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Population development in rural Switzerland:

Do sectors matter?

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ABSTRACT

The paper approaches the question of the role of the three different sectors in rural population development. A regression with data from 1606 rural Swiss municipalities shows that activity in the farming sector enhances population growth to a greater degree than activity in the industrial sector. Employment in the service sector was not found to sustain population growth in rural municipalities, whereas commuting possibilities had a strongly stabilising impact. Other important determinants were wealth, the number of holiday homes and demographic factors. A qualitative study of four rural municipalities largely confirmed the findings of the regression, but also showed the importance of non-economic factors influencing the relative attractiveness of a rural municipality.

1. INTRODUCTION

With a few exceptions (Paci et al., 2001), we lack evidence whether the three different economic sectors (farming and forestry, industry, trade and services) have different roles to play in enhancing regional growth. While most countries, as a matter of fact, have parts of their rural development policies specifically designed for farms, the scientific community has yet to confirm whether this special role of farming is by any means justified. If Switzerland, for example, prescribes in its constitution that farming has to play a central role in preventing depopulation of rural areas, it is unclear whether this “central role” could not be performed as well or better by tourism or by certain industries.

Indicators to measure the quality of rural development are, inter alia, regional income (Hazel and Hojjati, 1995), employment growth (Lewis et al., 2001) and the change in population (Doo-Chul, 1997). While all indicators have their advantages and their shortcomings, we

have chosen the latter. In Switzerland, the political focus, particularly for the Alpine region, has always been to maintain a sufficient level of infrastructure and therefore population density. On the theoretical level, several researchers (Buchanan and Goetz, 1972; Boadway and Flatters, 1982; Stiglitz, 1983) have made it clear that depopulation of some regions may indeed have negative welfare effects. More empirically, Ceña and Fernandez-Cavada (1986) and Smailes at al. (2002) show that rural depopulation has negative effects both for economic development and for social balance.

Rural depopulation processes have sometimes been merely described (Andrada, 1981; Kontorovich, 2000), and sometimes explained by several factors. While natural factors like rainfall and land quality are able to explain population density in rural regions (Robinson et al., 1961; Ruotsala-Ario and Ario, 1977), they are not sufficient to explain *changes* in population. Demographic (Heleniak, 1999) and social (Kiang, 1975) differences are more important influencing variables. Soft factors like landscape (Paquette and Domon, 2003) and lifestyle (Walmsley et al., 1998) play an increasing role in explaining rural migration in general. It is also often claimed that economic factors play their share in population changes. A low household income (Beale 1977, Domazlicky, 2002), changing demand patterns (Whelan, 1999) or regional over-specialisation (Simard, 1998) have been identified as factors responsible for depopulation, while others such as the share of land under conservation were found to have no influence (Duffy-Deno, 1998). The role of government intervention is a contentious issue: while Hagihara and Hagihara (1991; 172) claim that “intergovernmental grants are aiding the solution of the depopulation problem”, Goetz and Debertin (1996) discover that population development decreases with the share of the farmers’ payroll represented by government transfer payments.

For many decades, it has been a commonplace that rural development cannot be promoted by farm programmes alone (Gasser, 1966; Knutson et al., 1998). The share and the social role of agriculture is shrinking in almost all rural areas (Roussel, 2000). However, in the debate about exogenous and endogenous approaches to rural development (as summarized by Terluin, 2003), the specific role of the individual economic sectors has mostly been neglected. Occasionally, the importance of the service sector for rural development is mentioned (Otterstrom and Shumway, 2003). However, if anything has been written about the influence of agriculture on rural development, it was along the line of Domazlicky’s (2002) statement that “it is likely that dependence on agriculture will mean slower growth for a county.” This paper raises the question whether what has been looked at and found detrimental to rural development was perhaps the *lack* of activity in other sectors, rather than actually the role of the agricultural sector itself.

This paper contributes to the understanding of economic sectors in population development processes in two steps: in Section 2, a quantitative analysis explains population development between 1990 and 2000 in rural Swiss municipalities. Section 3 complements this part by four case studies of municipalities with either rapid depopulation or population increase. Section 4 concludes.

