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Working Papers SMART - LERECO

What would farmers' strategies be in a no-CAP situation? An illustration from France

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Working Paper SMART – LERECO N°12-02

April 2012

UMR INRA-Agrocampus Ouest **SMART** (Structures et Marchés Agricoles, Ressources et Territoires)

UR INRA **LERECO** (Laboratoires d'Etudes et de Recherches en Economie)

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What would farmers' strategies be in a no-CAP situation?

An illustration from France

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Acknowledgments
Financial support from FP7 project CAP-IRE (Assessing the multiple Impacts of the Common Agricultural Policies on Rural Economies) grant agreement n°216672 is acknowledged.

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What would farmers' strategies be in a no-CAP situation?
An illustration from France

Abstract

This article investigates how French farmers could react if the Common Agricultural Policy (CAP) were fully suppressed, based on a survey of intentions of 295 farmers carried out in 2009. The farmers surveyed were beneficiaries of CAP subsidies in 2008, and were therefore mostly specialised in field cropping and grazing livestock. Respondents had to indicate their ten-year strategy in two CAP scenarios: firstly in a "CAP continuation scenario", and secondly in a "No CAP scenario" where the CAP is fully removed from 2014 onwards. Although for the majority of respondents there would be no change in their intentions if the CAP were suppressed, about 19 percent would intend to stop their farming activity and would prefer to close their farm, while they would maintain the farm if the CAP were continued. A disappearance of the CAP would imply that off-farm employment would be more frequently sought after by farm households. Hired labour would not be the first choice to replace household labour on the farms but instead farmers would resort to outsourcing, which is a more flexible labour force. The results show the crucial role of the CAP in French farmers' existence and highlight the importance of the CAP for the rural labour market.

Keywords: farmers' strategies, agricultural policy, intentions survey, France

JEL classifications: Q18, Q12

Quelles seraient les stratégies des agriculteurs en l'absence de PAC ?
Une illustration française

Résumé

Basé sur une enquête d'intention conduite en 2009 auprès de 295 agriculteurs, cet article creuse la question des réactions des agriculteurs sous un scenario hypothétique d'absence totale de la Politique Agricole Commune (PAC). Les agriculteurs enquêtés étaient tous bénéficiaires de la PAC en 2008, et principalement spécialisés en systèmes d'élevage herbivore et/ou de grandes cultures. Lors de l'enquête, les agriculteurs devaient spécifier leur préférence, à un horizon de 10 ans, sous deux scénarios : une projection de « continuité de la PAC » d'une part, et un scénario d'« absence totale de PAC » à partir de 2014 d'autre part. Bien que la majorité des répondants déclarent qu'ils ne procéderaient à aucun changement dans leurs intentions en cas de suppression de la PAC, 19% des agriculteurs enquêtés auraient l'intention d'arrêter leur activité sous le scénario « absence totale de PAC », alors qu'ils continueraient sous le scénario « continuité de la PAC ». Par ailleurs, la disparition de la PAC impliquerait une augmentation de la fréquence du travail extra-agricole effectué par les chefs d'exploitation et leur ménage. Le recours à de la main-d'œuvre salariée ne serait en outre pas la première solution choisie pour contrecarrer la baisse de main d'œuvre sur l'exploitation provenant du ménage agricole, lequel préfèrerait contractualiser les travaux liés à la production agricole à des entreprises extérieures. Les résultats montrent ainsi le rôle crucial que joue la PAC sur la vie (ou la survie parfois) des agriculteurs et souligne l'importance de cette politique sur le marché de l'emploi en milieu rural.

Mots-clefs : stratégies d'agriculteur, politique agricole, enquête d'intentions, France

Classifications JEL : Q18, Q12

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1 Introduction

The structure of farms evolves continuously, with multiple adjustments being implemented in response to changes in the conditions faced by farms (Evans, 2009). Among such conditions is the policy environment. Agricultural policies in the developed countries have largely subsidised farmers in the past but have been substantially modified in recent decades, from the multiple reforms of the Common Agricultural Policy (CAP) in the European Union (EU) and the various Farm Bills in the United States (US) to the full suppression of agricultural subsidies in New Zealand. Several studies have analysed how past agricultural policy reforms have affected farmers' behaviour in developed countries, and how future or hypothetical reforms could affect farmers' intentions. In the EU, Rickard (2004), Breen et al. (2005), Douarin et al. (2007), Tranter et al. (2007), Gallerani et al. (2008), Genius et al. (2008), Lobley and Butler (2010), Maye et al. (2009) and Bougherara and Latruffe (2010) have shed light on the potential effects on European farmers' behaviour of the 2003 CAP reform and of the introduction of a hypothetical fully decoupled support. Studies regarding the effect of decoupled subsidies on farmers in the US include, for example, Key and Roberts (2003), Westcott and Young (2004) and Whitaker (2009). Findings for the EU and the US are not unambiguous, but show that opposite trends may result from the switch to decoupling, in terms of farm size, farm diversification or household's labour allocation between on- and off-farm activities. However, no studies have focused on the possible future of the farming sector if agricultural European support were fully removed, although this could shed light on how important government subsidies are for farms' existence and farmers' choices. The actual consequences of agricultural support removal can be observed in New Zealand, which implemented a full suppression of agricultural subsidies between 1983 and 1986. It has been noted that production has been reoriented towards some outputs that were not supported during the existence of the policy, and that farms' production factor use has decreased but that production has not (Sandrey and Reynolds, 1990; Johnston and Frengley, 1994; Scrimgeour and Pasour, 1996; Forbes and Johnson, 2001).

