42
Farming Systems Perspective in Auvergne and Limousin

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Abstract

This paper presents the main characteristics and some results of a prospective model built so as to identify the possible futures strategies of the cattle farms of Auvergne and Limousin. By adding a farms typology to a planning process by scenarios, this model has allowed to identify the possible consequences of the CAP reform, with a rationality suited to the characteristics of the farms of the studied area. The obtained results don't constitute a prediction, but some arguments for thinking about «the possible futures» of agriculture in Auvergne and Limousin.

Problem and objectives

A farming systems perspective has important implications for thinking about scenarios for the future, conducive policy contexts, and criteria for institutional design. That is why, knowing that the CAP reform aims to limit the global development of the milk, cattle and sheep productions, and that most of the farms of Auvergne and Limousin aim to growth these farming enterprises, we have seek to find out[1]: *which could be the main future strategies of the farmers of these two regions? and which could be the frequency of some alternative farming enterprises [2] in these new strategies?*

Material and method (prospective model)

Considering, (a) a farm and its economics environment constitute a complex system piloted by a decision maker (BROSSIER, J. et al. ,1990), whose the strategy aims to reduce the perceived «gaps» among its objectives and the vision he has of its future situation (MARTINET, A., 1983), and (b) the economic environment evolution is not predictable, the possible strategies of tomorrow of Auvergne and Limousin have been identified by simulating, for each farm type of the regional FADN, *a strategic planning process by scenarios.* This decision-making process includes 4 stages (see Figure 1):

Stage 1: a forecasting process, that consists of running the relationships that lie the economic results of a farm and the economic environment, so as to identify the possible future state of

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[2] diversification of building, cropping, grass land usings (B&B, farm food-processing, reforestation plants, dry fruits or medicinal plants, horses, goats, ducks, ...), extensification of cattle enterprises, off-farm employment, ...

each farm type in plausible economic environments of tomorrow, with their current management strategies.

Stage 2: a diagnosing process, that consists of comparing the previous highlighted possible future states to norms defined by the experts, so as to identify the possible problems and stimuli that could be generated by the current strategies in the simulated environments, as well as their causes.

Stage 3: a planning process, that consists of searching for the under-new strategies that could solve the highlighted problems (or that could be generated by the «positive» stimuli), by using a rationality suited to these stimuli and to the «behavioural profiles» of the farmers type: (a) by searching for a solution to each partial problem which takes into account its causes, next (b) by searching for the combination of current and alternative enterprises that could maximise the gross margin in the case of the «entrepreneurial farmers».
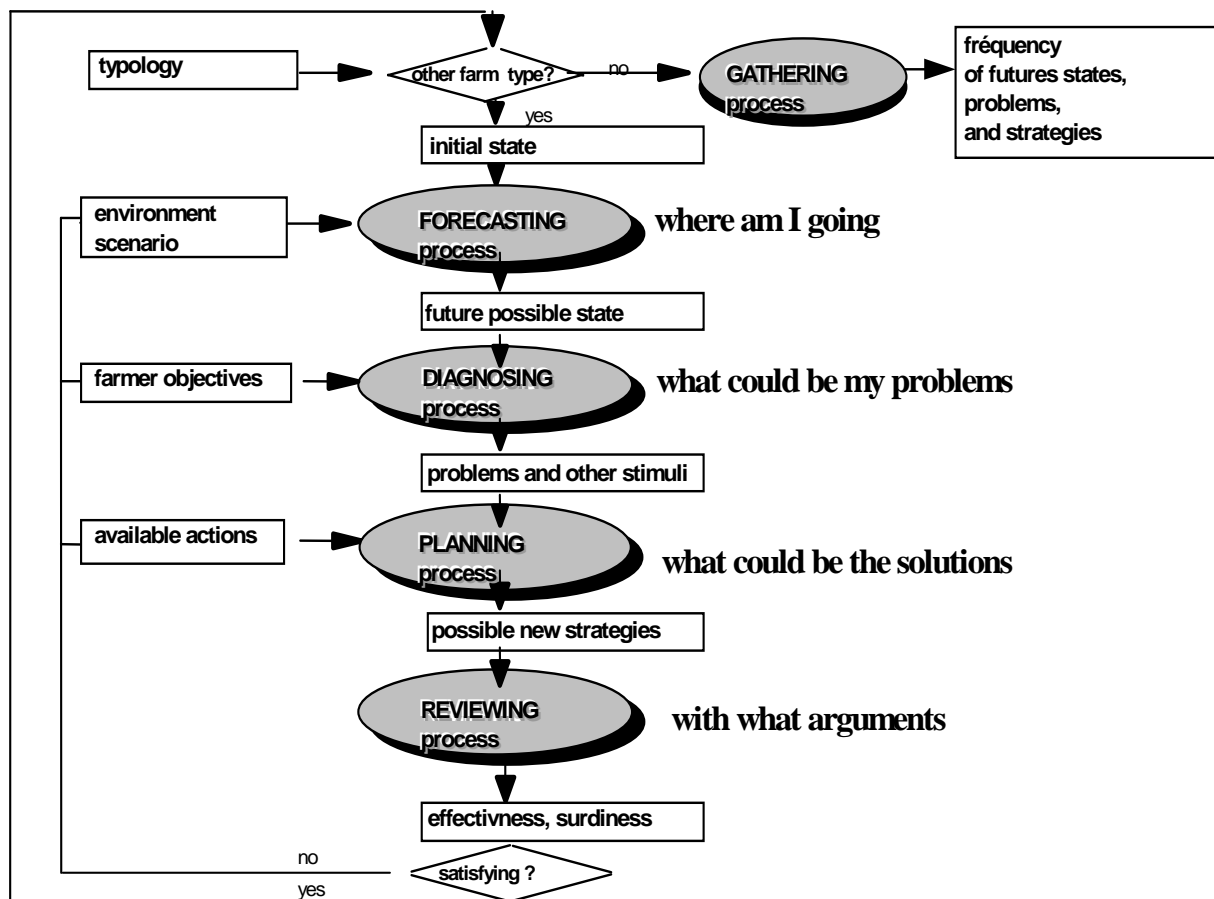