2. ECONOMETRIC ANALYSIS

2.1 Data and Variables

The database for the study was obtained from the Traffic Department from the Federal University of Switzerland and contained all available data about the 2899 municipalities in Switzerland from public censuses, which take place every ten years. For our purpose, municipalities with a population density under 150 people per square kilometre were selected. This implicit choice of definition of rural municipalities relates to the OECD definition of rural areas (Schrader, 1997). This is the most operational and the most useful definition which exists, compared, for example, with definitions referring to absolute population numbers of an area (e.g. Queensland Government, 2005). The main weakness of this definition as well as of the municipality database which was used was that the broader regional context of the municipalities, such as adjacency to metropolitan areas, could not be taken into account. The employed definition led to the inclusion of 1677 municipalities into the analysis[1], of which 71 municipalities could not be used for statistical analysis due to missing values. The main characteristics of all rural municipalities are summarized in Table 1. It can be seen that smaller municipalities are more sparsely populated, have a high share of old persons and are poorer than larger rural municipalities. The share of residents (between 20 and 64 years old) employed in the farming sector shrinks with growing size, while the importance of industry and the service sector rises.

Table 1: Rural municipalities in Switzerland grouped according to population

Population	Numbers	Popula-	Share of	Wealth	Share of	Share of	Share of

[1] For municipalities which were integrated between 1990 and 2000, the 1990 data was already merged as if it was one municipality

	of municipalities	tion density (persons/ km^2)	persons older than 64 years	(Federal taxes p.p.)	persons employed in 1st sector	persons employed in 2nd sector	persons employed in 3rd sector
1-100	145	24	20 %	338	44 %	8 %	15 %
100-500	779	59	16 %	388	26 %	12 %	21 %
500-1000	381	77	14 %	443	20 %	16 %	26 %
1000-5000	352	84	14 %	436	17 %	23 %	33 %
>5000	21	80	14 %	543	11 %	23 %	50 %

The relative change in population between 1990 and 2000 was used as the dependent variable. 261 rural municipalities experienced a population decline during that time, for 16 municipalities the number of persons was exactly the same in both years, whereas 1400 municipalities gained population. Rural municipalities have, thus, gained more inhabitants than urban municipalities in Switzerland during that time, although also the latter grew, by international inmigration as well as by a positive birth balance. While that seems to imply that rural depopulation is no real problem for Switzerland, a report by the Swiss Farmers' Union (2002) shows that there are regions where the viability of municipality life is seriously endangered due to migration and lack of offspring. In Switzerland, rural depopulation is a local rather than a general problem. That makes it worthwhile to check what are the reasons that some regions are affected while others are not.

In order to estimate the impact of sectoral distribution, two different scales were used (Table 2). Firstly, the number of enterprises in each municipality divided by the number of persons aged between 20 and 65 (as a proxy for employable persons) was calculated and used as a variable for all three sectors. Secondly, the number of working persons in each sector, again measured against the number of employable persons, was calculated. Both indicators were used independently in order to compare the influence of a broad and varied regional economic structure, as measured by the number of enterprises, to the mere presence of jobs. In addition, the number of unemployed persons as a share of employable persons was used as a variable.

Commuters often form an important part of rural municipalities in Switzerland. This includes locals who make their living by working in other municipalities as well as commuters from outside coming daily into one's own municipality. The share of outbound commuters among employable persons in the municipality and the number of incoming commuters as a share of employed persons within the municipality were variables which were included to account for this effect. The wealth of the municipalities, known to have a potential impact on population development, was taken into account by taking the level of federal taxes per head as a proxy.

All these variable could, of course also be seen as being influenced by outmigration or inmigration, influencing endogeneity between the variables. In order to distil the influence of commuting on population development, it was important to use 1990 figure for the influencing variables and view population development in the years ahead.

As demographic variables, the share of young people (aged up to twenty) and old people (over 65) of the local population were used, because age is known to be a major influencing factor for migration (Fischer and Malmberg, 2001) and birth balance. As tourism plays a big role in rural areas of Switzerland and as many villages are characterized by a great number of houses for holiday residences (either rented or used by the owner), the share of such second homes was used as a proxy for the impact of people from other places on population development. Nivalainen (2003) has recently shown that owners of second homes often move to the place once they have retired. The 'sumres' variable could, at the same time, also be understood as an indicator for the amenities of a municipality. A municipality near a lake or a ski resort will usually have a higher share of second homes than municipalities that are characterised by industry and intensive farming.

