarus/Glaris	123	100	113	101	99	83	102
Zug/Zoug	91	88	102	95	95	69	85
Freiburg/Fribourg	106	94	108	104	95	88	93
Solothurn/Soleure	89	78	101	123	88	47	83
Basel-Stadt/Bâle-Ville	98	80	117	131	95	97	93
Basel-Landschaft/Bâle-Campagne	87	80	102	97	72	79	80
Schaffhausen/Schaffhouse	99	87	106	104	91	73	89
Appenzell Ausserrhoden/ Appenzel Rhodes Extérieure	102	95	105	107	105	92	95
Appenzell Innerrhoden/ Appenzell Rhodes Intérieure	135	50	109	204	55	103	76
St. Gallen/St-Gall	86	84	93	95	94	94	82
Graubünden/Grisons	78	66	88	72	65	71	68
Aargau/Argovie	88	78	114	137	95	76	87
Thurgau/Thurgovie	88	82	95	90	87	85	82
Tessin/Tessin (Ticino)	81	52	88	128	73	78	70
Waadt/Vaud	92	54	152	126	94	65	81
Wallis/Valais	121	65	115	99	80	201	78
Neuenburg/Neuchâtel	70	68	74	81	71	72	68
Genf/Genève	85	39	108	133	133	133	65
Jura/Jura	137	83	112	90	78	72	93

4.1 Internal in-migration between cantons 1984, 1994 and 1996

4.1.1 Total in-migration rate by cantons

Total in-migration in 1984 (Figure 6) was on the level between 10 and 42 *pro mille*. Highest in-migration rates were observed in smaller cantons nearby big centres: Basel-Landschaft and Solothurn (linked to Basel-Stadt), Zug, Schwyz, Schaffhausen and Thurgau (linked to Zürich), Nidwalden and Obwalden (linked to Luzern) and Appenzell AR (linked to St.Gallen). High in-migration occurred in tourist cantons, such as Graubünden in which seasonal occupation forms an important part of local economy.

Low in-migration rates are observed in all the bigger cantons, such as Berne, in which the intra - cantonal migration is higher, and in cantons in geographical or linguistic isolation: first of all in Ticino, but also the urban Genève and some remote mountainous cantons without tourism (Uri and Glarus in the Alps, Jura). Industrial regions have generally a lower in-migration rate (Jura, Neuchâtel, St.Gallen). In cantons close to the border, we can see an effect of substitution of intercantonal migration by international migration (Genève, Basel, Ticino). These quite significant differences may express the economic situation, but also of the geographic and institutional characteristics discussed earlier.

In 1994 and 1996 (Figure 7 and Figure 8) the general level of internal migration was lower (the rates for 1996 varied from 6.7 to 37.2 per thousand), but the general structure is still the same. The lowest levels of in-migration in 1996 were observed in very diverse cantons: Uri, Ticino and Berne. The only region in which the in-migration rate increased between 1984 and 1996 was Fribourg (Table 6). Otherwise the decrease was uniform in all cantons. The most significant decreases were observed in large cantons: Italian speaking Ticino, touristic Graubünden and French speaking Vaud but also in much smaller Luzern and Obwalden or Schaffhausen.

Figure 6: Age-specific internal in-migration rates by canton in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 7: Age-specific internal in-migration rates by canton in 1994
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 8: Age-specific internal in-migration rates by canton in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

4.1.2 In-migration in family and older labour force age groups

Family in-migration in 1984 mostly repeats the pattern of total in-migration (Figure 6). The intensity of inflows in the 30-44 year age group is almost the same as the values for total population. The older labour age group is characterised with much lower mobility. These groups are not only an important part of the whole migration potential, but the direction of the migration is quite clearly defined: periurban regions. Particularly attractive are cantons surrounding Basel, Zürich, Luzern and St.Gallen.

A decade later (Figure 7 and Figure 8) the intensity of in-migration reduced, but in general spatial patterns remained very similar. Closer examination of Table 6 reveals some peculiarities of the changes: in canton Genève in which the in-migration rate in 1996 equalled 160% of the 1984 level for 30-44 years age group and 195% for 45-59 years age group. For the former age group increase in in-migration was visible in entire Suisse du Nord-Ouest and in Fribourg. Decreases exceeding 25% of initial values occured in Ticino and Graubünden. The increase of in-migration rates in the older of the two age groups was particularly strong in Jura and also visible in a number of cantons with old industrial tradition and in suburban or periurban rings surrounding Basel and Zürich.

4.1.3 In-migration in retirement and elderly ages

Retirement in-migration (ages 60-74, Figure 6) in 1984 was lower than for younger age groups. The geographical pattern is influenced by the size of the canton (big cantons as Berne, Vaud or Zürich have the lowest rates), bur also by the geographical structure of the country: Pre-Alpine regions and the Ticino usually are attractive for people in retiring age. On our map we can identify high in-migration to the cantons of Suisse centrale and of Suisse orientale, especially Graubünden. In the 1990s (Figure 7 and Figure 8) the general level of in-migration rate of elderly people is lower than ten years before and the differences between

cantons are smaller. But there is a clear geographic structure: the in-migration into French speaking cantons and Ticino is higher than ten years before, while the intensity of in-migration in the German part of Switzerland is lower.

In terms of rates, the highest values are still observed in the small cantons such Zug and Appenzell Ausserrhoden, both near bigger towns and offering quality amenities for elderly population.

Comparison of changes of in-migration rates in Table 6 shows increasing popularity of French, except Neuchâtel, and Italian speaking cantons and decreasing popularity of German speaking cantons, except Appenzell Ausserrhoden, a popular destination for elderly population (Lalive d'Épinay, Brunner, Albano 1999a). The most profound decrease in in-migration rates, to well below a half of 1984 level could be seen in Nidwalden, Uri and Glarus cantons, all with poor accessibility to large service centres and amenities. Some explanation to this East-West divide is offered by Lalive d'Épinay, Brunner, Albano 1999b, who suggest that different social policies in French and German speaking cantons underlie spatial concentration patterns of the oldest.

