Agriculture as a success factor for municipalities

Landwirtschaft als Erfolgsfaktor für Kommunen

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Zusammenfassung

Eine Analyse von über 18.000 Fragebögen aus 60 Kommunen zeigt Zusammenhänge zwischen dem Zustand der Landwirtschaft und der Wahrnehmung von Lebensqualität. Die Landwirtschaft ist – gemeinsam mit anderen Faktoren – einer der wichtigsten Prädiktoren für Lebensqualität in einer Kommune. Ein multivariates Modell berechnet den Einfluss der Variable „Zustand der Landwirtschaft" auf die Lebensqualität; Hintergründe zu diesen Variablen wurden untersucht. Künftig ist zu erwarten, dass die Agrarpolitik mehr Wert auf Ziele und Kundenorientierung setzen wird. Die Analyse bietet Fakten und kann die Diskussion über den Beitrag der Landwirtschaft zu europäischen Zielen anregen.
Schlagworte: Lebensqualität, Wohlbefinden, Multifunktionalität, Partizipation, kommunale Agrarpolitik, Zustand der Landwirtschaft

Summary

A survey of 18.000 citizens in 60 municipalities shows a close link between the performance of farming and the perceived quality of life. Agriculture is – among other factors – one of the most significant predictors of quality of life in a municipality. A multivariate model calculates the influence of "state of the municipality's agriculture" on quality of life; backgrounds of these variables have been studied. In future, agricultural policies are likely to put more emphasis on targets and

customer concerns. The analysis offers facts and may encourage a discussion on contributions of agriculture to European targets.

Keywords: quality of life, well-being, multifunctionality, participation, communal agricultural policy, state of the agriculture

1. Introduction

Austrian agricultural policy has been striving for years to reward services performed by a multifunctional agriculture. Currently, with the forthcoming reform of agricultural and regional policy of the EU (2013) the targets are discussed anew. In this situation, arguments for and evidence of multi-functionality are important. To what extent does agriculture promote the common good and achieve objectives, perceived and recognised by the population? That question has been subject to previous studies in Austria (see Baaske et al., 1996).

The research project "ErfolgsVision" (engl. "Vision of Success") analyzed secondary data from comparable population surveys. The general idea was that an eagle's eye view of recent citizen participation processes may yield new information, valuable for regional development consultants as well as for municipality management and policies.

2. Surveys of participation processes

Over the past few years, the SPES Academy (Studiengesellschaft für Projekte zur Erneuerung der Strukturen) supervised and assessed numerous citizen participation processes in Austrian and German municipalities, mostly within the framework of Local Agenda 21, the European Communities' LEADER programme 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.

Furthermore, interviews were conducted to understand citizens' demands, preferences and dispositions. They covered major issues concerning the environment, infrastructure and services. They also assessed social capital in municipalities 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

municipal committees and – most often – presented in public events or published in the local news. 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").

SPES Gemeindepanorama is a screening of the local mind-set. Between 2000 and 2006, 60 municipalities participated, 45 from Austria (Upper Austria, Lower Austria, Tyrol and Vorarlberg) and 15 from Germany (Baden-Württemberg and Bavaria). Most of the municipalities are located in the rural area, few in (peri-)urban areas. Population densities are in 3 out of 4 cases less than 100 inhabitants per square kilometre. The municipalities are small, 20% of them with less than 1,000 inhabitants, 70% 1,000 up to 5,000 inhabitants, 10% larger (up to 10,000 inhabitants). A quarter of the municipalities experienced population losses in the last decade. Other 10% experienced population increases of more than 1% per year. Only 8 municipalities profit from tourism remarkably, with more than 1 overnight year equivalents per inhabitant.

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 were identical 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. Finally, 40 mayors provided feedback on recent performance of their municipality.

3. Analyzing success factors

3.1 Hypotheses and questions

Starting the research project, SPES developed a list of questions to be answered, e.g.: What makes municipalities successful? What leads to quality of life (satisfaction)? What success factors are related to a sustained positive trend in quality of life? What factors encourage optimism? SPES also developed hypotheses to be tested. They concerned influencing factors like: a strong mayor, citizens' commitment, youth

participation, good level of coexistence and cooperation, high social capital, good communal information and public relation. These factors have been included in the questionnaire. Another hypothesis has been that sectoral thinking in the municipalities impairs the development of a positive quality of life.

This article focuses on answering the second question: "What leads to quality of life?" Research on other hypotheses is ongoing.

