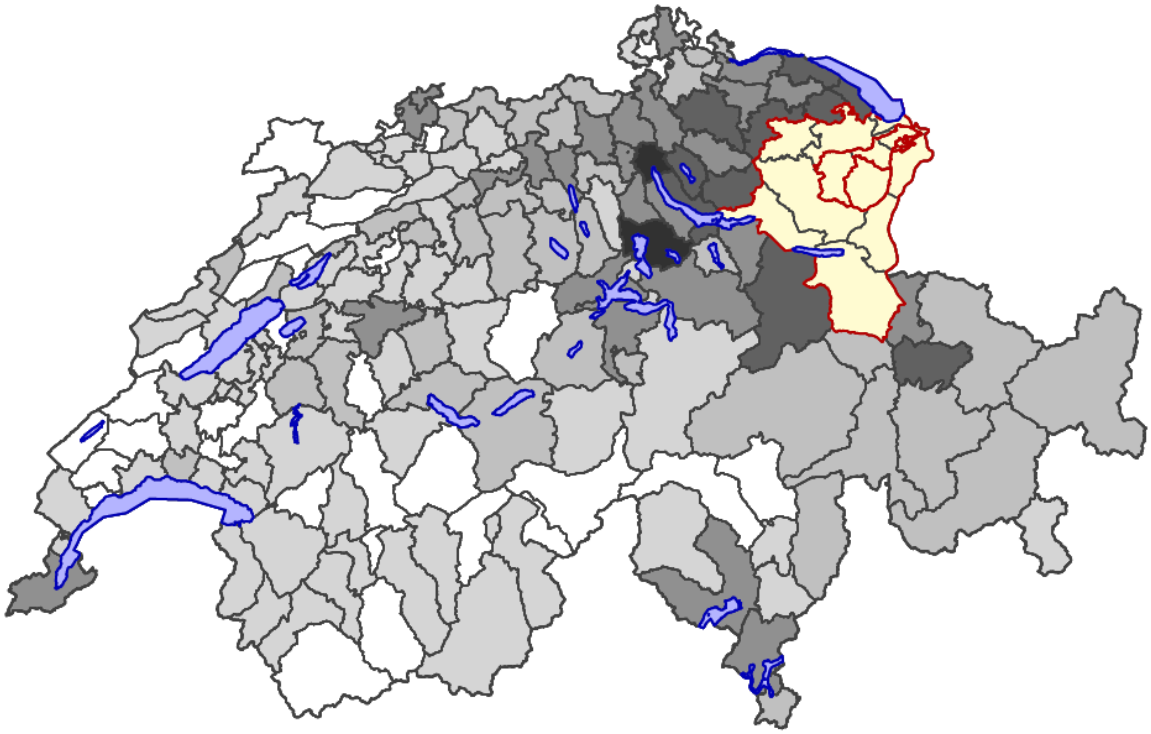

Company decisions on choice of location
Case study: St. Gallen region

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Abstract

This paper explores business demographics of the cantons of St. Gallen and the two Appenzells (Inner Rhodes and Outer Rhodes) between the years of 1991 and 2006 using entries to the business registers of the these three cantons. Of particular interest are the influences of age, size, industry branch and location on company migration behaviour. In addition, the central spatial distribution of business formations and closures (market entries and exits) is observed from a business demographics point of view The corresponding results are summarised and quantified in a logit-loglinear model.

Keywords

business demographics – migration – company formation – closure – spatial distribution – logit-loglinear model – St.Gallen – Commercial register – IVT ETH Zürich

1. Background

The change in our economic structure is of central significance for our society. This change expresses itself in two basic phenomena: first: in general, it changes the distribution of companies in the individual branches, for example, the various documented tertiarizations of the economy. Second, it allows the spatial distribution of businesses to be observed. In this way, it can be seen that retail centres areas are continually moving from the city centre (formerly as department stores on Bahnhoftstrasse in Zurich) to the edges of the agglomerations (new shopping centres on the "green meadows").

This tendency leads to a situation where, among other things, workplaces, tax income or provision of centrally located services (post office, shops, doctors) are spatially changed. In particular, this leads inevitably to a financial redistribution between the cities and additional problems: overloading the road network with accompanying noise pollution, the loss of a basic provision of services, resident out-migration with its resulting vacant buildings while the costs for the maintenance of the city infrastructure remain the same.

A spatial planning perspective especially points up the challenges of a change in economic structure and the changed preferences for the choice of a business location connected with it. In Switzerland, for example, it has been established that while industrial zones the size of the canton of Geneva lie fallow (Valda and Westermann, 2004), in certain other locations new industrial zones must be created in order to keep pace with the needs of the economy. One example is the rezoning of 55 hectares of agricultural land in an industrial area near Galmiz in the Canton of Freiburg, which has led to intense discussions.

Because of the requirement for an "economical use of the land", it is important for spatial planning to observe changes in the economic structure more closely. Therefore, the development of the business demographics will be examined analogue to the demographic investigations of the residents. In addition to the frequently studied business formations and closings in Switzerland, migrations play an essential role. These demographics communicate information from an economic view on the preferences of companies in location selection. In relation to this, until now in Switzerland, the only information available was from company surveys. Using data from the Commercial Registrar Offices of the cantons of St. Gallen and the two Appenzells (Inner Rhodes and Outer Rhodes) from the years 1991 to 2006, this work investigates the behaviour of the companies observed. The focus is on those companies that have left their site, what distances they moved or whether they have been dissolved.

In a first step, the connections are described based on the observed business demographic results. Then, the individual effects are tested and quantified with a logit-loglinear model. The model selected makes it possible to explore and quantify the observed effects of individual company characteristics on business demographic behaviour.

2. Theoretical Framework and Data

2.1 Previous investigations of business demographics

Comprehensive business demographic investigations are relatively scarce at this time, in that corresponding databases are not sufficiently available. Many works are therefore based mostly on their own surveys or are occupied with partial areas of business demographics: economic and political considerations are first of all interested in the profits or loss of workplaces as a result of formations or closings of businesses. From an economic viewpoint, Gibrat's Law[1] in particular, is controversially discussed. On-going works devoted to this topic are in progress.

