Agriculture as a success factor for municipalities?

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***Abstract* – Prospective changes in agricultural policies will set more emphasis on targets and customer concerns. The analysis of a unique data base stemming from 18,000 citizens' responses in 60 communes shows interference between the performance of farming and the cognition of quality of life. Agriculture is – among other factors – one of the most significant predictors of quality of life in a municipality.[1]**

Introduction and Motivation

Austrian agricultural policy has been striving for years to reward services performed by a multifunctional agriculture. Currently, with the reform of agricultural and regional policy of the EU the targets are discussed anew. In this situation, arguments and evidence in the multi-functionality are important. To what extent does agriculture promote common goods and achieve objectives, perceived and recognised by the population? The analysis of a record on population surveys in citizen participation processes helps to answer this question.

The research project "ErfolgsVision" *(engl. "Vision of Success")* analyzed the results from population surveys in a cross-comparable way. The research project aimed at giving better support to citizen participation processes. The general idea was that an eagle's eye view of the recent citizen participation processes may yield new information, valuable for regional development consultants as well as municipality management and policies.

Three partners joined for that project: SPES Academy, the data owner and regional developer; STUDIA-Schlierbach, an applied social researcher, so far responsible for municipal survey evaluations; and the Department of Statistics and Probability Theory at the Vienna University of Technology.

Participation Processes as a Data Source

Over the past few years, the SPES Academy supervised and controlled numerous citizen participation processes in Austrian and German municipalities, mostly within the framework of Local Agenda 21, LEADER or communal business development programmes. These processes established innovative ideas, alliances and problem solutions in the municipalities. For many of them it was the first time that broad levels of the population were actively involved in local development.

Interviews were conducted in order to understand citizens' demands, preferences and dispositions. They covered major issues concerning the habitation environment, infrastructure and services. They also assessed social capital in communities and positions on strategic fields of action. The results of the surveys have been used to provide a basis for local decision making. They have been reflected and discussed in communal committees and – most often – presented in public events or published in the local news. Each municipality received its own evaluation, consisting of tables, texts and graphics. This data gathered from local polls resulted in a unique record when summarised over the regions and years,.

The SPES "Gemeindepanorama" *(engl. "panorama of the municipality")* is a screening of the local mind-set. Between 2000 and 2006, 60 communities participated, 45 of them from Austria (Upper and Lower Austria, Tyrol and Vorarlberg) and 15 from Germany: Baden-Württemberg and Bavaria. In total, 18,748 questionnaires have been collected, on average 312 per municipality. The survey has been subject to individual adaptations towards the municipal needs. It usually comprised about 250 questions, most of them multiple choice. 134 questions have been posed identically in 30 or more municipalities and yield comparable results. Some 25 questions concerned the local agriculture.

In the course of the research project, those data have been merged with statistics on demography and economy. 40 mayors gave feed-backs on recent performance of their commune.

Analyzing Success Factors

Hypotheses. Starting the research project, SPES developed a list of 27 hypotheses to be tested and questions to be answered, e.g.

– What makes communities successful?

– What makes quality of life (satisfaction)? What success factors are conditions for a sustained positive trend in quality of life?

– What factors encourage optimism? E.g. a strong mayor, successful projects, citizens interior binding and commitment, youth on board, good climate in coexistence and cooperation, high social capital, good communal information and public relations.

– Sector thinking in the communities disturbs the development of a positive quality of life. The closer to the habitat, the more important networked, holis-

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tic thinking becomes. If merchants win against farmers, then all lose in the final analysis.

Data preparation included indicator building, handling of missing values, selection of variables and communes: Variables with less than 20% missing observations and observations with less than 50% missing variables were erased. Missing values were replaced by a nearest neighbour estimate.

From the questions and hypotheses, we derived target variables. Sets of explanatory variables were not derived from the hypotheses, but with an automatic search procedure *(Lasso regression).* An *all-subset regression* has been carried out to find the essential set of variables explaining the target variable. Robust regression procedures have been applied to attain results that are not susceptible to singularities.