4.1.4 In-migration in the adolescent and young adult ages

This age group has the highest mobility among all age groups (Figures 6, 7 and 8). On the cantonal level they are equally controlled by regional and geographical patterns as by the large urban agglomerations. Most likely it is a scale effect: some university cities such as Berne and Zürich are capitals of large cantons, which have lower than expected in-migration rates. Cities, which themselves form small cantons, such as Basel Stadt or Genève experienced very different fortunes, the latter having high, the former low in-migration rates. Small cantons, such as Zug, Nidwalden, Schaffhausen, Appenzell Ausserrhoden and Appenzell Innerrhoden experienced high in-migration as did large canton of Graubünden,

possibly due to temporary unskilled jobs in the tourist industry. Lower in-migration rates could be observed in 1994 or 1996 than in 1984. In the 1990s clearer division between higher in-migration North-East and lower in-migration South-East of the country has been formed. Decreases in the in-migration rates (Table 6) covered all cantons except Fribourg and Schwyz. The strongest decline, to less than 50% of 1984 level, was observed in 1996 in Genève, Vaud and Ticino.

4.2 Out-migration 1984, 1994 and 1996

All remarks referring to the interpretation of in-migration rates fully hold when out-migration rates are considered.

4.2.1 Total out-migration

Cantons with the highest out-migration rate - between 25 and 50 *pro mille* - are small antons located in regions Suisse du Nord Ouest, Suisse du Nord Est, Suisse Centrale and the canton Graubünden (Figure 9, Figure 10 and Figure 11). The lowest out-migration, 8.6 *pro mille*, is observed in canton Ticino. The patterns are stable over time, but the out-migration observed in 1996 is more even and lower than observed in 1984. Only out-migration from the region of Glarus is at the same level as 12 years earlier. There is a degree of similarity in the patterns of in- and out-migration.

Figure 9: Age-specific internal out-migration rates by canton in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 10: Age-specific internal out-migration rates by canton in 1994
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 11: Age-specific internal out-migration rates by canton in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

4.2.2 Out-migration in family and older labour force age groups

Out-migration pattern in these age groups varies. Children's migration intensities are split into North - Eastern Switzerland (roughly speaking Suisse du Nord-Ouest, Suisse du Nord-Est, Suisse Centrale and the canton of Graubünden) with higher out-migration and remaining part of the country (South - Western Switzerland) with lower out-migration (Figure 9, Figure 10 and Figure 11). Family and older labour force age groups have quite uniform intensities of out-migration except from small cantons which have high rates, what may be explained by their size. Ticino exports fewer migrants than other cantons. "Higher" and "lower" have different meanings for different age groups. For children higher means between 25 and 50 persons per thousand and lower means as little as 5.8 per thousand (canton Ticino in 1996). Parents of these children, mostly in the age brackets between 30 and 44 years, are more mobile, but the spatial patterns for this group of migrants is similar to that for the age group 0-14. The older labour age group (44-59) presents a slightly modified spatial pattern, with lowest out-migration in the south of Switzerland (region Hautes Alpes except Graubünden) and Berne canton.

The patterns observed are rather stable over time. Comparing 1984 (Figure 9) and 1996 (Figure 11) maps we may note that for the youngest age group only 5 cantons changed class. The highest increases were observed in Jura, Berne and Valais (Table 6). The largest decrease affected cantons Neuchâtel and Uri. Only 3 cantons changed their class for the younger labour force age group. A rapid increase in out-migration from Vaud should be noted. The most unstable out of the three is the older labour force age group with 7 changes of classes. Appenzell Innerrhoden experienced a high increase in out-migration propensity.

4.2.3 Out-migration in retirement and elderly ages

The elderly population is characterised by low out-migration rates, decreasing with age. For the retirement age group (60-74 years) in 1984 (Figure 9) lower rates (below 5 per thousand population) can be seen in south-western part of Switzerland (regions Suisse Romande, Berne, Hautes Alpes except Graubünden and canton Luzern). In 1994 (Figure 10) and 1996 (Figure 11) the area with low out-migration rates expanded to cover Graubünden and Uri (1994). The oldest age group has the lowest out-migration rates, below 5 per 1000 in almost all cantons except region Suisse du Nord-Est and canton Graubünden and Eastern part of Suisse Centrale (North-East Switzerland). In both age groups Appenzell Ausserrhoden is a notable exception because of high (between 10 and 25 per thousand) out-migration rate. The patterns are stable over time: comparison of maps for 1984 and 1996 shows that in the retirement age group only 4 cantons change classes between years. This number increases to 5 for the eldest age group. Large changes of rates in the oldest age group in Solothurn and Valais cantons (Table 6) should be attributed to statistical variability due to the low number of events.

4.2.4 Out-migration in the adolescent and young adult ages

This age group is characterised by the highest out-migration intensity. In 1984 in all cantons except Ticino it exceeded 25 *pro mille* (Figure 9), in Eastern Switzerland (Suisse du Nord-Est, Graubünden) and in some centrally located cantons (Zug, Schwyz, Nidwalden, Obwalden) exceeding 50 *pro mille*. In the 1994 (Figure 10) and 1996 (Figure 11) the intensity of out-migration reduced slightly in comparison to 1984. The reduction was higher in a belt of cantons constituting the Swiss Western and Southern frontier, in Luzern and in Appenzell Innerrhoden. Special attention should be drawn to the Genève canton where the drop was

substantial, to 39% of 1984 value. The temporal stability of migration in this age group was the lowest of all age groups analysed.