Mainly concerned with business formations and closings in Switzerland, are works by, among others, Benson (2006), Hutter (2005), Grossi (2005) and Matti et al. (2003). Most of these authors examine the formation of new companies and their survival rates and unanimously agree that new businesses are mostly small companies and the survival rate climbs with increasing age. In addition, they show that employment development is fundamentally influenced by new business. In Switzerland, around 40 percent of the increases in the number of jobs between 1998 and 2001 can be traced back to new companies. Similar investigations were also carried out in Germany (among others, Fritsch et al. 2004). Wagner (2005) presents a good overview.

Almus and Nerlinger (1999) researched Gibrat's Law using 20,000 companies from the production sector that were founded between 1989 and 1996 in West Germany. These rather young companies established a clear connection between the company's size and growth. Sutton (1997) provides a good overview of this subject.

In the Netherlands, in particular, various researches into the migration of businesses have been conducted. Van Wissen and Schutjens (2005) and Pellenbarg (2005) examined databases from the Netherlands Chamber of Commerce in relation to this (among others). In another direction, Brouwer (2004), as well as van Dijk and Pellenbarg (2000) are working with data from questionnaires. These show unanimously that size and branch affiliation of the

[1] Gibrat (1931) put forth the hypothesis that the growth of a company has no connection with its size.

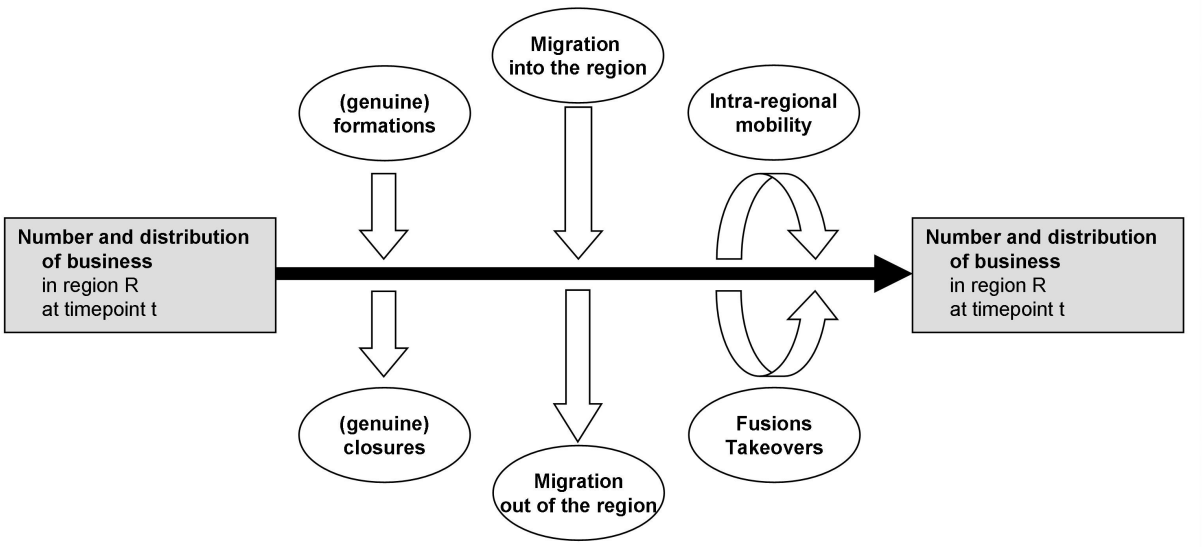
companies have an essential influence on the migration behaviour of businesses. Pellenbarg (2005) gives a comprehensive overview of the investigation of business demographics in the Netherlands.

Additional comprehensive models of the behaviour of companies were developed in Dortmund (Moeckel, 2006), Hamilton (Canada) (Maoh and Kanaroglou, 2005) and Zurich (Löchl et al., 2007). In particular, the model introduced by Moeckel accurately depicts the behaviour of businesses. Moeckel also offers a current compilation of other models.

2.2 Method of investigation

The theory used for the research on business demographics presented here follows Maoh and Kanaroglou (2005) and is adjusted for the current data situation (see Figure 1). It is assumed that the development in a region of the spatial distribution and the number of businesses between two observation time points (t and t+1) is essentially influenced by several factors: business formations (births) and closings (deaths), migrations from outside into the study area (in-migrations) migrations to other regions (out-migrations), intra-regional migrations, fusions and takeovers.

Figure 1 Research methods for the development of business demographics



Source: based on Maoh and Kanaroglou (2005)

Fusions and takeovers often lead as well to a business deregistration with a subsequent formation of one or more companies. In contrast, with a genuine formation a new company comes into being (ex nihilo). Accordingly, after a genuine closure, no subsequent company

comes into being (see BFS, 2005). The differentiation of genuine formations from entries based on fusions, location shifts (e.g., from a foreign country) or changes in the legal form of a business is, in reality, especially difficult to distinguish. The commercial register is mostly based on the self declarations of the entrepreneur and therefore the required information is often missing. This is particularly true for Switzerland where a tax advantage can be gained when a business declares itself as newly founded.

2.3 Model formation

The logit loglinear model used here is a special case of the general loglinear models. Therefore, the general loglinear model is briefly described first. This model is used to investigate the cell frequency in (multi-dimensional) tables and shows the interaction effects between the various variables and their characteristics. In this multiplicative model, the cell frequency F_{ij} in a simple table with two variables A and B is calculated by the constant η, the main effect τ_i^A of category i of variable A, the main effect τ_j^B of category j of variable B, as well as the interaction effect τ_{ij}^{AB} between category i of variable A and category j of variable B (see Andress *et al.,* 1997):

$$F_{ij}^{AB} = \eta \ \tau_i^A \ \tau_j^B \ \tau_{ij}^{AB} \qquad 1$$

To improve manageability, the logarithmic transformation of the equation 1 is usually used in an additive form:

$$G_{ij}^{AB} = \theta + \lambda_i^A + \lambda_j^B + \lambda_{ij}^{AB} \qquad 2$$

with: $G_{ij} = \ln(F_{ij})$, $\theta = \ln(\eta)$, $\lambda_i^A = \ln(\tau_i^A)$, $\lambda_j^B = \ln(\tau_j^B)$, $\lambda_{ij}^{AB} = \ln(\tau_{ij}^{AB})$

With saturated models, all the main and interaction effects are used to calculate the cell frequency. The appropriate model therefore exactly depicts the observed cell frequency. With unsaturated models, in contrast, not all effects are considered, especially the parameter of interaction effects of higher orders are mostly statistically insignificant and can therefore be ignored. These models do not depict the observed cell frequency exactly. To test the conformity of the estimated models on the observed distribution, the Pearson-χ^2 test and the Likelihood Quotient L^2 (Seifert, 2004) are used. To identify the model, additional restrictions must be introduced. In the model presented here, the corner-point restriction was applied, so that the parameters of the reference category (respectively, the last category of each variable) were set at zero.

