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Life and work on small-scale farms in Norway: an outlook based on survey results linked to financial data

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Abstract of the paper

This paper studies what causes (small-scale) farmers to leave their farms and typically move to urban areas. A data set is constructed by linking survey results with financial data, and the data set is analyzed by multivariate statistical techniques. Our results indicate that, while existence and size of future farm production is important, there is also a difference between farmers who primarily have financial objectives for their farming, and those who have more lifestyle oriented objectives. The latter group is, everything else being equal, more likely to stay on the farm. This could imply that, if preventing migration from rural to urban areas is a policy objective, production support schemes will be effective for some groups, but will be less effective for the group with lifestyle objectives. If this group is to be encouraged to stay on the countryside, policies directed at improving the general living conditions in the local community are likely to be more effective than specific support schemes related to agricultural production.

Keywords: migration, farmer objectives, agricultural policy, structural equation modeling

1 INTRODUCTION

The number of agricultural holdings in Norway declined from 99 382 in 1989 to 70 740 in 1999. Since then, the decline has continued at about the same rate. The average farmland area of the farms still in operation is constantly increasing, but is still small compared to other countries, with an average of 20.3 ha in 2006. Although Norwegian agriculture is different in some respects, this trend towards fewer, but larger farms can be seen in most countries (e.g., Eurostat, 2008). This trend has potential consequences in several areas.

First, one would expect changes in the labor market. The decline of small farms could reduce the need for labor in farming in general, as new and remaining larger farms typically are more efficient and require less work per unit output. This could in turn increase the labor supply to other industries.

Second, a less labor intensive agriculture mainly composed of larger, "industrial" farms may have consequences for the distribution of the population. Agriculture is one of few industries mainly to be found in rural areas, so if less people are occupied in farming, and those displaced from farming cannot be absorbed by the local labor market, one would imagine that this would lead to a flow of people from rural to urban areas.[1] From a macro perspective, this would in turn have consequences for infrastructure investment and demand for local goods and services.

Finally, one could hypothesize that this decline of small farms would affect agricultural policy. In many countries, support for rural communities and small-scale farming is an important part of agricultural policy. If this kind of farming becomes extinct, or at least substantially less important, one would think that these policy considerations would be of reduced importance too.

In some sense, this leaves us with at least three hypothetical effects of the decline we are experiencing in small-scale farming. However, we know little about the importance of each of these effects, and we can not deduce them just from quantitative data about numbers of farms, average farm size, and work input. Rather, we argue that the future effects of these changes will be a function of more complex mechanisms, including farmers' beliefs, goals, and expectations; financial situation; social networks; and connections to the off-farm labor market.

In order to shed light on such aspects, we have conducted a survey among Norwegian farmers, asking questions about their on- and off-farm economic activity, as well as about their expectations, beliefs, and goals. The data from this survey were merged with income (on and off the farm) and wealth data, obtained from the Tax Inspectorate's tax return register for the year 2006. Data from the Norwegian Agricultural Authority's farmer register, which includes farmland used and livestock numbers, were also merged with the survey data.

This cross-section data set makes it possible to do a more comprehensive study than previously done in the literature (see the literature review below) about possible connections between economic situation, behavior, attitudes and expectations. In particular, it allows us to

[1] On aspect that could, to some extend, reduce the flow of people from rural to urban areas is that "industrial" farming may has a larger multiplier effect than "traditional" farming.

look closer at small-scale farmers and the future outlook for small-scale farming, in order to explore possible effects of the decline of small-scale farming.

Nevertheless, it could initially be worth pointing out some important issues we do *not* intend to study in detail in the paper. First, we do not intend to study in detail the future development of small-scale farming as such. As mentioned above, there has been a trend towards fewer, but larger farms, a trend that has been shaped by massive economic, political and technological forces. There is little reason to expect this trend to suddenly disappear – and our data suggests it will not, as many small-scale farmers consider to quit farming. However, we have not tried to quantify the magnitude of this trend. This is partly because we lack relevant data (e.g., we have asked current farmers about their intentions to quit, but we have no information about how many non-farmers would be interested in starting farming). Rather, we are interested in the effects of this trend, and in particular potential migration effects.