3.2 Data preparation

Data preparation included indicator building, handling of missing values, selection of variables and observations (municipalities). The statistical method required a complete data record, without any missing values. Therefore, variables with more than 20% missing observations and observations with more than 50% missing variables were erased from the data record. For the few remaining missing values a nearest neighbour estimate was applied.

3.3 Variable selection and model building

For each hypothesis and question we derived a specific target variable. LARS (Least Angle Regression) was used as a procedure to select a set of explanatory variables for a selected target variable (VAN AELST et al., 2007). In our analysis we used a *robust* form of this procedure to ensure that the model will not be influenced by outliers (MARONNA et al., 2006). After using LARS on a big set of explanatory variables we took a robust form of another procedure called the *all-subset regression* to filter a small explanatory model.

For details on our complete procedure see ALFONS et al. (2008).

4. Results

4.1 Target variable "Quality of Life"

Quality of Life (QoL) is – on the one hand – a subjective and personal measure of one's own satisfaction with life, depending on individual preferences and access to potentials. This model takes into account that each person's life is unique and complex. On the other hand the term is

used to characterise regions or cities, reflecting the objective opportunities the location provides to the individual.

There is an extended history of research on well-being (RYAN and DECI, 2001; DIENER et al., 1999), focusing on subjective issues. Today, QoL is extensively studied in medicine. In comparison, the history of research on societal conditions for QoL is poorer. There are few studies organising indicators into consistent and meaningful empirical measures that move beyond ad hoc descriptions of amenities (DELLER et al., 2001). Participative aspects have been introduced to the notion of social capital (GEHMACHER, 2006). For Swiss agriculture, a monitoring instrument for social sustainability has been introduced on basis of social indicators for quality of life from the view point of farmer families (RADLINSKY et al., 2001).

The QoL model of TICHBON and NEWTON (2002) integrates some of those aspects and reflects key areas as Being, Belonging and Becoming. Being refers to current experience and internal feelings at the moment, including psychological, physical (health, nutrition) and spiritual (beliefs, values) aspects. Belonging is all about human and environmental relationships and includes social, community and ecological belonging: e.g. access to libraries, parks, feelings about the city, country, residence. Becoming deals with the action or doing aspects of life, e.g. purposeful activities, housework, leisure, hobbies, self-improvement through learning new skills and knowledge/personal development.
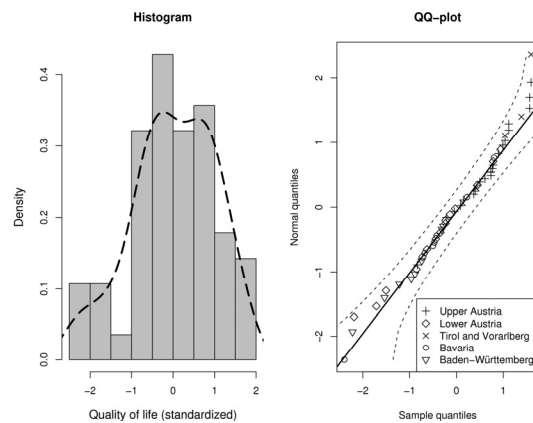

Fig. 1. Distribution and quantiles plot of "Quality of Life"

Within this study, the variable Quality of Life has been measured sub-
jectively and analysed objectively. QoL here reflects results of the ques-
tion "Please assess the current state of quality of life in your municipal-
ity, on a scale of 1 to 5 (1 ... very good, 5 ... very bad)."
Quality of Life is represented graphically to test it on normal distribu-
tion (see Fig. 1).
LARS regression then identified the most influential 26 variables. This
showed an influence of many variables, e.g. health services' supply,
education and vocational training opportunities.
The all-subset regression further selected variables for a robust regres-
sion model, which joins predictive and complementary variables into
one explaining model (see Tab. 1). The significant factors for a munici-
pality's quality of life are thus linked to supply structures, merchants'
activity and inventiveness, and to social climate factors like "youth-
friendliness".

Tab. 1: Robust regression model for "Quality of Life".

	esti-mate	std. error	t-value	signi-ficance
Intercept (constant)	0.141	0.057	2.5	*
State of the municipality's agriculture	0.398	0.055	7.3	***
State of municipality's youth friendliness	0.246	0.045	5.4	***
State of the municipality's view (beauty)	0.245	0.057	4.3	***
Merchants activate municipality's centre	0.275	0.063	4.4	***
Merchants active, come up with ideas	0.262	0.132	1.9	.