4.3 Net migration 1984, 1994 and 1996

The net migration rate, despite being a much criticised concept (Rogers 1990), is a very useful measure of the balance of in- and out-migration. Positive and negative values of net migration express the impact of life course and the economic performance of regions on migratory decisions of population. To examine the former the net migration rates have been mapped for each year and each age group separately. In addition to maps of age-specific net migration, total net migration in 1984, 1994 and 1996 have been mapped to provide a point of reference (Figure 12, Figure 13, Figure 14).

4.3.1 Total net migration

Net internal migration pattern in Switzerland is rather flat, with net migration in cantons only rarely exceeding ±5 persons per thousand per year. In 1984 there were 10 cantons with positive and 16 with negative net migration rates. The process of moderate concentration was more apparent when the nature rather than number of cantons is taken into consideration. In 1984 the main gainer was canton Zug, the main losers were cantons Basel-Stadt and Uri, one of the largest cities and a relatively inaccessible canton respectively. Cantons with large towns, except Vaud, and most of the alpine cantons, except Ticino, experienced negative net migration. The Cantons of Vaud and Berne are much larger than Lausanne and the city of Berne, resepctively, so little can be said on the relationship between migration and concentration or deconcentration processes based solely on this map.

Figure 12: Age-specific internal net-migration rates by canton in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 13: Age-specific internal net-migration rates by canton in 1994
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 14: Age-specific internal net-migration rates by canton in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

In the 1994 and 1996 we can talk about redistribution rather than concentration with the equal number of gaining and losing cantons in 1996. In 1994 and 1996 two cantons: Zug and Basel-Stadt kept their positions of leaders of in- and outflow respectively. Canton Fribourg was another gainer, but the level of gains fluctuated over time. Some cantons, such as Appenzell Innerrhoden and Appenzell Ausserrhoden noted positive net migration in 1984 but turned to negative in 1994 and 1996. Other cantons, such as Genève, Glarus and Graubünden turned from negative net migration in 1984 to positive in 1990s. There is some instability of the patterns of migration, suggesting that fluctuations have relatively strong impact on overall process of population redistribution.

4.3.2 Net migration in family and older labour force age groups

Migration of children is closely linked to migration of their parents. Families prefer to bring up children in a pleasant and healthy environment with good access to educational facilities. Older working age couples gain more independence as their careers stabilise and their children become adults. In the case of Switzerland this change of condition has a strong impact on migration preferences. Net migration patterns are very similar in all these three age groups: the childhood age group and the younger and older labour force age groups. In 1984 (Figure 12) out of five cantons with the largest urban agglomerations, four (Genève, Berne, Basel and Zürich) experienced negative net migration in all three age groups. Canton Vaud was exceptional, having positive net migration. Almost all remaining cantons, with the exception of industrial cantons Neuchâtel and Jura for both labour force age groups, witnessed positive net migration. Family-related migration (0-14 and 30-44 age groups) show more varied migration patterns than the age group 45-59.

Ten years later, in 1994 (Figure 13), the pattern of net migration for both family age groups was slightly modified, with canton Genève gaining population, and regions Jura and

Hautes Alpes, bar canton Ticino losing people. Net migration in a number of other cantons turned from positive to negative. There were no substantial changes in migration patterns between 1994 and 1996 (Figure 14). In the 1990's some small differences could be observed in those aged 45-59. Regions with positive net migration expanded, covering regions Hautes Alpes, Suisse du Nord-Est, part of Suisse Centrale (Southern and Eastern Switzerland) and cantons Jura, Basel-Land, Solothurn and Fribourg. As indicated earlier this age group shows low mobility.

4.3.3 Net migration in retirement and elderly ages

Migration decisions in these two age groups are governed by different considerations. At the retirement ages the need to commute to work disappears what makes it possible to reassess the geographical location one wishes to live in. For the elderly ages the main consideration is accessibility to amenities and quality medical and care services. In 1984 (Figure 12) migration of population aged 60-74 years results in net transfers of population to eastern and some centrally located cantons of Switzerland. Most attractive were Appenzell I.R., Obwalden, Nidwalden and Schwyz, rural cantons with good accessibility to urban centres and to amenities. In 1990s there was a marginal shift in patterns with expansion of areas with positive net migration. Berne and Suisse du Nord Ouest have been persistently losing population.

The migration patterns of elderly people (aged 75+) differ to some extent from those of population at retirement age. In 1984 the elderly population favoured the Suisse Romande region, the northern cantons of Suisse Centrale and Obwalden regions, Suisse du Nord-Est and cantons Valais, Basel-Land and Aargau. Urban cantons of Zürich, Genève and Basel as well as the remote canton of Uri lose people in the oldest group. There are some fluctuations in the migration patterns over time, but in the 1990s the overall picture is quite similar.

4.3.4 Net migration in the adolescent and young adult ages

Adolescents and young adults are the most mobile groups in society. Migration for education, search for first jobs and marriages are all factors which form a powerful set of incentives to relocate in space. The preferred directions of migration differ from those of population in other age groups. Large cities with ample educational and cultural opportunities and numerous jobs attract people from smaller, remote and provincial areas. This statement is fully supported by evidence from Switzerland. In 1984 (Figure 12) four cantons, Zug, Zürich, Ticino and Vaud, gained more than 5‰ and as many as 13 cantons, mostly located in Suisse Centrale, Suisse du Nord-Est, Hautes Alpes (Eastern and Central Switzerland) and in Jura lost more than 5‰. The attraction of largest agglomeration is overwhelming: in 1984 all five cantons with the largest cities had positive net migration in this age group. Out of these five four (Vaud is the exception) had negative net migration in all other age groups. This migration pattern is very persistent over time, with one notable exception: canton Ticino in 1990s moved to the group of cantons moderately losing population. Analysis of this age group was deliberately left till the end of this section of the paper, as their pattern of migration is completely different from patterns of migration in all other age groups.