Second, we shall by and large ignore our second hypothetical consequence of a trend towards fewer and larger farms – changes in local labor markets. This is partly due to size restrictions for the paper, but also because a thorough study of this would be likely to demand additional data.

In sum, our main focus here is on the causes and effects of a decrease in small-scale farming, and possible policy implications of the decrease. In particular, we are interested in migration effects, i.e., whether small-scale farmers will leave the farm if they quit production. We find this effect particularly interesting for several reasons. First, this is a fairly direct measure of our first hypothesis; that a move away from small-scale farming implies increased migration from rural to urban areas. Some people will of course quit farming, leave the farm and settle down in other rural areas, but in general, the more people leaving the farm, the more people will migrate from rural to urban areas. Our second reason to study this aspect in detail is our concern for the policy implications. In many countries, and in Norway in particular, an important reason behind support schemes for farming has been to support and encourage small, rural communities. If the move towards fewer and larger farms continues, it is useful to know to what extent this will lead to increased urbanization that may erode the political support for current agricultural policies. Similarly, it would be useful to consider whether the fundamental policy goal of flourishing rural communities could be better achieved by other means than agricultural support. A third reason is that few studies have looked closely to this particular aspect in the literature (see below).

The rest of this paper is hence structured as follows: In part 2, previous literature on the subject is briefly reviewed. In part 3, the materials and methods used in the analysis are presented, whereas part 4 contains the analysis and main results. Part 5 discusses the results and possible implications, before we conclude in part 6.

2 LITERATURE REVIEW

The impacts of small-scale farming have been extensively discussed and analyzed from many points of view in the agricultural economics literature. (Some review papers are, e.g., OECD (2005) and Hazell et al. (2006)). For our purpose, we are primarily interested in the network of relations between farm size; on- and off-farm income and opportunities; attitudes, goals, and outlook; financial situation; and labor and exit decisions. Whereas, to our knowledge, all these factors not have been simultaneously studied before, there exists a significant literature

on many of the separate factors. Examples related to labor decisions are: the characteristics of those participating in off-farm employment and the factors affecting labor supply (hours worked) in off-farm activities (e.g., Schultz-Greve, 1994; Weersink et al., 1998; Woldehanna et al., 1996, 2000; Salomonsen and Vårdal, 2007; Hennessy and Rehman, 2008); the effect of differences in and variability of incomes/wealth between agriculture and other occupations (e.g., Mishra and Goodwin, 1997; Andersson et al., 2003; Fall and Magnac, 2004); and whether part-time farming is a stable adjustment, a way to full-time farming or way out of agriculture (e.g., Kimhi, 2000).

Of particular relevance is Salomonsen and Vårdal (2007), as they under took an econometric analysis of data from Norwegian farmers – the same group as we are concerned with. Their main finding is a substantial elasticity of transformation between on-farm and off-farm work of -0.9, indicating that greater availability of off-farm jobs will indeed tend to lure farmers away from farm work and into off-farm activities. Related to this is the work of Bratberg et al. (2007), who found that good off-farm salaries increase the likelihood of farmers both quitting farming altogether and of taking off-farm work to become part-time farmers. Hence, there seems to exist a clear link between on- and off-farm employment and income opportunities and farmers' exit decisions.

Many studies has investigated such subjective issues as attitudes, goals and expectations connected to farmers and farming (e.g., Gasson et al., 1988; Willock, 1999; Bergevoet et al., 2004; Macbery et al., 2005; Lien et al., 2006). However, little research combines the more subjective issues with the labor allocation and exit decisions. We shall therefore include these factors, as measured by our survey, in order to gain further insight into how different factors affect the outlook for small-scale farming.