Table 2: Factors included in the regression (1990 figures)

Variable	Meaning
Dependent: Pop.dev.	Relative population development in the municipality between 1990 and 2000
a_1_rel	No. of enterprises in the primary sector (e.g. farms) as a share of employable persons
a_2_rel	No. of enterprises in the secondary sector (e.g. joineries) as a share of employable persons
a_3_rel	No. of enterprises in the tertiary sector (e.g. hotels) as a share of employable persons
b_1_rel	No. of employees in the primary sector (e.g. farmers) as a share of employable persons
b_2_rel	No. of employees in the secondary sector (e.g. carpenters) as a share of employable persons
b_3_rel	No. of employees in the tertiary sector (e.g. waiters) as a share of employable persons
unemployment	No. of unemployed persons as a share of employable persons
Commute_in	No. of incoming commuters as a share of employed persons within the municipality
Commute_out	No. of outgoing commuters as a share of employable persons
wealth	Federal taxes paid per head (in 1000 Swiss Francs)
Share_young	Share of persons up to age 20 of total population
Share_old	Share of persons over age 65 of total population
Summer_res	No. of second homes as a share of total homes
altitude	Altitude of the municipality in 1000 metres

Finally, mountain regions play a particularly important role in Switzerland. It is often suspected that social problems such as depopulation are aggravated in Alpine regions as compared to lower lands. The altitude of the municipality was therefore included as another variable.

In addition to the variables in Tables 2 and 3, five regional dummy variables were used to identify regional effects for Central, Eastern, Western, Northern and Southern Switzerland.

From the clear causal relations that were assumed, it became clear that a regression model would be most appropriate. The two regressions were calculated with OLS, as the change in the level of population was normally distributed. The Breusch-Pagan/Cook-Weiss test for heteroscedasticity was carried out, with a negative result.

Table 3: Summary statistics for data

Variable	Mean	Minimum	Maximum
a_1_rel	0.082	0.000	0.391
a_2_rel	0.026	0.000	0.125
a_3_rel	0.064	0.000	0.364
b_1_rel	0.230	0.000	1.213
b_2_rel	0.159	0.000	2.458
b_3_rel	0.252	0.000	2.115
unemployment	0.010	0.000	0.083
Commute_in	0.534	0.016	0.935
Commute_out	0.184	0.000	5.130
wealth	0.408	0.062	4.709
Share_young	0.264	0.020	0.425
Share_old	0.155	0.059	0.463
Summer_res	0.238	0.000	0.922
altitude	1.025	0.358	3.017

2.2 Results

The results of the OLS-regressions are presented in Table 4. Two different specifications are shown, where the first one focuses on the number of enterprises, the second on the number of jobs in the municipalities.

For traditional economists who often regard economic sectors as interchangeable and only aggregated economic activity as important, it is worth noting that for rural population

development, the role of the three sectors differs greatly. This is easiest to see by looking at the impact of each job listed in the right-hand column of Table 4. The impact of an agricultural worker on population development is almost four times as great as the impact of an industrial worker. And it could not be proved that an additional job in the service sector has any impact on rural population development at all.

Another striking result, seen from the coefficient of determination, is that enterprises matter more than jobs. The number of enterprises in a municipality explains population development to a larger degree than does the number of jobs. If this is the case, the number of enterprises is a more important indicator than the number of jobs, so that a large number of small firms with economic diversity and stability apparently does more to secure the region's future than a small number of large firms. And, again, although an enterprise in the secondary sector, usually a workshop or an industrial plant, is much larger in size than a farm[2], a farm has more than half of the industrial enterprise's effect in enhancing local population growth.

The most probable reason why agriculture has such an marked effect on population development probably stems from its strong links with other local economic actors. Swiss case studies (Buser et al., 2002; Buchli et al., 2003) show particularly strong economic interdependencies between farms and not only the local food industry, but also other industries and tourism. As farms vanish, so does considerable supply and demand for other local enterprises. It also will be most exceptional for farmers to commute to their farm. The causal link between a farm and a local resident will be far stronger than between, say, a restaurant and a local resident. A more sociological (and also more speculative) explanation would be the cultural value of agriculture. People who decide to move to the countryside may prefer villages in which agriculture is visible to villages without that important characteristic of the rural scene. Another argument is that farm families still tend to have more children than non-farm families (Harsche, 1999) and thus contribute to regional offspring to a stronger degree.