5. POPULATION CHANGE AND MIGRATION BY COMMUNE 1984-1996

5.1 Population change in Swiss communes 1984-1996

Figures 15 and 16 display the population change over the decade 1984-1994 and over years 1994-1996 respectively. There are some significant differences in these maps. The former shows nearly universal increase of population with only 255 communes in which population decreased. The decrease is observed either in small communes with low density of population scattered around the country or in large cities, but there is several exceptions, such as Genève, Davos or Sion.

In the short period in the mid 1990s the picture was a bit different (Figure 16). The number of communes losing population increased to 834, over three times more than in the decade 1984-1994. Cantons in the north of the country as well as Alpine communes (Berner Alpen and Glarner Alpen) were most affected. Suisse du Nord Est, and cantons Genève, Obwalden and Nidwalden were prosperous in demographic terms. Clearly in this short period not only large cities were losing population, as it was visible in the decade 1984-1994, but also their immediate hinterland of suburban communes surrounding them. This, in particular, can be observed in a cluster of communes east of Berne, and around Biel, Solothurn, Zürich, Schaffhausen or Basel and to lesser extent around eastern cities of St.Gallen and Chur. The process of population reduction in suburban areas cannot be identified in the French speaking part of Switzerland: Genève and surrounding communes were growing, Lausanne itself lost some population, but the ring of communes around it was quite prosperous, as was Neuchâtel. Thun (both the core and the ring increasing population) and Luzern (the core decreasing, the ring increasing population) differ from the pattern of depopulating urban agglomerations. More detailed analysis of the 1996 pattern is offered in section 5.4.

Figure 15: Population change in Switzerland by size of communes, 1984-1994
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 16: Population change in Switzerland by size of communes, 1994-1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

5.2 In- and out-migration patterns in 1984 and 1996

In-migration intensities by communes in 1984 and in 1996 are displayed respectively in Figures 17 and 18. In 1984 communes with high levels of in-migration, 75 or more per thousand, concentrated in Mittelland, in particular along northern shore of Lac Léman and the Luzern - Baden axis, west of Zürich. Also in central and eastern part of Graubünden canton in-migration is high. A low level of in-migration was observed in regions Valais, Uri and western Graubünden. These patterns were basically preserved in 1996, but show more territorial expansion of high in-migration communes. The Lac Léman clusters expands to Fribourg and Genève cantons. Communes with high in-migration form a ring around Zürich. The number of communes with high in-migration in 1996 has risen in comparison to 1984 and the number of communes with low in-migration, below 25 persons per thousand, dropped by more than one third.

Out-migration rates for 1984 and 1994 are shown in Figure 19 and Figure 20 respectively. Geographical patterns of high and low out-migration are similar to those of high and low in-migration. The intensity of out-migration has, as expected, increased between 1984 and 1996. The next section discusses how these patterns translate into migration induced population growth in communes.

5.3 Net migration patterns by commune 1984, 1994 and 1996

Overall population change can be easily decomposed into two components: natural change and net migration. In 1984 in Switzerland majority of communes (1930) experienced positive net migration and 964 experienced negative net migration (Figure 21). The geographical distribution of net migration is a mosaic, but it is possible to establish some patterns: concentration of communes with negative migration covers communes in the Alps, in particular in Uri canton and in Jura.

Figure 17: Internal in-migration rates by communes in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 18: Internal in-migration rates by communes in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 19: Internal out-migration rates by communes in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 20: Internal out-migration rates by communes in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Most Swiss cities experienced migration loss, but among rings surrounding large cities only the ring surrounding Zürich experienced also negative net migration (1984) while the city itself noted small positive net migration. In all other large cities rings of communes surrounding them either consisted of a mixture of gaining and losing communes (Winterthur, Schaffhausen, Basel, Genève, Berne) or of gaining communes (Chur). This suggests that the process of migration was in a sense bimodal, with population deconcentration focusing on two types of communes: large cities and Alpine communes. Positive net migration in rings of communes surrounding large cities suggests that in 1980s a process of urban deconcentration was in motion.

Two maps (Figure 22 and Figure 23) show the net migration rate by commune in 1994 and 1996. The spatial patterns are very much like those identified in 1984, modified with only minor changes. One of them is the changing role of suburban communes around Berne, which started to lose population through a negative migration balance. A very characteristic belt of communes with negative net migration in the southernmost communes of cantons Berne, Uri and the western communes of canton Graubünden has been expanding over time. Otherwise the net migration pattern has not been modified in any significant way between 1984 and mid 1990s. This remarkable stability may occur due to a very stable economic and social system Switzerland has developed and a lack of developments modifying the behaviour of migrants.

Figure 21: Internal net-migration rates by communes in 1984
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 22: Internal net-migration rates by communes in 1994
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Figure 23: Internal net-migration rates by communes in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

5.4 The demographic sources of population change

A simple analysis of the interplay between the natural growth and net migration can be prepared using Webb (1963) classification. It is based on the relationship between natural increase and net migration and described in detail in Table 7. The Webb classification allows us to select various combinations of key demographic features, such as the direction of population change, sign of net migration and natural growth, requires limited amount of data and conceptually is very simple. Note that in this case net migration refers to the combined balance of internal and external inflows and outflows.