Figure 1:   Inference structure of the prospective model

Stage 4: an evaluating and reviewing process, that consists : (a) of comparing the results of the under-new strategies and the problems to be solved, so as to appreciate the degree of the efficiency of each new strategy, and (b) of simulating an other economic environment, so as to study the sturdiness of the highlighted new strategy.

Next, a gathering process has draw up a regional account of the impact of the simulated political and economic environment evolution, by taking into account the statistical «weight[3]» of each farm type in the FADN sample. The main regional farm types of Auvergne and Limousin have been identified by building a typology of the FADN sample of these two regions in 1990, by using a multicriteria analysis. This statistical analysis has highlighted 60 farm types. Each farm type has been described by 85 social, physical and economic criteria (Busselot, A. et al., 1994), whose the values define the (initial) state of the farms by 1990, as well as the behaviour of the farmers between 1984 and 1990. The possible economic environments of tomorrow have been described by using 40 criteria, whose the values define the possible evolutions of prices and CAP subsidies, the attribution thresholds of the subsidies, etc. (see Figure 2).

classical products	Prices (evolution in%)
milk	- 1,3 (*)
calves and bull	-15,0
lambs	- 8,0
cereales	-34,0

(*) plus a decease of quotas in 2%

new products	gr. margin	tech.coeff.		
poultries	220	0	0.4	1500
strawberries	30000	1	23	70000
Bed and breakfast	50000	0	120	217000
...				

CAP Subsidies	values
CS/suckle cow 5-40 Sc >40 Sc	1150 F/t 950 F/t
CS/calve	710 F/t
CS/sheep	140 F/t
Extensive premium	236 F/t
Grass Premium	300 F/ha
Cereale Premium	35,5 F/q

Conditions of attribution of CS	maximum
CAP stocking rate	2
Extensive stocking rate	1,4
Grass stocking rate	1,4 or 1

Figure 2: Evolution of the economic environment in the basis scenario

Basis scenario

The simulation of the decision-making process of the main farm types of Auvergne and Limousin, in the economic environment that most French public institutions attach to the new CAP (see Figure 2), shows this new environment could be more favourable than the economic context of 1990 for the cattle and sheep farms of this two regions. Consequently : (a) 50% of the farmers of this two regions could make no change in their current activities (see Figure 3, lines S0 and S1), and (b) 25% of the farmers could increase the area of their grassland and the meat production (lines S2 et S3). Finally, the number of farms interested by the installing of an alternative farming enterprise could be lesser than in 1990 (see evolution of the lines S6, S9 and S10). However, this simulation also shows a large part of the farms «at risk» or «under pressure» could continue to use and to install alternative farming enterprises needing little capital or little area, so as to solve a lack of money or a lack of milk, suckle cows, or cheeps quotas (see Figure 3, lines S6, S7, S10).