Regarding migration effects of farming, the general finding in the literature is that declines in the number of people employed in farming have often resulted in major population losses in farming communities (e.g., Albrecht, 1998). Flaten (2002) found that, for Norwegian dairy farming, a structural change towards larger farms would result in considerable losses of employment with appreciable impacts on the affected communities. These results are somewhat in contrast to the findings by Lobley and Potter (2004) in a quite recent study of agricultural households in England. They concluded that the commitment to staying on the farm remains strong among farming families. However, as pointed out by Flinn and Buttel (1980), the social impacts of structural changes in agriculture are a very complex issue, and empirical research is typically context specific and difficult to generalize.

3 MATERIALS AND METHODS

3.1 Survey and other data sources

Our study is based on a survey among Norwegian farmers conducted in 2008, coupled with financial and other data from various registers. For the development of the survey used in this study, we to some degree used questions and a structure that had been used for another survey (Flaten et al., 2005; Lien et al., 2008). For some questions, we also have looked at questionnaires from other countries as a source of reference (e.g., Pennings and Garcia, 2001). Before the survey was conducted among the farmers, the questionnaire draft was tested on a number of colleagues, primarily colleagues with significant practical farming experience. This resulted in changes to some questions, and the final questionnaire was the result of several rounds of testing.

Most questions were closed, i.e., each respondent was asked to tick one/several of a number of pre-defined alternatives. Attitudes towards listed statements were mostly measured by 7 points Likert scales, where the respondent was asked to rate his degree of agreement/disagreement on a scale from 1 to 7. The final question was open, and respondents were asked to give comments in their own words. The response quality was very good, which should indicate that the questions were understandable and not too numerous.

The questionnaire was sent by mail to a stratified sample (with regard to age, region, and size of farms) from the Norwegian Agricultural Authority's register of farmers receiving production support. In total, 1001 questionnaires were mailed out. Those who had not responded were sent a reminder postcard approximately four weeks later. In total, 551 responses were received. This constitutes a response rate of 56%, which is satisfactory for a mail response survey. As mentioned above, the general response quality was very good. Nevertheless, 37 forms were incomplete and had to be rejected, thus leaving us with a total sample size of 514.

One main contribution of this paper is the merging of survey data on attitudes etc. with financial data. The financial data were obtained from the Norwegian Tax Authority, and included both on- and off-farm income for both the farmer and partner, typically specified with regard to income source (income from farming, income from other farm-related activities, off-farm salary, and capital income/capital gain). The financial data also contained information on taxable wealth, debt etc; thus giving a reasonably good overview of the farm household's financial situation.

Finally, we also merged the two datasets from the survey and the Tax Authority with a third dataset; the Norwegian Agricultural Authority's register of farming area and production. In short, this register contains information about farmland used for different purposes, and livestock numbers.

3.2 Methods

As a first step in the analysis, observed variables were summarized by their means (or shares), standard deviations, and minimum and maximum values (Table 1).

However, our main goal was to analyze factors and characteristics that influence the small-scale farmers to leave or stay on the farm when they quit production. One possible way is then to estimate a multiple regression with farmers' expected migration plan as dependent variable related to several relevant independent variables or factors. In this study we used a non-standard multiple regression analysis for reasons explained below.

Our dependent variable is "the farm is a permanent residence in 10 years", based on each farmer's degree of agreement on a 7-point scale (1 – extremely unlikely, 7 – extremely likely) (see the data description below). In cases where the responses are reasonable balanced over the 7-point scale, the variable can be used as a continuous and normal distributed dependent variable without large error (e.g., Hellevik, 2009). Since our dependent variable is fairly right distributed (77% responded 7) we specified it as a categorical ordinal dependent variable.

Not all variables to be included in the regression model could be considered observable. For example, farmers (like others) typically have problems to specify exactly their expectations

about the future or their goals for farming. Variables that do not correspond to anything observable must be considered unobservable or latent, which cannot directly be dealt with in standard regression-based approaches. To overcome this limitation we used (a simple version of) the structural equation modeling (SEM) framework, which enables us to construct unobservable or latent variables measured by indicators of observed variables (e.g., Rigdon, 1998; Hair et al., 2006).