Figure 24 shows the map of Webb classification of communes in Switzerland in 1996. In general the geographical pattern of various classes is a mosaic. The spatial distribution of class A communes (population growing due to natural increase compensating migration losses, 227 communes) does not create any clusters. Class A communes are distributed all over the country. Classes B and C are the most desirable from the point of view of demographic development. Communes belonging to any of these two classes grow due to both positive natural increase and positive net migration. In 219 cases natural increase is the driving force of the growth (class B) and in 768 cases the net migration (class C). The geographical distribution of these communes shows concentration in the belt extending from Genève to St.Gallen, but also in other areas in Hautes Alpes there are quite a number of them. The last class, which has positive overall population change, class D is characterised by positive net migration, which offsets negative natural change. There are 234 communes belonging to this class, which are distributed all over the country.

Table 7: The Webb classification of demographic regimes

Webb Class	Population change	Natural change	Migration direction	Relation
A	Population Increase	Natural Increase	Net Negative Migration	
B	Population Increase	Natural Increase	Net Positive Migration	NI>NPM
C	Population Increase	Natural Increase	Net Positive Migration	NI<NPM
D	Population Increase	Natural Decrease	Net Positive Migration	
E	Population Decrease	Natural Decrease	Net Positive Migration	
F	Population Decrease	Natural Decrease	Net Negative Migration	ND<NNM
G	Population Decrease	Natural Decrease	Net Negative Migration	ND>NNM
H	Population Decrease	Natural Increase	Net Negative Migration	

Notes:
NI = Natural Increase, i.e. (Births - Deaths) ≥ 0
ND = Natural Decrease, i.e. (Births - Deaths) < 0
NNM = Net- Negative -Migration, i.e. (In-migration - Out-migration) < 0
NPM = Net-Positive-Migration i.e. (In-migration - Out-migration) ≥ 0

Source: Webb (1963)

Figure 24: Webb classification of Swiss communes, 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

The remaining four classes lose population. Class E, in which natural decrease is not compensated by positive net migration, is hardly represented with only 39 communes belonging to this category. Also very infrequent (25 communes) is class G, characterised with both negative natural increase and net migration. Class F (235 communes), losing population due to both components of growth being negative, occupies mostly communes in the Alpine belt and northern part of Ticino canton. It should be stressed that the relatively small number of communes with both negative components of growth confirms good demographic situation in the small spatial units in Switzerland. Finally, class H, with positive natural increase smaller than negative migration, is the most frequent case with 653 communes belonging is visible almost everywhere, especially in Alpine communes. The relatively large number of unclassified communes is due to the fact that whenever migration equals natural change commune has no class attributed.

6. RELATIONSHIP TO THE URBAN SYSTEM

The population size of a commune is a very imperfect approximation of the degree of urbanisation achieved. Communes are administrative divisions of a country rather than urban or rural functional or commuting regions. Nevertheless it is useful to examine population change and migration using commune populations because in a country such as Switzerland there is a relationship between commune size and place in the functional hierarchy of settlements. Large communes contain the big cities; small communes are rural and remote; middle size communes are smaller towns or peri-urban adjuncts to larger cities. Table 8 shows the pattern of net migration in 1996 between communes grouped into population size bands. The bottom left triangle of the table shoes the absolute size of flows between size bands while the upper right triangle converts the migration statistics into migration effectiveness indicators, which show how important a particular exchange is net redistribution of the population.

The band of communes with over 100000 inhabitants is losing population to all other bands. The band of cities with populations between 50000 to 100000 inhabitants loses population to all bands but the highest ones. That is also the case with the third band from the top, which loses population to all bands but two top ones and the band comprising the smallest communes with populations below 500 inhabitants. The band of smallest communities lose population to all other bands but the three top ones, with communes over 10 thousand inhabitants. Losing are communes belonging to all bands above 10000 inhabitants, the band with the largest cities having the highest negative net migration, reaching well over 7 thousand. All bands with less than 10000 population have positive net migration. The largest gains are observed in bands 1000-2500, 2500-5000 and 5000-10000 inhabitants. Clearly Swiss migrants prefer medium size urban centres and dislike large cities and, at the opposite end of the spectrum, small rural communes.

The highest efficiency of migration, between 11 and 12%, is observed for migration between all bands below 10000 inhabitants and the band with 100000 and more inhabitants. Migration between neighbouring bands is inefficient, in particular for bands below 10000, for which it sometimes is around 0% or 1%. This evidence places Switzerland in 1996 in the group of countries experiencing urban deconcentration, at least on a local scale.

Table 8: Net migration and migration effectiveness ratios in 1996 by urban size classes.

Origin by size of commune	Destination by size of commune: Under 500	500 - 1000	1000 - 2500	2500 - 5000	5000 - 10000	10000 – 50000	50000 - 100000	Over 100000
Under 500		*1*	*0*	*1*	*0*	*3*	*7*	*11*
500 – 1000	-21		*1*	*2*	*1*	*4*	*8*	*12*
1000 – 2500	-17	64		*1*	*0*	*3*	*7*	*12*
2500 – 5000	37	161	242		*1*	*2*	*7*	*11*
5000 – 10000	-4	89	57	-191		*3*	*7*	*11*
10000 – 50000	214	472	1036	811	1012		*4*	*9*
50000 – 100000	68	124	310	306	318	269		*4*
Over 100000	360	626	1612	1666	1669	1733	100	
Net total	637	1556	3209	2152	3049	-1542	-1295	-7766

Source: Calculated based on data provided by the Swiss Office fédérale de la statistique.
Note: Net migrant numbers are displayed below the diagonal in each table. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

7. RELATION TO POPULATION DENSITY

7.1 Geographical patterns of population density

Most densely populated areas in Switzerland concentrate in and around largest cities (Basel, Zürich), along main communication axis Biel – Zürich – St.Gallen and along Rhone valley as well as on the lake shores: Lakes Genève, Neuchâtel, Biel, Thun, Luzern and Zürich (Figure 25). Alpine communes as well as those located in Jura are the less densely populated.