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[3] The FADN is a statistically representative sample of the full-time farms of a region (sampling rate : 1.5%).Each farm is assigned a weight wi=Nj/nj, according to the number of farms Nj using the same farming system, and that are the same economic size (strate(j))

Strategies	Frequency (*)	Evol/1990
S0 : statu quo	33,0	+10,8
S1 : improving efficiency of classical system	18,0	- 7,9
S2 : extensification of classical system	5,2	+ 5,2
S3 : development of classical enterprises	20,7	- 0,2
S4 : food processing	2,0	+ 2,0
S5 : develop. of current alternat.farm.enterp.	10,9	+ 0,6
installing alternat. farm.enterp. needing		
S6 : much work, little area and capital	38,7	- 7,4
S7 : much capital, little area and work	19,5	- 0,4
S8 : much area, little capital and work	6,1	+ 2,9
S9 : much area and work, little capital	7,1	- 7,0
S10 : much work and capital, litle area	26,4	- 5,4
S11 : much capital and area, little work	17,4	+ 1,0

(*) some farms combining several strategies, the sum is greather than 100%

Figure 3:   Frequency of the main strategies by 1996 (basis scenario), comparison with the frequency of these strategies by 1990.

Alternative scenarios

Beside, these simulations show that the impact of this new politico-economic environment may be strongly dependent of the value of some of its parameters:

1. The decrease of the maximum threshold of stocking rate for extensive premium from 1.4 to 1.0, could give a more incitative context for extensive cattle farming systems (see Figure 4, line S2), for installing alternative farming enterprises lied to the tourism (S7), for food-processing enterprises (S10), and for red dear production (S11). But, it could also increase by 25 % the number of farms « in economic difficulty » in Limousin.

2. The decrease by 25% of the alternative enterprises gross margins, could strongly decrease the output of the new products (by more 50%, comparatively to the basis scenario); and, in corollary, could increase the economic interest of the classical cropping, milk, cattle and sheep enterprises.

3. The impossibility for the members of the family to access to an off-farm employment could increase the economic interest of alternative enterprises needing much work and little capital, as well as the interest of extensive cattle activities.

Strategies	Frequency(*)	Evol/1990	scenario (a)
S0 : status quo	**32,3**	+10,1	+10,8
S1 : improving efficiency of classical	**29,7**	+3,8	-8,9
S2 : extensification of classical enterprises	**29,8**	+29,8	+5,2
S3 : development of classical enterprises	**27,5**	+7,4	-0,2
S4 : food processing	**1,2**	+1,2	+2,0
S5 : development of current	**9,0**	-1,4	+0,6
Installing alternative farm enterprises needing			
S6 : much work, little area and capital	**41,1**	-5,0	-7,4
S7 : much capital, little area and work	**25,2**	+5,3	-0,4
S8 : much area, little capital and work	**9,5**	+6,3	+3,0
S9 : much area and work, little capital	**8,3**	-6,2	-7,0
S10 : much work and capital, little area	**37,7**	+6,9	-5,4
S11 : much capital and area, little work	**25,2**	+8,8	+1,0

(*) Some farms combining several strategies, the sum is greater than 100

Figure 4: Frequency of the main strategies in 1996 in the case of a decrease of the threshold of stocking rate, comparison with (1990) and basis scenario

Conclusion

In summary, by adding a farms typology to a planning process by scenarios, in which farmers are viewed as men that rationalise their choices by using an inductive logic rather than as "Homo economicus" perfectly rational, we have attempt to identify the possible consequences of the CAP Reform on the farming systems perspective of Auvergne and Limousin, by using a rationality suited to the main farm types of these two regions.

However, although obtained from a statistically representative sample of the farms of the two studied regions, the thus obtained results can not expect to represent the « reality of tomorrow »: they must be viewed as some qualitative arguments for managing the CAP Reform in the two studied region, not as a prediction of the future. Firstly, because the used prospective model takes into account only a part of the reality: the alternative farming enterprises do not enjoy the same institutional and policy supports that the classical activities, and most of them can only be flowed on a local or regional market. Secondly, because the reality (and overall the reality of tomorrow) is never given: it's always built. And this prospective model notably shows that the frequency of several alternative farming enterprises could be increased by a policy that would give the priority to the work, rather than to the competitiveness of the bovine breeding.

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