This article investigates how French farmers might react if the EU CAP were fully suppressed. Although removing the CAP totally is not specifically on the European

Commission's Agenda, one proposition for the next policy period (after 2013) is to move away from income support and focus on climate change only (European Commission, 2010). Our study can thus help assess how important the CAP is for farmers, and what type of farming systems the CAP helps maintain within the agricultural sector. Agriculture is recognised as a strong link in rural areas, in terms of social cohesion and employment provision (Latruffe et al., 2009; European Commission, 2010). The disappearance of farmers or of specific farm systems could therefore be harmful not only for the vitality of European rural areas but also for the EU as a whole, in particular in view of the Europe 2020 sustainable growth strategy, since rural areas provide 22 percent of EU employment (European Commission, 2011).

To understand how the French farming sector could be affected if the CAP were fully suppressed, French farmers' intentions in a hypothetical no-CAP world were gathered through a survey. It is nevertheless acknowledged that an intentions survey may not be a perfectly reliable way of investigating such an issue, since intentions do not always reflect the exact strategy that farmers would implement if the hypothetical world became real. Reasons for this may be that farmers may not fully grasp the economic conditions of the hypothetical scenario, or may not take sufficient time to think and answer, or may answer in a way that is contrary to their true choice in the hope of influencing future policies (Thomson and Tansey, 1982; Väre et al., 2005). However, it can be argued that intentions surveys may reveal specific and precise strategies or effects that would not be shown by modelling exercises using aggregated data or using the same behavioural assumptions for all farmers (Douarin et al., 2007).