All variables are standardized   Robust residual standard error: 0.243
Signif.: *** 0.001, ** 0.01, * 0.05, . 0.1   R2: 0.96897, N=28

As one of the influential predictors the "State of the municipality's ag-
riculture" is most important, but not sufficient in itself to explain qual-
ity of life. Thus to increase quality of life, non-agricultural factors must
be introduced in regions with an intensive agriculture. It has been
proven that the state of agriculture does not relate in a negative man-
ner to the state of jobs in the region. Therefore, job opportunities may
easily be combined with a positive "State of agriculture" on a regional
level.

4.2 Target variable "State of agriculture"

What does it mean to observe a satisfactory state of agriculture? The question asked in the population survey was: "Please consider your municipality. How would you rate agriculture? Please tick …" Evaluation of that question generated the variable "state of the municipality's agriculture". It has shown up to be significant for QoL, and now becomes a target variable of its own.

State of agriculture corresponds in part to the share of the agricultural population. The state of agriculture significantly increases with the number of farms per population (agricultural density). With higher agricultural density marginal propensities decrease. Incremental increases will not contribute to state of agriculture any further. At higher agricultural densities interference becomes zero, see Fig. 2. When agricultural density increases further, the effect might even become negative.
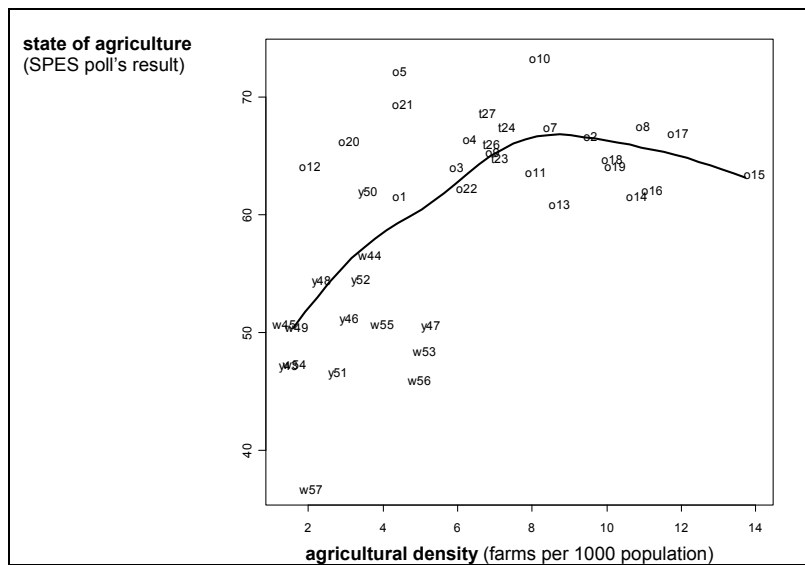

Fig. 2. Scatterplot "agricultural density" versus "state of the municipality's agriculture". The scatterplot depicts not only strength of interference, but also non-linear behaviour and the position of individual municipalities (each dot represents a municipality – y…Bavaria, w…Baden-Württemberg, o…Upper Austria, t…Tyrol/Vorarlberg) Loess-regression line (see CLEVELAND, 1992)

5. Conclusion

Agriculture is one of the most significant predictors of quality of life in a municipality. However, further research is needed to derive the optimum or the minimum agricultural density, or to identify agro-structural influences (e.g., the relation between pig rearing and "state of agriculture"). Provision of a sound agriculture therefore is a rational strategy for ensuring quality of life in a village or city. Municipalities may develop an own "communal agricultural policy" to increase quality of life for their inhabitants. A discussion on that started already (see HEIßENHUBER et al., 2002).

National public administration may consider quality of life as a target variable in rural development policies, and therefore include the success factor state of agriculture on a regionally differentiated level. The national level may care for an outbalancing of regions. The strongest effects on quality of life are predicted when farming is maintained in areas where there are few farmers. In areas with intensive agricultural production, non-farming infrastructure becomes essential.

The European level could introduce Quality of Life concept in order to orient the Common Agricultural Policy towards common EU goals and targeting of payments. SPES "Gemeindepanorama" offers useful insights into customer demands on agriculture. The analytical concept may be used to reference fulfilments of multifunctional agricultural policy goals – at least for the countries observed, unless the study is unique in the EU.

Acknowledgement

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