Whereas the general loglinear model examines an unspecific connection between categorical data, it is possible with the logit-loglinear model to discover specific connections between a

dependent categorical variable $\bar{O}$ and for example two independent variables A and B. What is of interest in these models is not the quantities of cell frequencies, but the quotient of cell frequencies observed of category 1 to the reference category L (Seifert, 2004):

$$\Omega_{ijl}^{AB\bar{O}} = F_{ijl}^{AB\bar{O}} / F_{ijL}^{AB\bar{O}} \quad 3$$

According to equation 2, the calculation for the logarithmised quotient $\Phi_{ij}^{AB\bar{O}}$ gives the following additive form:

$$\Phi_{ijl}^{AB\bar{O}} = \beta_l^{\bar{O}} + \beta_{il}^{A\bar{O}} + \beta_{jl}^{B\bar{O}} + \beta_{ijl}^{AB\bar{O}} \quad 4$$

with: $\Phi_{ijl}^{AB\bar{O}} = \ln (\Omega_{ijl}^{AB\bar{O}})$

Because the additive form is being used and the effects are therefore logarithmised, a β of zero means that the observed effect does not deviate from those of the reference category. The more β is removed from zero, the greater therefore is the difference to the reference category, where positive values point out a stronger effect, and negative values a lesser effect.

2.4 Data base

Using a specially developed software programme, the basic information for the years 1990 - 2005 of the resident businesses were transferred from the commercial registers of the St.Gallen and Appenzell cantons. In order to do this, several characteristics of the businesses were calculated for the 31st of December of the above-mentioned years: i.e. the city of residence, the number of registered persons, and the age of the business. On the basis of the commercial register excerpts, the development of about 54,600 firms could be examined over 16 years, whereby the number of registered firms increased from 20,700 at the end of 1990 to 31,600 by the end of 2006.

The business demographic events represented in Figure 1 are quite easily and effectively determined, as far as relocations are concerned, based on the address information in the trade register. The difference between genuine formations and closings on the one hand and market entries and exits based on fusions on the other hand is, as mentioned above, more difficult to establish. The relevant assignment was made with the aid of remarks entered in the registers. Based on this information, 8% of all registrations and 13% of all deregistrations were based on fusions and takeovers. As Hutter (2005) also points out, the share of ‚false' formations and closings could be significantly larger.

Concerning the choice of location, the interpretation of data with fusions and takeovers is also ambiguous: in particular, no conclusions can be drawn as to whether a company will remain at its existing location. However, this concerns on average only 0.6% of businesses.

Table 1 Number of companies at year's end by source of the data (in thousands)

	1990	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06
Businesses entered in the Commercial Registers (CR)	21	22	22	23	24	24	25	26	26	27	27	28	28	29	30	31	32
Companies with current BUR data	.	.	.	.	.	.	.	.	.	.	.	.	.	29	30	31	31
Companies with BUR data (year 2003)	12	13	14	15	16	18	19	21	23	24	26	28	28	*	*	*	*
Companies without BUR data**	8	9	8	8	7	7	6	5	4	2	1	0	0	0	0	0	0

* Not relevant because the current data from the operations and business registers (BUR) in the corresponding years are available.

** No information available about the size of the companies; the appropriate branch was deduced from the company designation and its stated purpose.

In addition, the branch identification (NOGA Codes) and the size indication (occupational class) could be taken from the business and trade register (BUR) of the Federal Office for Statistics. According to Bürgle (2006), nine branches are used: Agriculture / Mining, goods manufacture, construction, wholesale, retail, hotels/gastronomy, transport/communication, services/financing and health / education.

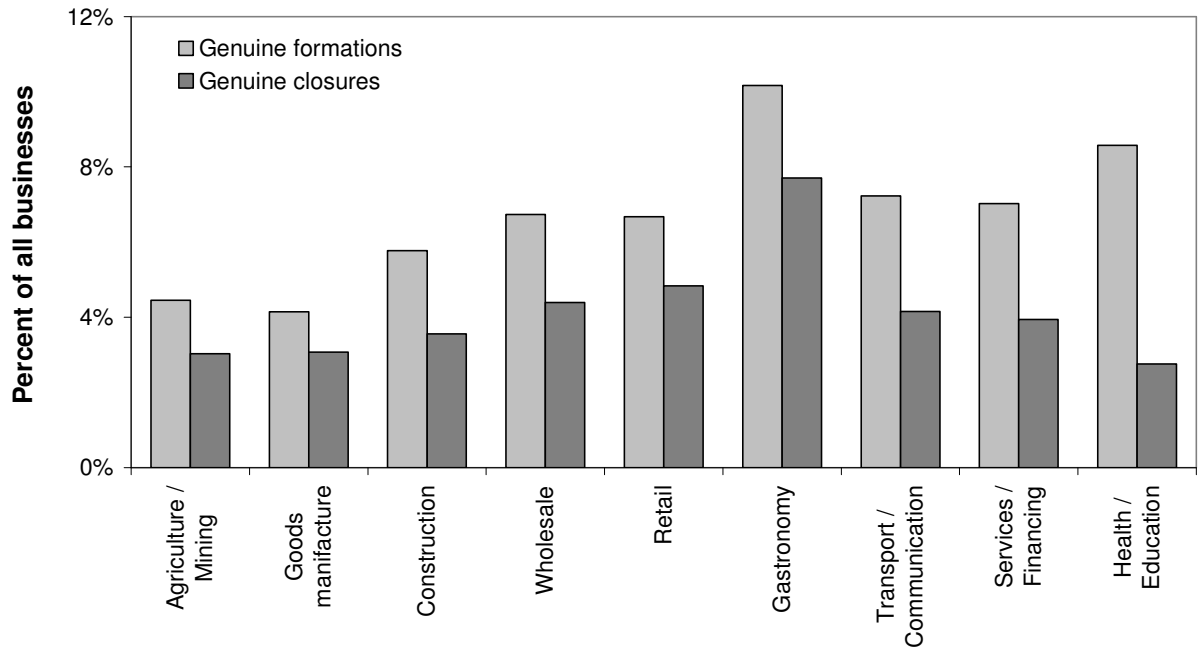
As can be seen from Table 1, the branch identity of the businesses observed can be traced back to the year 2003 almost seamlessly with the help of the data from the BUR. For the years 1991 to 2002, the branches from the year 2003 were used. Firms that were deleted from the trade register before 2003 were retrieved on the basis of the company name and its goals. Any changes in branch identity of the firms before 2003 were not considered. The size indications could not be retrieved. Therefore this information is only available from the BUR for the years 2003-2006.