We applied the general steps of SEM framework. In the first step we assessed the reliability and validity of the unobserved measurement model then, in step two, we assessed the structural (or regression) model. The measurement model was assessed by looking at individual item reliabilities, convergent validity (the extent the included items demonstrated convergent validity for the unobserved constructed variable), and discriminant validity (the extent measures of a given unobserved variable differed from measures of other unobserved variables in the same model). In the second stage the unobserved variables were simultaneously estimated and used together with observed variables as independent variables in the structural regression model.[2]

Since variables used in our study had different scales (mean score on a scale 1-7, age, income, etc.), we found it useful to examine the standardized parameter coefficients. In that way we could compare the relative strengths of associations across variables on different scales.

Some respondents failed to answer a few items/questions. For our sample, most of the items were complete (514 responses), and the lowest response rate for an item was 506. However, if remedies for missing data are not applied, cases with missing values on any of the items must be omitted from the SEM analysis. To overcome this problem, the few missing data points in our sample were approximated using the multiple imputation method by Rubin (1976).

The statistical analysis was conducted using MPlus (Muthén and Muthén, 2006).

3.3 Data description

Table 1 below shows some basic descriptive statistics about the observed variables. Answers to the first question about whether farmers expect to be living on the farm in 10 years provided our dependant variable. Respondents were asked to state their agreement with statement shown on a scale from 1 to 7 and, as the table shows, most of them were fairly certain they would still be living on the farm in 10 years.

[2] The SEM literature distinguishes between the covariance-based approach (such as LISREL or AMOS based analysis) and the variance-based approach (partial least squares (PLS) models). Further, for the measurement model there is a distinction between formative and reflective indicators. The covariance-based approach with reflective indicators was applied in this study. In this paper we do not go into further details about these different modelling approaches. Interested readers can find more information about the different unobserved indicator specifications and SEM-approaches in, e.g., Jarvis et al. (2003), Heanlein and Kaplan (2004), and Hair at al. (2006).

Table 1

Descriptive statistics (grouped in 9 groups). N between 506 and 514 observations

Group	Variable name[1]	Mean	St. dev.	Min	Max
1	Farm is permanent residence in 10 years	6.44	1.37	1	7
2	Future production expected to increase in 10 years	3.86	2.15	1	7
	Future production expected to decrease in 10 years[2]	4.90	2.08	1	7
3	Expect (the next 10 years) prices for agricultural products to increase	4.83	1.32	1	7
	Expect (the next 10 years) increased support payments per livestock unit	4.18	1.39	1	7
	Expect (the next 10 years) increased support payments per decare	4.32	1.46	1	7
4	Importance of "largest possible income" as goal for farming	5.18	1.73	1	7
	Importance of "secure and stable income" as goal for farming	5.79	1.58	1	7
	Importance of "working full-time as farmer" as goal for farming	4.68	2.28	1	7
5	Importance of "living and participating in countryside life" as goal for farming	5.82	1.41	1	7
	Importance of "contributing something to society" as goal for farming	5.66	1.48	1	7
	Importance of "living and producing without damaging the environment"	5.22	1.47	1	7
6	Farmland (decare (daa) =0.1 ha)	219	168	16	1234
	Livestock units (LU)	17.8	22.8	0	181.3
	Farm specialization (Herfindahl index)[3]	0.72	0.27	0	1
	Farming area is not run by respondent in 10 years	3.61	2.33	1	7
7	Age of the farmer (years)	50.1	10.4	21	76
	Holder is single (share)	0.15	0.36	0	1
	Number of children (living at home) (number)	1.34	1.35	0	6
	Education level, BS or higher (share)	0.24	0.43	0	1
8	Total income (1000 NOK)[4]	528.4	274.6	0.3	1872.6
	Total income from wage income (share)	0.65	0.33	0	0.98
	Total income from capital income (share)	0.05	0.13	0	0.99
9	Labor market region 1 (share)	0.05	0.22	0	1
	Labor market region 2 (share)	0.11	0.31	0	1
	Labor market region 3 (share)	0.02	0.12	0	1
	Labor market region 4 (share)	0.23	0.42	0	1
	Labor market region 5 (share)	0.15	0.36	0	1
	Labor market region 6 (share)	0.09	0.29	0	1
	Labor market region 7 (share)	0.35	0.40	0	1

[1] If no other measures mentioned for the variables the numbers are means score, on the Likert-scale between 1 and 7.