7.2 Relationship between population density, population growth and migration

The density of population may be used as a proxy variable for the degree of urbanisation. The less densely populated communes, below 50 persons per square kilometre lose population from all other bands but the highest density band (Table 9). Two other losing bands are those with population density between 1000 and 5000 and above 5000 persons per square kilometre, the highest density bands. All other bands are net gainers, in particular those in 150 to 300 and 300 to 1000 persons per square kilometre bands. Such composition of flows suggests bimodal distribution of migrant's preferences. On one hand they are keen to emigrate from sparsely populated mountainous communes. On the other end of the spectrum are cities and largest towns that are unattractive due to traffic congestion and social and environmental problems. Almost identical were results of migration between size bands presented in Table 8. This pattern is similar to those seen in other highly developed European countries (Rees, Kupiszewski 1999) in which rapid outflow from cities is widespread and significant in all age groups with exception of young adults. Effectiveness of migration is high for migration involving band below 50 persons per square kilometre and to highest density band. Lowest effectiveness is observed in exchanges between neighbouring bands.

Figure 25: Population density by communes in 1996
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Table 9: Net migration and migration effectiveness ratios in 1996 by population density classes

Origin by population density of commune	Destination by population density of commune						
	Less than 50	50 -100	100 –150	150 - 300	300 – 1000	1000 - 5000	More than 5000
Less than 50		*5*	*7*	*9*	*7*	*3*	*4*
50 - 100	-127		*1*	*4*	*2*	*2*	*9*
100 - 150	-151	-45		*2*	*1*	*4*	*10*
150 - 300	-417	-260	-162		*2*	*6*	*13*
300 - 1000	-871	-359	-120	602		*4*	*11*
1000 - 5000	-363	409	615	2084	3829		*7*
More than 5000	74	282	310	775	1725	1041	
Net total	-1856	154	839	4301	6302	-5532	-4207

Source: Calculated based on data provided by the Swiss Office fédérale de la statistique.
Notes: Net migrant numbers are displayed below the diagonal in each table. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

8. MIGRATION AND UNEMPLOYMENT

The level of unemployment in Switzerland is much lower than in most European countries. It stood at 3.3% in 1995 compared to 10.5% in European members of the OECD (OECD 1999). Figure 26 shows the geographic pattern of unemployment in Switzerland. Unemployment is very low – less than 4% of active population in over two thirds of all communes with exception of the most southern and western communes as well as of Zürich and surrounding communes and some industrial towns: Basel, Winterthur, Schaffhausen or Luzern. Unemployment above 8% is infrequent – it can be observed only in 78 communes, mostly located in cantons Vaud, Valais and Ticino.

The lowest unemployment band gained migrants from all other bands as did the second lowest band to all bands with higher unemployment (Table 10). Higher unemployment bands, 4-8% and 8-10% of unemployed, were losing population. The last band, over 10% of unemployed in total population, showed very limited positive net migration, which may well be an effect of temporal fluctuations in migrations, so few units belong to this category. Effectiveness of migration is low, the lowest for exchanges with the highest unemployment band. This suggests that unemployment has an impact on migration decision making in Switzerland, but with some reservation made above – the highest unemployment band does not push migrants away. There may be a number of reasons for such weak reaction of migrants in the highest unemployment band: one is generous social security benefits.

Figure 26: Unemployment rate by communes, Switzerland 1995
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Table 10: Net migration and migration effectiveness ratios in 1996 by unemployment classes

Origin by unemployment band	Destination by unemployment band: Less than 2%	2 – 4%	4 – 8%	8 – 10%	More than 10%
Less than 2%		*2*	*5*	*6*	*1*
2 – 4%	1057		*3*	*5*	*0*
4 – 8%	2854	3549		*2*	*3*
8 – 10%	568	801	256		*5*
More than 10%	16	-11	-83	-18	
Net total	4496	3283	-6231	-1645	96

Source: Calculated based on data provided by the Swiss Office fédéral de la statistique.
Note: Net migrant numbers are displayed below the diagonal in each table. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

9. MIGRATION BY FUNCTIONAL CLASS

Swiss Office fédéral de la statistique classifies all communes in the country into 22 narrow and 9 wider functional classes. The latter classification was employed in this study. Two classifications were available to us: one based on 1990 data and one based on 1998 data. The latter was used and linked with migration data as in 1996 and mapped using digital boundaries as in 1995 adapted to 1997 boundaries (Figure 27). The map shows clear divide between more urbanised Mittelland and tourist and agricultural belt of Alpine communes, except southern communes of the canton of Ticino and in the upper Rhône valley.

There are only 73 communes classified as *centres* but they are inhabited by well over two million inhabitants (Table 11). *Suburbs* with 1.8 million and *Periurban* and *Industrial* with 0.8 million of inhabitants each form two other important classes. Remaining four classes comprise much less population. In all classes population growth occurred between 1984 and 1996 (Table 11).

Four classes of communes are losers of the migration process: Centres, Tourism, Mixed and Agricultural, all of which, except Centres, having some rural component (Table 12). Centres lose to all other classes but Tourism and Agricultural. Suburbs lose to the same group of communes except Mixed, but their gains from Centres makes their net migration positive. Rich communes gain from all other classes as do *Periurban* communes (gains from all classes except *Rich*). The picture of migration presented in Table 12 is bimodal: losing are *Centres* and their *Suburbs* as well as *Tourist*, *Mixed* and *Agricultural* communes. Gainers are *Periurban*, *Industrial*, and *Non-Urban commuters*. The process of periurbanisation – shift of population to communes which were in the past more rural, located at the commuting distance from urban centres is the most characteristic feature of Swiss population system. This research confirms finding of earlier research by Huissoud, Schuler and Steffen (1996). Based on the functional classification an aggregation of migration to rural – urban flows was

prepared. They were very moderate gains for rural areas, by 239 persons on the expense of urban population.