3. Empirical Results

3.1 Business demographic events

The relationship between the number of genuine formations and the number of genuine closings, is clearly differentiated between the branches (see Figure 1). Fast-growing branches such as health and education have a relatively higher entry rate, with only a few closures registered: on average, annually 9% of all enterprises in this sector were newly founded in the years from 1991 to 2006 and only 3% were closed. On the other hand, stagnating branches clearly show a more balanced ratio. In commercial and industrial businesses (goods manufacture), annually around 4% of all businesses were newly founded and 3% were dissolved.

Figure 2 Percent of genuine business formations and closures (1991-2006)



The relationship between in-migrations and out-migrations, in contrast to the previously described market entries and exits, is quite balanced. The observed perimeter shows a total of 1,231 in-migrations against 1,232 out-migrations. On the basis of these minor differences, only the out-migrations from a location will be taken into account in the following. In Figure 3, the percentages of businesses that leave their location are depicted according to branch. The branch of Services/Finances registers the highest number of relocations: between 1991 and

2006, annually 6.1% of the businesses in this branch moved to another location. However, of those gastronomic enterprises with a fixed location, annually only 2.6% leave their site. Considering the high exit rate, however, the extraordinarily strong dynamics of the gastronomy branch becomes clear. As can be expected, the migration rates for agriculture and mining (3.1%) and for retail (3.6%) are well below average.

Figure 3 Percent of businesses that leave their site (1991 - 2006)

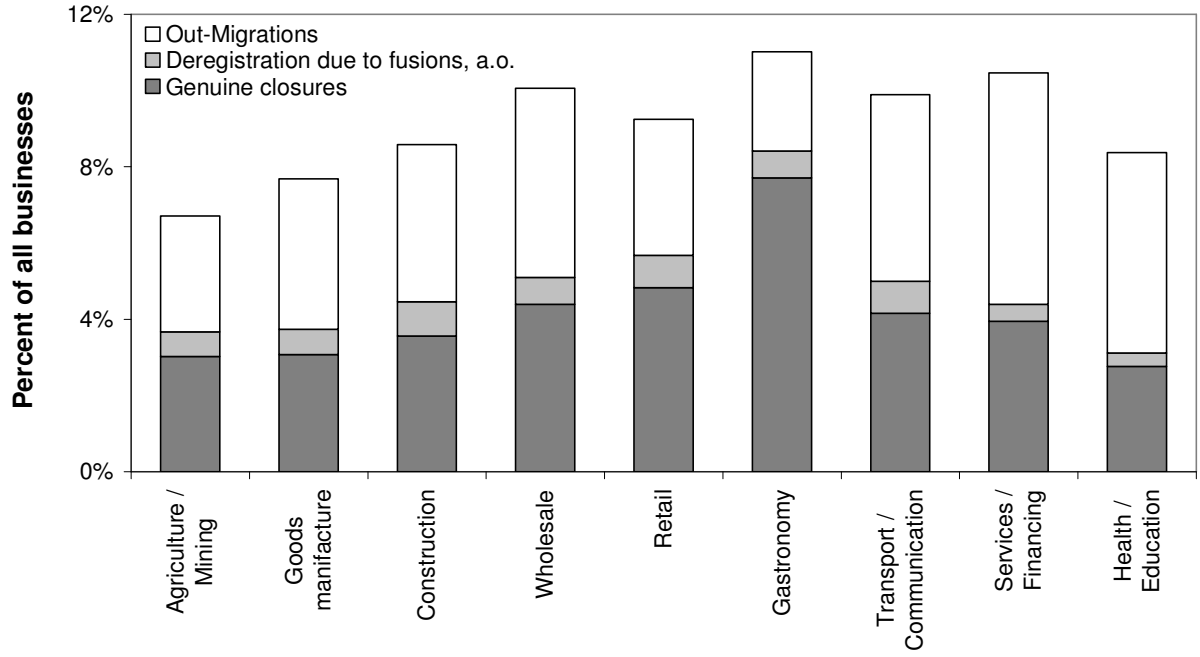
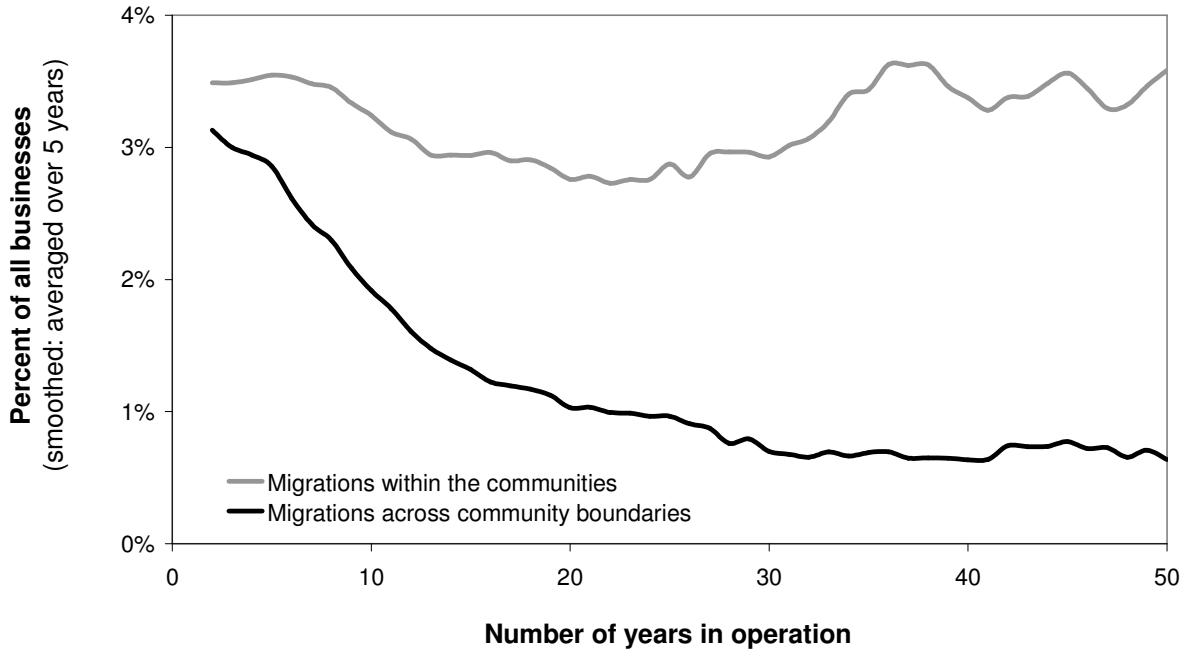