[2] Items in reversed coding used here on this question, to get it consistent with the question future production expected to increase.

[3] The Herfindahl index is defined as: $H = \sum_p (y_p^s)^2$, where y_p^s is the share of the *p*th activity in a farm's total standard gross margin. The index ranges from 0 to 1. A value of *H* close to unity indicates specialization, whereas smaller values reflect increased diversification.

[4] 1 NOK (Norwegian kroner) = 0.17 EUR on 17. March 2009. Income consists of farmers and (eventually) partners' net income agriculture, wage income and capital income.

The second group of questions measured farmers' expectations about future production (10 years ahead), again measured by agreement (on a scale from 1 to 7) with the statements in the table. Average responses reported here are close to 4, indicating plans to keep production at the same levels as today. An unobserved or latent factor, "intended future farm size/extent of production", was constructed, to summarize the results from this category.

The third group of questions measured farmers' expectations about future prices and support payments, again by agreement (on a scale from 1 to 7) with the statements in the table. The table shows that responses averaged slightly above 4, indicating expectations of slightly higher prices and support in the future. A latent factor, "expected future farm economy", was constructed, to summarize the results from this category.

The fourth group of questions measured the importance of several potential objectives for farming. Farmers were asked to consider the objectives in the table, and rate them from 1, unimportant, to 7, very important. It can be seen that, on average, these goals were considered to be quite important, with averages around 5. The objectives included in the table are typical economic objectives, so we called the constructed latent variable "economy as farming goal".

Similarly, the fifth group of questions measured the importance of several different potential objectives for farming. These goals were also considered to be quite important, with averages between 5 and 6, in fact slightly more important than the goals in the fourth group. The objectives included in the table are typical non-economic objectives, so we called the constructed latent variable "lifestyle as farming goal".

The sixth group of the table is made up of numbers from the Norwegian Agricultural Authority's register of farming area and production. In addition, this group contains the important question of whether farmers believed they or someone in their family would be running the farm in 10 years, again measured by agreement (on a scale from 1 to 7) with the statements in the table. The table shows that the average farmer was in doubt whether the family would be running the farm in 10 years, with a score below 4 for the last question.

The seventh group of questions contains demographic factors, while the eighth group contains financial information gathered from the Tax Authorities. The ninth group consists of dummy variables related to which labor market region the farm belongs.

4 RESULTS

The measurement model for unobserved variables was, as a first step, specified and tested. The item loadings (between item and latent construct) and accompanying significance levels were acceptable[3]; one measure (among several) for convergent validity, Cronback's α, was above 0.7 for all constructs, which indicates sufficient internal construct consistency (Hulland, 1999). We also tested for discriminant validity, and found that each unobserved construct had more variances with its measures/items than it shares with other unobserved constructs in our model. In sum, the unobserved variables specified were assessed as reliable and valid for use as independent variables in the structural regression model.

In Table 2 the standardized path coefficient for the structural model (or in more familiar terminology, standardized parameter estimates for the regression model) are reported.

[3] Regarding convergent validity, as a "rule of thumb" all factor loadings should be at least 0.5 and preferable 0.7 or higher (Hair et al., 2006). (Hulland (1999) argued for less strict guidelines in "early stage research"/exploratory research.) In our study, all 11 items had loadings higher than 0.5 and 7 had loadings higher than 0.7. To save space, factor loadings are not reported, but are available from the authors upon request.