Analysis Results for Quality of Life

Quality of Life (QoL) is – on the one hand – a subjective and personal measure of one's own satisfaction with life. On the other hand the term is used to characterise regions or cities, reflecting the objective opportunities the location provides to the individual. QoL models reflect key areas as e.g. Being, Belonging and Becoming (Tichbon, Newton 2002) and include access to public services, nutrition and health, knowledge and the physical environment.

QoL is represented graphically in order to test it on normal distribution, see Fig. 1. Lasso regression then identified the most influential 26 variables. The all-subset regression further selects variables for a regression model, see Tab. 1.

The significant factors for a commune's quality of life are thus linked to supply structures, merchants' activity and inventiveness, to social climate factors like "youth-friendliness". It is important to mention, that model variables have been selected by the methods described above. Other model calculations show an influence of health services' supply and education and vocational training opportunities.

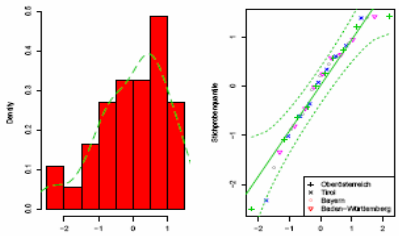

Figure 1. Distribution and quantiles plot of "Quality of Life". The variable reflects results of the question "Please assess the current state of quality of life in your municipality, on a scale of 1 to 5 (1 … very good, 5 … very bad)." (n = 56)

Table 1. Regression model for "Quality of Life". Explaining variables: A … state of the agriculture (question posed similar to Quality of Life, see above), Y … state of municipality's youth friendliness, V … state of the municipality's view, M_C … merchants activate the municipality's centre, M_I … merchants are active and come up with ideas.

QoL = 8.73 + 0.28 A + 0.21 Y + 0.14 V + 0.20 M_C + 0.20 M_I					
	(5.9)	(4.0)	(3.6)	(3.8)	(3.2)
adj. R^2 = 0.93, dF = 27					

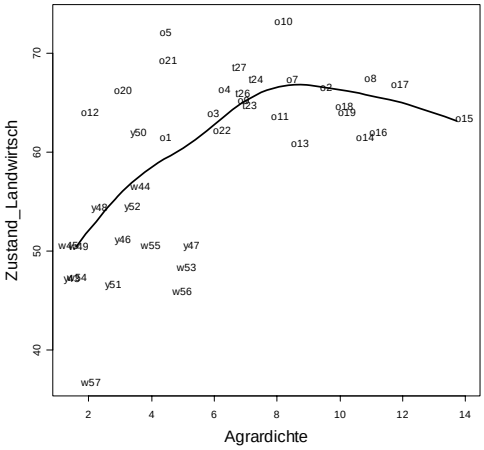

Figure 2. Scatterplot of agricultural density (farms per population), x-axis, versus state of agriculture (SPES poll's result), y-axis; Loess-regression line; objects=municipalities

The most important influential predictors have been displayed in scatterplots. They depict not only strength of interference, but also non-linear behaviour and the position of individual municipalities. The state of agriculture is important, but not sufficient itself to explain quality of life. The state of agriculture does not relate in a negative manner to the state of jobs in the region.

The state of agriculture corresponds in part to the share of the agricultural population, especially when this density is low. At higher agricultural densities interference becomes zero, see Fig. 2.

Conclusion

Agriculture is one of the most significant predictors of quality of life in a commune. Municipalities may develop an own "communal agricultural policy" to increase quality of life for their inhabitants. On a national level a rational policy may consider quality of life aspects, and therefore include the success factor state of agriculture on a regionally differentiated level. Most effects on quality of life are predicted when farming is kept in areas where the occupation of farmer is rarely found. In farming intense areas non-farming infrastructures become essential. The data base generated by SPES "Gemeindepanorama" gives useful insights into customer demands on agriculture. The data base may be used to reference fulfilments of multifunctional agricultural policy targets.

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