Figure 27: Typology of communes in Switzerland, 1998
Source: Based on data provided by the Swiss Office fédérale de la statistique.

Table 11: Classification of Swiss communes

Commune class	**Number of communes**	Population in 1984	Population in 1994	Population in 1996
Centres	**73**	2122018	2133469	2129279
Suburbs	266	1623066	1751911	1773847
Rich	99	308305	335756	341402
Periurban	544	652376	778709	800646
URBAN	982	4707749	5001839	5047170
Tourism	141	184878	214507	216529
Industrial	378	685927	771652	787471
Non-urban commuters	509	356300	420830	432257
Mixed	551	405215	475636	481453
Agrarian	342	98657	108787	108967
RURAL	1921	1730977	1991412	2026677

Source: Calculated based on data provided by the Swiss Office fédérale de la statistique.

Table 12: Net migration and migration effectiveness ratios in 1996 by functional classes

	Destination functional class								
Origin functional class	Centres	Suburbs	Rich	Peri-urban	Tour-ism	Indust-rial	Non-urban com-muters	Mixed	Agrarian
Centres		*6*	*11*	*10*	*2*	*6*	*8*	*4*	*1*
Suburbs	-3349		*5*	*4*	*7*	*0*	*2*	*1*	*7*
Rich	-1244	-766		*1*	*12*	*5*	*3*	*6*	*12*
Periurban	-2576	-1353	87		*11*	*4*	*2*	*5*	*11*
Tourism	91	502	166	349		*8*	*10*	*6*	*1*
Industrial	-1280	-110	252	432	-189		*2*	*2*	*7*
Non-urban commuters	-1095	-419	95	120	-153	-124		*4*	*9*
Mixed	-602	187	207	387	-95	91	136		*6*
Agrarian	28	219	75	157	-2	83	68	41	
Total	-10027	1608	2891	5286	-1545	943	1781	-270	-668

Source: Calculated based on data provided by the Swiss Office fédérale de la statistique.
Note: Net migrant numbers are displayed below the diagonal in each table. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

10. MIGRATION BY LINGUISTIC REGIONS

Switzerland is a unique country in Europe because of its linguistic differentiation and the number of languages used officially (see Table 5 for classification of cantons by official language). Two factors reduce to some extent barriers preventing people from migration between linguistic areas. One is the widespread knowledge of more than one language. The other is the tolerance demonstrated by the Swiss people to widely defined foreigners. This is shown for example by the lack of racially motivated violence, despite one of the highest shares of foreign population in Europe.

However, migration between linguistic regions in Switzerland does not play any important role. Net migration benefits French and Italian speaking communities, mostly at the expense of German speaking regions (Table 13). These flows go against the unemployment gradient. Unemployment in the French speaking part of Switzerland is higher than in the German speaking. Some of the migrants between linguistic zones are young people who wish to learn a second or third language. Such an explanation would also justify migration gains of linguistic regions with much smaller populations than German speaking population. The migration gains and loses of linguistic regions have not got any significant impact on the size of populations of these regions. The effectiveness of migration is very low. Vast majority of migration is contained within linguistic regions. Language is a key expression of culture and that in consequence the migration from one linguistic region to another means that the cultural and social environment of migrant changes. Such vast cultural changes are more typical of international migration than intranational. Switzerland, due to its diversity, is a unique country in that respect.

Table 13: Net migration and migration effectiveness ratios in 1996 by linguistic regions

Origin by linguistic regions	Destination by linguistic regions			
	German	French	Italian	Romansch
German		0	1	1
French	-646		0	2
Italian	-200	-26		2
Romanche	29	14	3	
Total	-817	633	230	-46

Source: Calculated based on data provided by the Swiss Office fédérale de la statistique.
Note: Net migrant numbers are displayed below the diagonal in each table. Effectiveness = absolute value of net migration divided by gross migration and expressed as a percentage.

11. SUMMARY AND CONCLUSIONS

Switzerland is a country with a steady growth of population built on both international migration and positive natural change. The first of the two components is quite unstable and dependent on both migration policy and economic cycle. However, it is very significant - in 1996 as many as 19.3% of inhabitants of Switzerland were foreigners. The natural increase plays a stabilising role with an evident decreasing tendency in the last two decades. Internal migration plays a key role in population redistribution within the county.

Between the 1980s and the 1990s internal migration intensities decreased considerably. A variety of factors contributed to this decrease: ageing of population, regional policy measures, decentralisation of education system, better possibilities for long distance commuting due to highway construction and efficient railway system. The decrease in the migration numbers between 1980s and 1990s were to a large extent generated by lowering of migration in the most mobile age groups and to small extend because lower mobility of children and older population. This drop was offset a little by the increase in migration in the family age groups.

The net internal interregional (inter-cantonal) migration pattern in Switzerland is rather flat, with net migration in cantons only rarely exceeding ±5 persons per 1000 per year. Putting size-related skeweness of rates aside it is possible to identify in 1984 a clear geographic division of the country into higher mobility North-East and lower mobility South-West. This division is much less obvious in 1990s. On the cantonal level one could observe in 1984 a process of slow concentration. In the 1994 and 1996 we can talk about redistribution rather than concentration. There is some instability of the patterns of migration, suggesting that fluctuations have relatively strong impact on overall process of population redistribution.