Table 4: Results of the Regressions (n=1606)

[2] From our sample, the average enterprise in the primary sector had 1.5 working persons, 10.5 persons in the second sector and 7.0 persons in the third sector

Variable	(1)	(2)
a_1_rel	0.79** (11.95)	
a_2_rel	1.11** (5.00)	
a_3_rel	0.62** (5.85)	
b_1_rel		0.22** (9.48)
b_2_rel		0.047* (2.15)
b_3_rel		0.012 (0.67)
unemployment	3.50** (9.20)	3.63** (9.34)
Commute_in	-0.01 (-0.60)	-0.01 (-0.48)
Commute_out	0.28** (11.21)	0.23** (8.25)
wealth	0.092** (5.01)	0.095** (5.04)
Share_young	-0.44** (-5.15)	-0.37** (-4.27)
Share_old	-0.68** (-9.17)	-0.62** (-8.15)
Summer_res	0.072** (3.00)	0.10** (4.28)
altitude	0.001 (0.00)	0.026 (1.74)
intercept	-0.033 (-0.84)	-0.000 (-0.00)
R^2	0.22	0.18

t-values are in parentheses. * denotes significance on a 5 per cent level, ** denotes significance on a one per cent level. Regional dummy variables (two of them significant) are not displayed.

As in a study by Millington (2000), the appearance of the highly significant positive impact of unemployment in rural municipalities seems paradoxical at first. Why would a high share of unemployed enhance population growth? It has to be remembered, however, that in a country with almost full employment, *unemp* describes the share of unemployed persons who actually stay in their local municipality in spite of not having a job. Probably, the variable relates to the meaning of the German word *Heimat*. The stronger insider advantages (Fischer and Malmberg, 2001), or more generally the social links between your home

municipality and yourself, the longer will you decide to stay there even if you are unemployed and would probably be able to find a job elsewhere in the country.

The important role of commuting for rural development is reflected by the two respective variables. Jobs in the surrounding municipalities to which the locals commute play as important a role as jobs in the agricultural sector of one's own municipality. This emphasizes the importance of the municipality's economic environment. On the other hand, commuters from other villages who work in the municipality do not influence local development with regard to population growth.

Having taken federal taxes paid per capita as a proxy for local wealth, it can be confirmed for Switzerland that the standard of living is also an important determinant for population processes. Admittedly, the argument in favour of farm preservation is weakened by the finding that the share of agricultural enterprises and the wealth of a municipality are negatively correlated by a coefficient of –0.24.

The fact that a high share of persons over 65 is an indicator for population loss hardly comes as a surprise. However, a high share of people aged under 21 also has a tendency to decrease local population. This can be explained by the high degree of mobility which young people enjoy. Migration at the beginning of an educational course or a job appointment is much more common than migration in the middle of one's working life. An interesting parallel to this are the results by Lindh and Malmberg (1999) who show that the share of very young and very old residents influence economic growth negatively.

It can be confirmed that a high share of summer residences in a village has a tendency to increase population. This is open to different interpretations. Summer residences can, on the one hand, themselves be an indicator for attractiveness to tourism. Particularly beautiful places are, one could argue, rarely hit by depopulation processes. One could, however, also assume that a considerable number of (retiring) people eventually settle in the municipality in which they had their summer residence built and where they spent a lot of time (Millington, 2000; Domazlicky, 2002; Nivalainen, 2003). A third explanation is that a big demand for summer residences creates additional jobs in the regional construction industry. In any case, a municipality threatened by depopulation seems well advised to welcome people who temporarily drop in from other places.

For the Swiss context, it is an important finding that altitude does not matter. For regression (1), it could be shown by a significance of 99 per cent that being in a mountain area does not affect population development of a municipality. There are potentials to stabilise or increase local population for mountain and lowland villages alike.

Compared to similar studies (Beale, 1977; Domazlicky, 2002), the measure of determination is rather on the lower edge, although no potentially significant variables used in other studies were omitted. A comparative study between Switzerland and the former German Democratic Republic (Mann, 2004) pointed to the possibility that individuals in affluent societies had more freedom to choose their residence. That made economic variables potentially less influential. In Switzerland, one of the richest countries in the world, the economic structure may not influence population development to such an extent as in other parts of the world.

3. CASE STUDIES

3.1 Method

Although many significant coefficients could be found to explain population development in rural Switzerland, it has to be borne in mind that only 22 per cent of changes in population could be explained by quantitative analysis. This partly seems to confirm Hodge and Whitby (1986; 406): “The study of rural development has not readily yielded to the use of formal modelling and quantitative techniques. The prevalence of intangible values, lack of data and multidisciplinary nature of the subject combine to limit the potential scope for economic modelling.” Given the large share of as yet unexplained population development, it seems appropriate to complement quantitative analysis by a qualitative part. This part should likewise focus on the role of sectors without neglecting other explaining factors.