Figure 4 shows the development of address changes with increasing company age. The number of companies with relocations within the community remains almost constant in the process of aging: it sinks from 3.5% to 2.7% after about 20 years of age only to slowly increase again. After about 35 years, the quota returns to roughly starting level. Relocations across city boundaries give a different picture: young companies migrate with an annual rate of 3.1% in the early years clearly more often then older companies. At first, the migration rate increases strongly and later only decreases slightly achieving a level of 0.7% at about 35 years. Address changes within the community and relocations to another community, therefore, do not appear to be sharing the same regularities. Relocations across very short distances are hardly influenced by the age of an enterprise. Where larger distances are concerned, however, age plays a stronger role. Businesses usually encounter basic location decisions within the first few years.

Figure 4 Percent of businesses with address changes by company age (1991-2006)

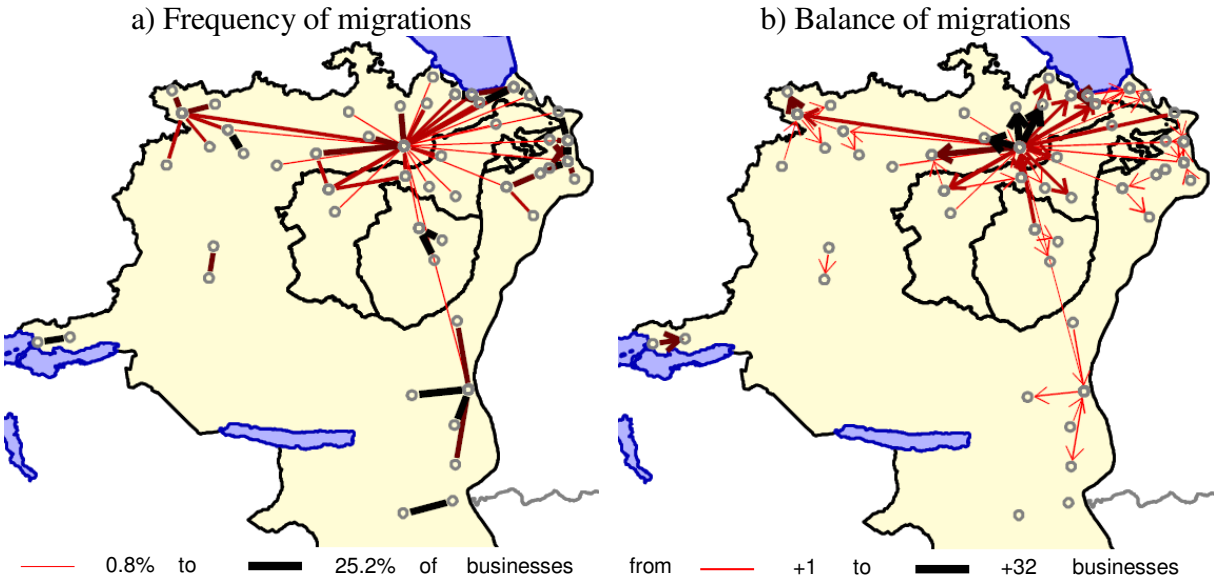


3.2 Spatial patterns

When the migrations between communities in the perimeter are considered, there is a considerably different image. Figure 5a presents the relative frequency of migrations between communities within the observed perimeter.[2] The large migrations take place in the agglomerations: in smaller agglomerations between the core city and the agglomeration communities, and in the agglomeration of St. Gallen in addition, between the larger agglomeration communities. However, the relative frequency of migrations with shorter distances between the communities clearly increases. This is particularly evident between Rapperswil and Jona as well as with the Inner Rhodes communities.

In Figure 5b, the relevant migration directions are represented (balance between the two migration directions). The city of St. Gallen is a big "supplier" for businesses. In particular, businesses move preferably into the border communities, that is, not into the peripheral communities. A clear out-migration of businesses in the direction of St.Gallen however is only evident for the communities of St. Margrethen and Appenzell. In the smaller communities, businesses also follow the general trend of moving out of the core city. The main migrations appear to be within or between the agglomerations.

Figure 5 Migration frequency and balance between communities (1991-2006)



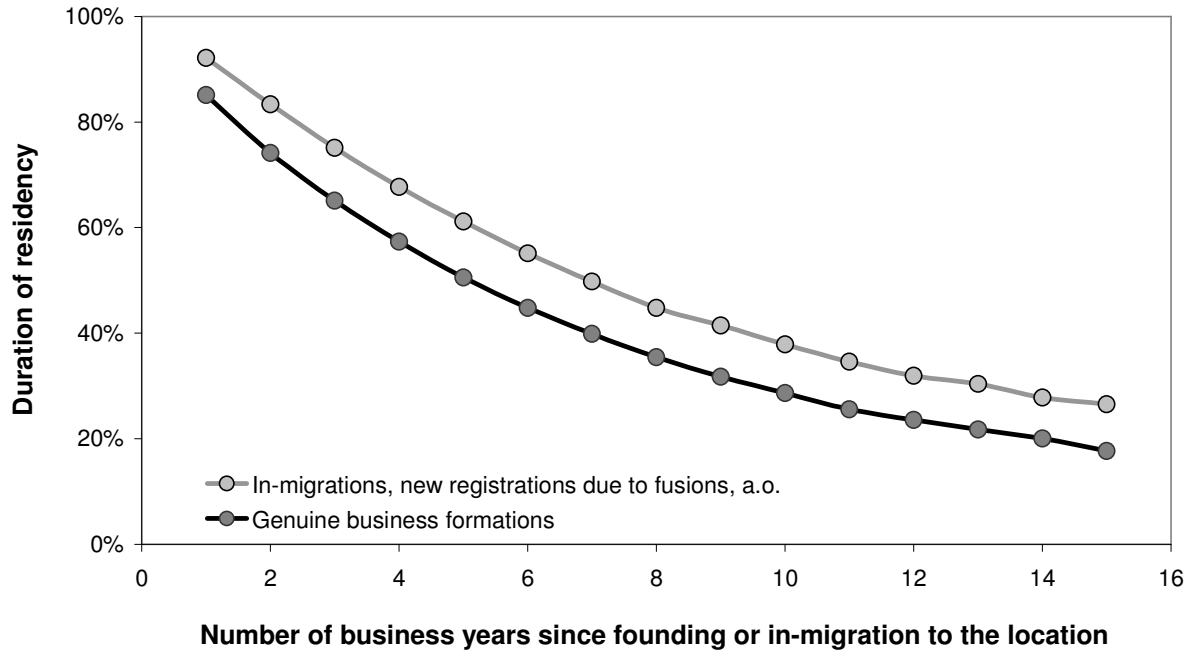
[2] The number of migrations was divided by the number of companies registered in the two communities.