Table 2

Standardized structural path coefficients (or standardized regression coefficients). Ordinal dependent variable is the respondents' agreement (on a scale 1 (extremely unlikely) to 7 (extremely likely) on the statement "Farm is permanent residence in 10 years"

Variable name	Parameter	Significance[1]
Latent factor: Intended future farm size/extent of production[2]	0.153	**
Latent factor: Expected future farm economy[3]	0.162	***
Latent factor: Economy as faming goal[4]	-0.109	*
Latent factor: Life style as farming goal[5]	0.108	*
Farmland	-0.002	
Livestock units	-0.022	
Farm specialization (Herfindahl index)	-0.028	
Farming area is not run by respondent in 10 years (mean score)	-0.243	***
Age of the farmer	-0.239	***
Holder is single, no = 1, else = 0	-0.074	
Number of children (living at home)	0.077	
Education level, BS or higher = 1, else = 0	0.035	
Total income (1000 NOK)	0.014	
Share of total income from wage income	-0.019	
Share of total income from capital income	-0.022	
Labor market region[6] 1 = 1, else 0	0.011	
Labor market region 2 = 1, else 0	-0.006	
Labor market region 3 = 1, else 0	0.028	
Labor market region 4 = 1, else 0	0.044	
Labor market region 5 = 1, else 0	0.050	
Labor market region 6 = 1, else 0	0.030	
R square	0.241	
RMSEA	0.057	
N	514	

[1] $^{*}p<.10$; $^{**}p<.05$; $^{***}p<.01$.

[2] The items in group 2 in Table 1 is used to construct the unobserved or latent variable "Intended future farm size/extent of production". Cronbach's $\alpha = 0.71$.

[3] The items in group 3 in Table 1 is used to construct the latent variable "Expected future farm economy". Cronbach's $\alpha = 0.84$.

[4] The items in group 4 in Table 1 is used to construct the latent variable "Economy as farming goal". Cronbach's $\alpha = 0.79$.

[5] The items in group 5 in Table 1 is used to construct the latent variable "Lifestyle as farming goal". Cronbach's $\alpha = 0.76$.

[6] Labor market region 7 is base region in the regression.

The variable in group 1 from Table 1, "Intends to live on farm in 10 years" was the dependent variable. One measure of goodness of fit for the composite structural model (the measurement model and the structural regression model) is root mean square error of approximation (RMSEA). Our model had a RMSEA of 0.057. Guidelines suggest that this value should be 0.08 or lower (Hair et al., 2006), which indicates a satisfactory model fit for our model.

The largest effects come from the two variables concerning age and whether the farm was run by the respondent/family. That older age should reduce the chance of living on the farm in 10 years was no surprise. Older farmers were less likely to expect to be involved in the farming in 10 years, and hence to be less likely to be living on the farm. Similarly, it is not surprising that those respondents who doubt they (or their family) will be running the farm in 10 years also were less likely to think they will be living on the farm.

The effects of the two first latent variables were also – as expected – significant. The larger a farmer expects the production in 10 years to be, the more likely it will be living on the farm. Also, the better the farmer thinks the farm economy will be in 10 years, the more likely it will be living on the farm.

The two other latent variables provide smaller yet interesting results. Both coefficients are significant – the more important economic issues are for farming, the less likely farmers are to stay on their farms, and the more important "lifestyle" objectives are, the more likely they are to stay. To some extent, these effects could be expected too. Not reported numbers from this study, as well as several other reports (e.g., NILF, 2008), indicate that farming yields lower income per hour than alternative activities. Hence, farmers with a focus on financial results could be expected to both leave farming and leave rural areas for better paid work in urban areas. However, there are no significant difference between regions here, meaning that farmers in central areas, where they easily could live on the farm and work outside farming, are as likely to leave the farm as farmers in very rural areas where almost any other job would require them to leave the farm. The positive coefficient from the last latent variable indicates that farmers who consider lifestyle aspects related to farming to be important are more likely to plan to live on the farm in 10 years. Again, this is not surprising, as this group has "countryside living" as an important goal, and hence probably would accept both lower income from farming and through non-farming labor markets in order to live in the countryside.

While the significant coefficients are interesting, it is also worthwhile to point out the coefficients that not are significant. First, size and type of farm affect negatively the desire to stay on the farm, however these effect was not statistically significant different from zero. One could imagine that larger and more profitable types of farms were harder to leave. These farms are also often located in better labor market regions, so one could imagine that it would be easier to live on such farms while working off-farm.

Furthermore, family size and education level did not significantly affect the plans to stay on the farm, and the same applied to sources of income and location in terms of alternative labor markets.