The notion that it seemed useful to compare villages with a large population decline to villages with a large increase in population, and that it seemed useful to compare villages in which the regression accurately explained the development (small error term ε) to those where the regression could not explain the development (large ε) led to the selection of variables which were rather extreme in both population development and error term. The resulting choice is illustrated in Table 5 and Figure 1.

The municipalities indicated in Table 3 were visited. Semi-structured interviews were carried out with representatives of the municipality. The nature of the enterprises in all three sectors of the municipality and their development in recent years were discussed. The question about the sectors in which commuters worked outside the village was raised, too. The municipality’s wealth and its sources were discussed as well as its demographic structure. To account for the rich literature on exogenous versus endogenous development, some indicators by Sharp et al. (2002), like downtown revitalisation and the development of an industrial park, were measured. At the end, the strength of the municipality’s social infrastructure was discussed.

Table 5: Selection of municipalities

	Small ε	Large ε
Large population loss	Lauterbrunnen	Calpiogna
Large population gain	Parpan	Villars-Lussery

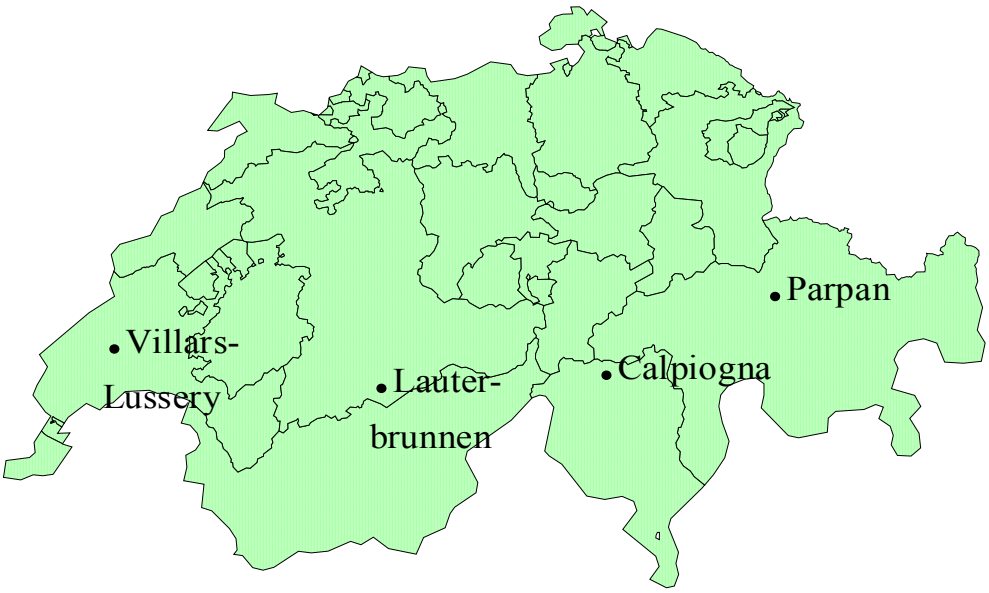

Fig. 1: Location of the selected municipalities.

3.2 Results

Table 6 describes some characteristics of the four selected municipalities that are most relevant for the purpose of the study. It shows that four very different villages in terms of size, population density, economic structure and wealth have been selected. This heterogeneity allows for selecting a wide variety of quantitative and qualitative factors for population gains and losses.

Table 6: Characteristics of the selected municipalities (in 2000, unless otherwise indicated)

	Lauterbrunnen	Calpiogna	Parpan	Villars-Lussery
Pop. 1990	3207	93	180	90
Pop. 2000	2815	50	310	157
Pop. density (inh./km^2)	17	15	33	90
Share of res. below 20	22 %	16 %	23 %	23 %
Share of res. above 64	17 %	21 %	13 %	7 %

No. enterprises primary sector	63	3	7	5
No. enterprises secondary sector	39	1	2	3
No. enterprises tertiary sector	194	3	21	2
Outbound commuters	218	11	48	25
Federal taxes (Fr./head)	395	1554	1065	273

Lauterbrunnen: Mobility as a problem

The population figures of Lauterbrunnen decline slowly, but steadily since the 1960's. In fact, also three of the municipality's four major sectors have undergone a shrinking process. Beside the departures from the wood business, many subsistence farms have disappeared during recent decades, leaving a number of part-time farmers, some small full-time farmers on the verge of bankruptcy and only eight large farms with good prospects. Since the 1960s, the number of hotels in the municipality has dropped considerably, although the municipality is home to the Jungfrau, one of the most popular mountains of the Alps. The only stable sector is the lift and rail business. This is managed by one enterprise which is highly profitable and employs the majority of the 220 incoming commuters.