3.3 Duration of residency

The duration of residency of an enterprise at a specific site actually depends on whether the specific company was (genuinely) founded at that location, or existed already. The likelihood, that a genuine founded business is still present at its original site after one year is 85%, after three years, it's 65% and after ten years, only 29%. In contrast, the respective duration of residency for an imported or not-genuine founded business is clearly longer: after one year, it is 92 %, after 3 years, 75% and after 10 years, 38%. As Figure 6 clearly shows, the slope of both curves declines with increasing residency duration, i.e., the longer an enterprise remains in one location, the greater the possibility that that enterprise will also be there the following year. Both curves closely follow a negative exponential curve (with a coefficient of determination $r^2 = 0.99$).

When in-migrations and founding cohorts of different time periods are compared, it's noticeable that the rates of residency deviate at most 3% from the mean, as represented in Figure 6. The influence of economic trends seems therefore to be insignificant concerning whether a business remains in one specific location.

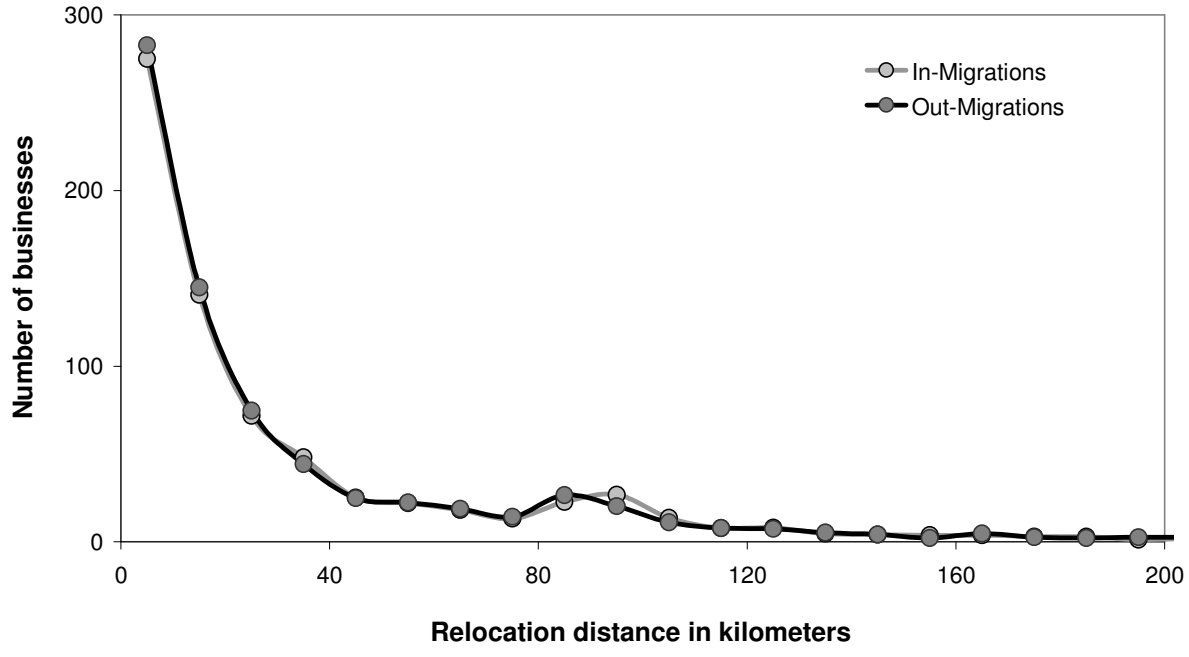
Figure 6 Duration of residency by company age (average of in-migrations and founding cohorts 1991-2005)



3.4 Distances involved

Based on residency information in the trade register, the distance involved in relocations can be estimated. Figure 7 shows the number of residence changes by distance between 1991 and 2006.[3] The number of in- and out-migrations is almost identical and resembles a negative exponential curve. Which is obviously disturbed between distances of 80 to 100 km. A relatively large number of in- and out-migrations with the agglomeration of Zurich are responsible for this. In the distances between 30 and 40 km, the in and out-migrations with the agglomeration of Winterthur lead to a small distortion of the curve. The influence of other cities and agglomerations is marginal. It indicates that, at least across larger distances, the migrations happen first between the centres. When relocations in the economic region of St.Gallen are observed and the influence of the big centres of Zürich and Winterthur are eliminated, the curve slopes almost exactly into a negative exponential. (r^2 = 0.99 for distances up to 80 km).