Inflows and outflows to and from cantons to large extent are dependent on geographical location: Mittelland experiences higher in-migration and out-migration rates in all age groups and in all years examined. Adolescent and young adults (15-29) preferred directions of

migration different from those of the population in other age groups – large cities are their destination goals. More focused definition of age bracket of adolescent and young adults age group would help to elicit even stronger population concentration in this age group. Varying sizes of cantons and their lack of relationship to functional urban regions was another component making the analysis difficult. Population in family ages (0-14 and 30-44 and 45-59) escape large cities and keenly relocate to periurban and to lesser degree suburban rings. Elderly seek rural areas with good access to service centres.

On the commune level we can trace the combined effect of interregional migration and subregional residential migration, the latter being often the dominant force of change. Gaining are periurban communes, located further away but still within commuting distance from urban centres. They form a second ring of communes surrounding suburban communes. This process covers the largest cities of the country, Zürich being the most advanced example. Among smaller towns the process of urban deconcentration is less advanced, with depopulating city cores and suburban rings either growing or consisting of a mixture of growing and declining communes. On the other hand, remote alpine communes with rural and tourist functions and communes more distant from urban centres lose migrants. The picture of relationship between the population density of communes and net migration and the functional classification of communes and net migration fully confirms above statements. This pattern is similar to those seen in other highly developed European countries (Rees and Kupiszewski 1999) in which rapid outflow from cities is widespread and significant in all age groups with exception of young adults.

Unemployment has some effect on migration which we might have expected based on neo-classical economic theories of migration. The lowest unemployment band gain population from all other bands as did second lowest band from all bands with higher unemployment. However, high unemployment bands gain population from low

unemployment bands. Migration between linguistic regions of Switzerland has only very marginal impact on populations of these regions.

BIBLIOGRAPHY

Blake M., M. Bell and P. Rees, 2000, Creating a temporally consistent spatial framework for the analysis of inter-regional migration in Australia. *International Journal of Population Geography,* 6: 155-174.

Bundesamt für Statistik, 1996, *Statistisches Jahrbuch der Schweiz* 1995, Verlag Neue Zürcher Zeitung, Zürich.

Bundesamt für Statistik, 1998, *Statistisches Jahrbuch der Schweiz* 1997, Verlag Neue Zürcher Zeitung, Zürich.

Calot G., 1988, *Deux siècles d'histoire démographique suisse. Album graphique de la période 1860-2050. Office fédéral de la statistique*, Observatoire démographique européen, Berne.

Council of Europe, 1997, *Recent demographic developments in Europe 1997*, Council of Europe Press, Strasbourg.

Fleiner-Gerster T., P. Gilliand and K. Lüscher, 1991, *Familles en Suisse*. Editions Universitaires, Fribourg.

Frei P., P. Wanner and S. Cotter, 1998, Spécificités de la mortalité et de son évolution dans les cantons entre 1920/21 et 1988/93. *Geographica Helvetica*, 1, 3-19.

Hagmann H.-M., 1966, *Les travailleurs étrangers, chances tourment de la Suisse,* Lausanne.

Hoepflinger F., 1986, *Bevölkerungswandel in der Schweiz,* Verlag Rüegger, Grüsch.

Huissoud T., M. Schuler and H. Steffen, 1996, *Les migrations en Suisse entre 1981 et 1983. Une analyse des statistiques de l'état annuel de la population et des migrations (ESPOP),* Office fédéral de la statistique, Berne.

Joye D., M. Schuler, R. Nef, M. Bassand, 1988, *Le système de communes suisses. Approche typologique du modèle centre-périphérie*. Office fédéral de la statistique, Berne.

Lalive d'Épinay C., M. Brunner, G. Albano, 1999a, *Atlas suisse de la population âgée*. Réalités sociales, Lausanne.

Lalive d'Épinay C., M. Brunner, G. Albano, 1999b. Types of elderly household and their geographic distribution in Switzerland. Paper presented to the conference on the *Status of the Older Population: Prelude to the 21st century*, Sion.

Leimburger W., 1992, *Switzerland. Impact of migration in the receiving countries,* IOM, Geneva.

OECD, 1999, *Standardised Unemployment Rates*, WWW server of the OECD accessed on 5.3.1999.

Office fédérale de la statistique, 1996, *Historical Statistics of Switzerland*. OFS, Neuchâtel.

Rees P., H. Durham and M. Kupiszewski, 1996, *Internal migration and regional population dynamics in Europe: United Kingdom case study*. Report prepared for the Council of Europe (Directorate of Social and Economic Affairs, Population and Migration Division) and for European Commission (Directorate General V, Employment, Industrial Relations and Social Affairs, Unit E1, Analysis and Research on the Social Situation). Available as Working Paper 96/20, School of Geography, University of Leeds, Leeds, UK.

Rees P. and M. Kupiszewski, 1999, *Internal Migration and Regional Population Dynamics in Europe: a Synthesis*. Population Studies No.32, Council of Europe Publishing, Strasbourg. French edition. *Migrations Internes et Dynamique Démographique Régionale en Europe*. Editions du Conseil de l'Europe, Strasbourg.

Ritzmann-Blickenstofer H. (ed.), 1996, *Historical statistics of Switzerland*, Chronos Verlag, Zürich.

Rogers A., 1990, Requiem for the net migrant. *Geographical Analysis* 22, 283-300.

Rogers A. and J. Castro, 1981, *Model Migration Schedules*. RR-81-30. International Institute for Applied Systems Analysis, Laxenburg.

Schuler M., 1997, *Les niveaux géographiques de la Suisse*, Office fédéral de la statistique, Berne

UNHCR, 1998, *Refugees and other of concern to UNHCR. 1997 Statistical overview,* Geneva.

Webb J. W., 1963, The natural and migration components of population changes in England and Wales, 1921-1931. *Economic Geography* 39, 2, 130-148.

Wilson T. and P. Rees, 1999, Linking 1991 population statistics to the 1998 local government geography of Great Britain. *Population Trends* 97, 37-45.