Still, the municipality representative sees the lack of skilled jobs as the main cause of Lauterbrunnen's process of depopulation. "Everybody who is smart and keeps learning has to leave. Or commute." This economic explanation matches the results of the regressions that predicted the depopulation rather well. Looking at the municipality council staffed exclusively by members who were born in the municipality, looking at the local associations with their declining activities, looking at the weak level of exchange with neighbouring municipalities and looking at the largely unsuccessful attempt to site two industrial parks in the municipality, one may also want to look for deeper, non-economic roots of Lauterbrunnen's development.

Calpiogna: A sanatorium displaces nine farms

The major size of Calpiogna has been reached between 1800 and 1850. Since then, outmigration and a negative birth balance has always caused problems for the municipality. As statistics describe Calpiogna as a relatively wealthy village and as a fair share of its population works in the farming sector or commutes, the regressions predicted up to 21 per cent population growth between 1990 and 2000, whereas in reality, the population has declined at double that figure. However, part of that contradiction is solved by a statistical

artifact: as three-quarters of the houses in Calpiogna are summer residences, their owners have to pay an asset tax on them. They are not counted as taxpayers in Calpiogna, though, having to pay the bulk of their taxes elsewhere. That leads to high taxes per head, although Calpiogna's inhabitants are not extraordinarily wealthy.

The main cause for Calpiogna's depopulation is without doubt the rapid decline of the farming sector. Until around 1985, the farming sector was stable with twelve small subsistence farms in the mountainous area around Calpiogna carrying on sheep and dairy farming. As they got older, one farmer after another retired and for want of a successor the farms were abandoned. Today, a constant amount of land and a similarly constant number of animals are kept by two full-time farmers and one part-time farmer. This process was accompanied by a similar decline in the other sectors: whereas in 1990, there were still two construction businesses in the municipality, one has meanwhile closed and one now confines itself to trading construction materials. The latest closure is the only restaurant in the village, which has recently been given up by its young owner and is now for sale. This, again, badly affects the camping ground and the hikers' hostel in the village, which will hardly succeed without a catering facility nearby.

Impulses rarely come from inside (the municipality has hardly any social life) nor from outside (all the members of the municipality council were born in the village). Local policy makers are now mainly concerned by plans to incorporate Calpiogna into a larger municipality including a larger settlement down in the valley, which raises fears that the concerns of the mountain region will not be listened to any more. The only positive development in the municipality is the recent opening of a sanatorium for clean drug addicts and handicapped people. They indeed find the quietness in Calpiogna which they need for their recovery.

Parpan: Stability in a successful region

The large population increase in Parpan which has gained speed through inmigration since 1990 has been predicted by the regression, because a strong farming sector, a lot of commuters and wealth were three characteristics prevalent in Parpan that were important indicators for population growth. The economy of the village rests firmly on farming and tourism. Four of the six farms are full-time farms. They are active in the dairy sector, keep horses for their owners or rear calves. Two market their products directly to the tourists. Most enterprises in the service sector clearly have tourists as their target group, not only the many hotels and restaurants, but also the physiotherapist, the masseur, the acupuncture surgery or the skiing schools. The most important employer in the village is the lift operator, as Parpan has 155 km of ski slopes.

The tourism business in Parpan is stable, but not booming. In the season, most employees are seasonal workers from abroad. Hotels and restaurants are starting to show symptoms of the aging processes. “The fire of the youngsters is missing”, as the municipality representative puts it. The ski schools suffer because their advice is less frequently sought by the young generation than it used to be. On the other hand, the ski club of Parpan has 500 members, many more than inhabitants. Two former Olympic skiing champions who are from Parpan contribute to its merits and draw many non-locals into the club. And the village gains considerably from its neighbouring village to the south, which has experienced a considerable boom for ski tourists and is now so expensive that many visitors prefer lodging in Parpan.