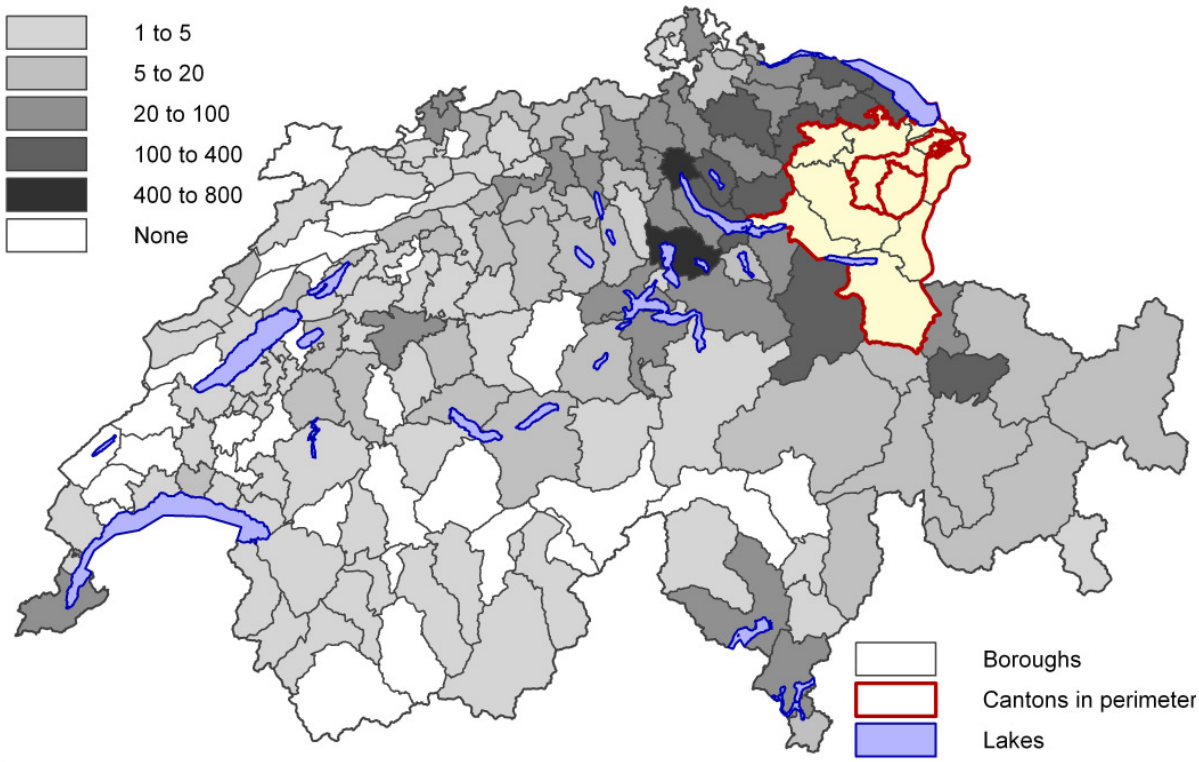
Figure 7 Number of residence changes by distance (1991 - 2006)



[3] In the evaluation of distances, migrations within cities were not included. The distances between the locations were calculated at the Institute for Transport Planning and Systems at ETH Zürich and refer to the distance travelled by car between the centres of the communities in question (Fröhlich *et al.,* 2004).

In Figure 8, the sum of all migrations between the observed perimeter and other Swiss boroughs is represented. As expected, the number of migrations decreases with increasing distance to the perimeter boundary, whereby obviously the distance by road, respectively the driving time, would be decisive rather than the linear distance. Striking is the relatively large exchange of businesses with the larger agglomerations. Two reasons could be decisive in this case: 1) the proximity to other businesses (centrality, effects of agglomeration) and 2) tax- or similar incentives.

Figure 8 Number of migrations between the observed perimeter and other Swiss boroughs (1991 - 2006)



4. Loglinear model

4.1 Variables

In order to ensure that the multi-dimensional table contains no accidentally empty cells, the characteristics of the companies are aggregated and when possible summarised to dichotomous variables. This has the additional benefit that correlations between variables and the data quality can be considered. Based on the information presented in chapter 3, the effects of the following variables in the model were tested:

- **Company demographic events (Ō)**: move within the city, move out of the city over a short or long distance (up to 20 km or over 21 km), closure of a company and no event.
- **Age since founding (A)**: divided into four age quartiles (1 to 4 business years, 5 to 10, 11 to 20, and 21 and older).
- **Number of years operating at the location (B)**: companies new to their location (1 to 4 business years) and other companies (5 business years and longer).
- **Company size (C)**: Large companies (10 or more employees), other companies (small and micro-companies as well as companies that are inactive according to the BFS.
- **Growth in the branch (D)**: growth phase (number of employees increasing in the corresponding branch, and companies become larger, other phases.
- **Location-dependence in the branch (E)**: location-dependent companies based i.e. on product manufacture (branches of the first and second sectors, retail businesses, gastronomy, personal services), other branches.
- **Branches (F)**: agriculture/mining, goods production, construction, wholesale trade, retail trade, hotels/gastronomy, transport/communication, health/education, service/finances.
- **City type of main office since the beginning of the year (G)**: large and medium-sized centres, small centres/suburban communities, peri-urban communities, industrial/tertiary/agrarian communities (BFS, 2005)[4].

What emerges is that in a logit-loglinear model with the company demographic events as a dependent variable from the seven previously mentioned influence variables, only the

[4] The division based on the nine main types of the BFS (2005), where the centres in large centres and medium or small centres are subdivided. (see 22 class types of the BFS). Mid-sized centres in the perimeter are the cities of St. Gallen and Wil. Small centres are Herisau, Rorschach, Altstätten, Buchs and Wattwil.

parameter of the general effect $\beta_l^{\bar{O}}$ and those of the main effects $\beta_{il}^{A\bar{O}}$, $\beta_{jl}^{B\bar{O}}$, to $\beta_{kl}^{G\bar{O}}$ are significant. However, the parameters of the interaction effects of second order and higher are insignificant for the model estimations. In the estimation model, therefore, only the general effects and the main effects were considered.

4.2 Model estimation

The parameter estimations of the logit-loglinear models are summarised in Table 2. The general effects reflect the fundamental distribution of the probability that the appropriate company demographic event will appear. Companies that have not relocated or filed for dissolution serve as the reference category. Because the largest probability is that no business demographic event will occur, the other parameters contain relatively large negative values. The probability of a move within the same city is clearly larger than that for a closure. The least likely event is a move over a great distance.

If the effects of age on the company demographics events are observed, what stands out is that, as expected, the probability of moving (over all distances) decreases with increasing age. Young companies move relatively often and across greater distances. With increasing operating age, the probability of relocating, as well as the distances covered, is reduced. This allows the conclusion that companies choose their basic location in the first years of operation. With increasing age, which also means more established customer and employee bases, relocating becomes more problematic and is avoided. Older companies, more than 19 years of operation, almost never move and if they do, then they usually remain in the same city or are finally dissolved instead. New to a location or newly founded companies tend to move less often within city limits. In contrast, the probability of a move outside the city limits is significantly higher.

Larger businesses (with more than 10 employees) move less often outside the city limits than small or micro-businesses. In addition, it seems that the size of the business reduces the probability of a business closure.