5 IMPLICATIONS

Some caution is needed when interpreting these results. We have surveyed only current farmers. To the extent that these farmers exit farming and/or leave their farms, the net effect on both farm numbers and net migration will be heavily influenced by whether others not currently farming decide to take over the "abandonded" farms, either for farming production purposes or just for permanent residence.

Nevertheless, some of the results could have interesting policy implications. Given a policy objective to support rural communities and prevent migration from rural to urban areas, our results provide some clues as to how this objective could be achieved.

The two strongest predictors of future farm living are age and expectations of future farm production. Although policies of course could be developed to encourage older/retired farmers to stay on the farm or in the rural community, this does not seem to be a very important implication. This is because many older farmers would probably stay in the same area, even if they answered "yes" to our question about their plans to leave their farms. Also,

older people are likely to be less important for the future of small-scale farming and rural communities than younger people. As expected, those planning to run the farm in 10 years are also more likely to plan to use it as permanent residence. This in turn means that the traditional strategy – to support small-scale farmers and encourage them to maintain production – should have some reducing effect on the migration from rural to urban areas. The importance of this strategy is also supported by the significance of expected future farm economy. The better the future farm economy is expected to be, the more likely farmers are to remain on the farm, indicating that future support payments (improving farm economy) are likely to have some positive effect for the rural areas. The impact of future farm size is harder to interpret. One could argue that encouraging small-scale farmers to increase production where possible would increase the chance of them staying on the farm. On the other hand, such policies would typically be not advantageous for those unwilling or unable to increase production, thus possibly forcing some of these to exit farming, which in turn would increase the chance of migration for this group.

An interesting finding in this study is the significance of farmers' objectives. All else equal, farmers with "lifestyle" objectives are less likely to leave the farm than farmers with "economic" objectives. This *per se* might not be surprising, but could have policy implications. For the "lifestyle" group, farm production and financial gains are often less important factors for their choice of living on a farm than a good countryside "way of life" and a life in contact with nature for themselves and their children. This group is hence less likely to respond (by staying on the farm) to traditional production support schemes. One way to interpret this result is to presume that such support schemes are wasted on them, as they are likely to stay independent of financial benefits. Another way to look at it could be that policy maker who wants to make sure this group stays on farms in rural communities – even if their farm production is low or zero – should explore other policies directed at supporting the whole rural community rather than encouraging agricultural production. The UK study by Lobley and Potter (2004) reached a similar conclusion and they recommend a more integrated agricultural and rural policy that better accounts for the diverse community of land managers. Given that growing numbers of small-scale farmers disengage from mainstream agriculture to a greater or lesser degree, Marsden et al. (2002) also pointed out that it results in a more diverse land management community and a need for increased focus on the development of the social and regional infrastructure.

6 CONCLUSION

Our main purpose in this paper has to statistically analyze what factors influence farmers' decisions to leave the farm – typically for other jobs in urban areas. Preventing or slowing this trend has been and is an important objective for agricultural policy in many countries.

Our results indicate that plans to run the farm in the future, low age, high expectations about the future farm economy, high expectations about to the size of future production, and lifestyle oriented objectives for farming as opposed to financial objectives are factors that significantly increase the chance that the farmer intends to stay on the farm. Much of this is as expected, and appears to be recognized in current agricultural policies in Norway. Policy objectives are often related to preventing migration, and measure such as support to small-scale farmers (to maintain production) and production support (to encourage high production) should indeed be productive to achieve this objective. Nevertheless, a large group of farmers have non-economic objectives or reasons for living on a farm, and might be less receptive to financial incentives to maintain or increase farming production. To try to ensure that this

group stays on the farm, we propose, in line with the UK study by Lobley and Potter (2004), that more "lifestyle oriented" policies could be considered, where focus is more on improving living conditions in rural areas rather than on directly supporting agricultural production. Whereas the farm is primarily a necessary source of income for many farmers, it is primarily a beloved place to live for other groups. If prevention of migration from rural to urban areas is an objective for agricultural policy, policy makers will need to cater to the diverse groups of land managers in order to succeed.

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