A large share of commuters, however, does not work in this village but in the town of Chur which is 15 km to the North and an economically and culturally viable place that offers locals in Parpan jobs as drivers, PR consultants, IT specialists and others. The local representative sees little potential for Parpan to develop endogenously, but explains the increase in population mainly with the saturated market for residential homes in the immediate neighbourhood of Chur. He believes in the importance of economic factors: “If there are jobs, young people will choose to stay here. If there are none, they won’t.”

Villars-Lussery: Pigs and *le sentiment*

As Villars-Lussery is a rather poor municipality with few employment opportunities outside the farming sector, which had a large share of young people in 1990, the regression predicted a population increase of no more than 10 per cent, while in fact a population increase of 75 per cent occurred between 1990 and 2000. The last decade was not only characterized by a baby boom, but also by the integration of Villars with the neighbouring village of Lussery, which took place in 1999[3] but was prepared for long before, as a bottom-up process. The two clubs in the municipality, the hunting club and the youth club, had always been used by the two municipalities together and construction projects like a “chemin de la fusion” between the two villages strengthened local support for integration.

The role of agriculture in Villars-Lussery is noteworthy. Whereas the rate of farm abandonment is currently three per cent per year in Switzerland, no farm in Villars-Lussery has been given up since the local representative can remember. What is more: asked about an industrial park, the representative mentioned construction plans for new pig houses, which one farmer is going to build outside the village, whereas the other farmers are already considering doing the same. While there are currently only cows and horses on the local

[3] The population increase has, of course, not only statistically happened by integration of Lussery but was calculated for Villars-Lussery alone.

farms, the stable consumption of pork seems to encourage local farmers to diversify into this market. Whereas plans for new pig production are usually accompanied by protests by the non-farming population (Mann and Kögl, 2002), in this case locals only insisted on a minimum distance being observed between pig houses and the residential area.

Commuting is as important a factor in Villars-Lussery as in Parpan. Major employers outside the village are a large new postal distribution centre nearby and several enterprises in the city of Lausanne, which is 20 km away. However, asked for the reasons why local young people would not leave the village and why a number of new residents would flock into Villars-Lussery, the representative insisted that economic reasons were certainly not the main factor. “Villars-Lussery is in a beautiful area situated centrally between the Jura mountains and the cities of Yverdon and Lausanne. It is a young and dynamic municipality, the oldest member of the municipality council being 42 years old. So, it is just *le sentiment* which prompts people to live in Villars-Lussery.”

4. DISCUSSION

An econometric analysis explaining population development in rural municipalities in Switzerland between 1990 and 2000 and four case studies in communities with extreme population developments had the goal to identify economic and other variables responsible for the differences between villages. Particular weight was put on the role of the three different sectors of the rural economies.

There are economic and non-economic reasons for population development. The share of economic influences varies between municipalities and it may also vary between agglomeration and depopulation processes. However, the analysis has made clear that agricultural development is an economic variable that influences population development. An active farming sector apparently has the potential to prevent or at least slow down depopulation processes in rural areas. This applies particularly if farming is not associated with poverty, as it sometimes is. This finding has implications for the effectiveness of regional policy. If a tax dollar put into tourism were as effective for the tourism enterprise as a tax dollar put into farming would be for the farm, the tax dollar for farming may still be more effective in sustaining population density in remote places. This justifies an agricultural policy that not only targets the sector itself, but the rural environment as a whole. Agricultural policy supporting a lively rural sector may thus be more effective than general industrial policy pursuing the same aim.

The importance of commuting possibilities shows that rural municipalities should not be looked at in isolation. It is crucial for rural development whether jobs are available within

commuting distance, and it seems that the distance over which people are willing to commute has increased in recent years. Hence, an urban development policy may also help the rural countryside, particularly near urban regions.

In particular, the qualitative part of the study has made it clear that the traditional view of rural development between endogenous and exogenous approaches provides important insights into the causes of successful and unsuccessful developments. Municipalities like Villars-Lussery which are open to newcomers, well integrated in a regional network and dynamic in their cultural and economic development will attract more inward migration than municipalities within rigid political structures that are lost in isolation. However, both the quantitative and the qualitative part of our work show that a closer look at economic structures uncovers important causal relationships as well. This 'sectoral' look should be broadened in future research, taking account of structural changes and comparing sectoral influences across different types of rural municipalities.

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