Businesses in the growth branches often move outside the city limits, and especially over great distances. Such businesses consequently tend to seek better locations and take the cost and effort of greater moving distances into account. Apparently, the community of the current location can no longer fulfil the needs of these businesses. One example could be a lack of available building land.

Table 2 Interaction effect β between selected business groups A - E and their behaviour Ō (1991 - 2006)

Parameter estimation (a, c, d)	Move within the community	Move of 1-20 km	Move of more than 21 km	Business closures	No event
General effects	-3.027**	-5.549**	-5.709**	-5.086**	0 (b)
Age quartile (A)					
1st age quartile	0.315**	1.294**	1.067**	0.638**	0 (b)
2nd age quartile	0.083*	1.359**	0.749**	0.407**	0 (b)
3rd age quartile	-0.024	0.770**	0.221*	-0.215**	0 (b)
4th age quartile	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
New at location (B)					
New (1st to 4th business year)	-0.257**	0.209**	0.246**	0.105	0 (b)
Other businesses	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
Larger businesses (C)					
Larger businesses	-0.027	-0.352**	-0.430**	-0.745**	0 (b)
Other businesses	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
Growth in the branch (D)					
Growth branches	-0.134**	0.213**	0.365**	0.459**	0 (b)
Other branches	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
Location-dependence (E)					
Location-dependent	-0.319**	-0.671**	-1.243**	-0.076	0 (b)
Other branches	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
Branches (F)					
Agriculture/Mining	-0.313**	-0.412	0.621*	0.13	0 (b)
Goods production	-0.120*	0.430**	0.749**	-0.078	0 (b)
Construction	0.016	0.039	0.021	0.065	0 (b)
Wholesale trade	-0.288**	0.145*	0.430**	0.202**	0 (b)
Retail trade	-0.280**	0.208	0.647**	0.541**	0 (b)
Hotels/Gastronomy	-0.651**	-0.025	0.588**	1.066**	0 (b)
Transport/Communication	-0.079	-0.424**	-0.336*	0.237*	0 (b)
Health/Education	0.125	0.377**	0.753**	-0.319*	0 (b)
Service/Finance	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)
Community type(G)					
Large and mid-sized centre	0.325**	-0.007	0.380**	0.391**	0 (b)
Small centres/suburban community	-0.214**	0.299**	0.138*	0.193**	0 (b)
Peri-urban community	-0.095*	0.270**	0.008	0.132	0 (b)
Industrial/agrarian community	0 (b)	0 (b)	0 (b)	0 (b)	0 (b)

a Multinomial logit-loglinear model: $\Phi_{ij\ldots kl}^{A\ldots G\bar{O}} = \beta_{l}^{\bar{O}} + \beta_{il}^{A\bar{O}} + \beta_{jl}^{B\bar{O}} + \ldots + \beta_{kl}^{G\bar{O}}$

b This parameter is set at 0 because it is redundant (reference category).

c Likelihood quotient : 4'948 (Degree of freedom 9140, Significance 1.000)

d Pearson chi square: 5'977 (Degree of freedom 9140, Significance 1.000)

** Significance at 1% level, * Significance at 5% level (Estimation with SPSS 15.0)

As expected, businesses in branches that are dependent on their location because they must ensure goods production or be near their customers or suppliers are significantly less often affected by relocations than location independent businesses. The difference becomes significantly larger with increasing distance.

Despite the branch-specific variables, the new branches observed still behave, in part, quite differently. The reason for this difference can be found in the capital investment in production, space requirements and availability or tax-related aspects. This must be further investigated in future. In the interpretation of the estimated parameters, it should be noted that the service and finance branches were chosen as a reference category and that these branch effects are already influenced through the two previously mentioned effects of growth branches and location dependency. The largest effect is shown by the gastronomy branch; these businesses seldom relocate, and that over long distances the very strong negative effect of location dependency must be considered. In contrast, business closures are more common in the gastronomy branch.

The type of city also has a significant influence on the migration behaviour of businesses. Companies in the larger centres are affected relatively often by relocations or closures, certainly the companies either remain in the city or move a great distance. These are also clearly influenced by the obviously larger surface of these centres. Businesses in small centres, suburban and peri-urban communities, however, move relatively less often within the city or tend to remain rather within the region. What is interesting is that the behaviour of businesses in the more rural areas, distant from city centres: these clearly move less often and when they do, they remain in the community. Businesses in the rural areas are also behaviour-wise less affected by business closings. From this observation, it can be derived that with increasing distance to the centres, the businesses behave statically.

5. Conclusions

Based on the business demographic data of the cantons of St. Gallen and both Appenzells from the years 1991-2006, four basic influence variables show up in the migration behaviour of companies: age, size, branch and location (community type) of the business. Using a logit-loglinear model, the relevant effects on the behaviour of the companies can be quantified. A short summary gives the following picture:

- **Age:** Young companies relocate frequently, especially across longer distances. They also are relatively often affected by business deaths. Newly arrived companies also relocate more often - and they also often change communities at the same time.
- **Size:** Small companies clearly relocate more often and at further distances than larger ones. Surprisingly, the likelihood that businesses with 10 employees or more will leave their location is no longer dependent on their size.
- **Branch:** Businesses in growth branches relocate more often, usually into another community. Businesses dependent on their location basically avoid moving. Especially across larger distances, the likelihood of relocation considerably decreases.
- **Location:** Clearly more enterprises leave their location in cities than in agricultural areas. A majority of these migrations are between the larger cities.

The results achieved basically confirm the expectations and were also confirmed in various other works. The logit-loglinear model, however, allows proving which effects are brought about by the individual characteristics of the businesses – whereby the effects of all other characteristics can be taken into account. For example, several papers point out that young companies relocate frequently. Because young companies are also usually small, the question remains whether company size is responsible for this connection. With the proposed model, this question can be cleared up unambiguously: age and size have an independent effect on the behaviour of a business. The age of a company has a predominant influence on migration behaviour: smaller companies often relocate across community boundaries. In comparison, the size of a business has a noticeable effect on the exit rate: the larger the business, the less likely a closure will occur. The effect on migration rates is therefore considerably smaller.

The present analysis shows that several more factors play a part in the decisions on choice of location: among others, the availability of building land and the price of workspaces. This shows up particularly in the modelled effects of the branches. These themes as well as that of infrastructure (accessibility for customers and employees) and the behaviour of communities and cantons (i.e., taxes) will be explored in further studies.

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