2. Methodology

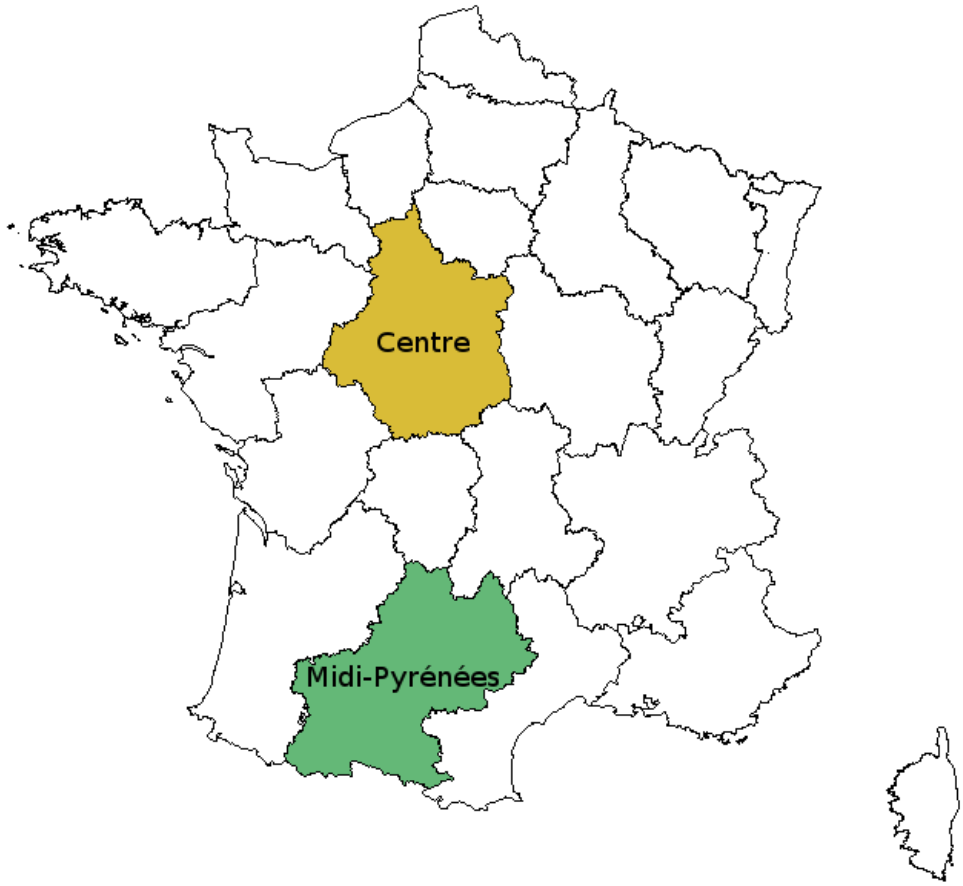
2.1. A survey of farmers' intentions

The analysis is based on a survey of farmers' intentions carried out in 2009 in two French NUTS2[1] regions (Figure 1): i) the Midi-Pyrénées region, located in the south of France near Spain, encompassing a mountainous area in the Pyrénées, and characterised by field cropping and cattle breeding; ii) the Centre region, located south of Paris, and characterised by plains in the north where cereals and other field crops are cultivated and by dairy and sheep breeding in

[1] NUTS : EU Nomenclature of Territorial Units for Statistics (http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction)

the south. The choice of these two regions allows a large variety of farming systems that could be affected by CAP removal to be included in the analysis.

Figure 1: Location of the two regions (NUTS2) of interest



In total 295 farmers were surveyed; 150 in the Midi-Pyrénées region and 145 in the Centre region. The surveyed farmers were selected from the beneficiaries of CAP subsidies, since the objective was to identify how a suppression of the CAP would affect those farmers who are currently dependent on subsidies. For this reason, most of the farms in the sample were specialised in field crops or in grazing livestock. Some general information was gathered through the first part of the survey of intentions. A description of this information for the farmers' full sample can be found in Column 5 of Table 1.

At the time of the survey in 2009, the interviewed farmers were on average 40.7 year old. Figures regarding the highest school level attained within their household show that most of them had completed higher secondary school or a technical degree (generally an agricultural technical degree). Three-quarters of the households lived on the farm. This was particularly

the case for farms engaged in livestock productions. About half of the farms (52.5 percent) were field cropping farms (cereals, oilseeds, protein seeds, potatoes, etc.), and 37.3 percent were specialised in dairy or beef. The rest of the sample comprised farms that specialised in sheep or goat breeding (4.4 percent), and a few that were mainly involved in other forms of production (pigs, fruit and vegetables, wine) – which is in line with the choice of the sample of CAP beneficiaries. Respondents were asked to categorise themselves according to their dependence on agriculture in terms of gross household revenue stemming from agricultural activities. For 38.7 percent of the households, 90 percent or more of their revenue depended on agriculture, but almost 30 percent of the sample's households drew more than half their revenue from non-agricultural activities. This might be due to non-production activities on the farm (diversification activities such as tourism or on-farm sales, carried out by 23.1 percent of the farms), or to pluriactivity (the farm heads allocated on average 8.6 percent of their time to off-farm activities). The level of the CAP Single Farm Payment (SFP) received by the farms in 2008 was also gathered during the survey, and divided by the number of hectares of utilised agricultural area (UAA) to compare farms' dependence on the CAP decoupled subsidy. The average value of SFP per hectare in the sample is 199.3 Euros. Half of the farms were engaged in one or more agro-environment schemes (AES) at the time of the survey. In terms of legal status, 48.1 percent of the sample's farms were individual farms, the rest being partnerships or companies. Finally, regarding their location, 65.1 percent of the farms surveyed had part or all of their UAA located in Less Favoured Areas (LFA), and 53.2 percent of the sample's farms were located in mountainous or hilly areas, the other 46.8 percent being located in the plains. Farms used on average 0.22 full-time employees and 0.66 part-time employees.

The average farm size is 152.4 hectares for the full sample, 178.5 in the Centre region and 128.9 hectares in the Midi-Pyrénées region. Compared to the farm population in both regions, the sample used here is biased towards larger farms: according to the French Agricultural Census in 2010 the average farm size in Centre region and Midi-Pyrénées was 100.4 and 48.2 hectares respectively. Four farm size categories (small farms, medium farms, large farms, very large farms) were created, based on different farm size indicators according to the dominant production on the farm. The specific size indicators chosen were: the UAA for all crop farms; the number of dairy cows for dairy farms; the number of beef cows for beef farms; the number of sheep and goats for sheep farms and for goat farms respectively; and the number of pigs for pig farms.

Table 1: Characteristics of the full sample and of the three farm clusters; tests of difference between the clusters

Variables		Cluster 1 (71 observations)	Cluster 2 (43 observations)	Cluster 3 (73 observations)	Full sample	Paired tests 1-2	1-3	2-3
Average farmer's age (years)		42.8	40.3	40.3	40.7			
Share of households according to the highest education level:	- None or primary completed	2.8	0	0	1.0			
	- Lower secondary completed	14.1	11.6	13.7	12.9			
	- Higher secondary completed	32.4	25.9	21.9	30.2			
	- Technical school completed	29.6	46.5	35.6	37.6			
	- University degree except PhD	18.3	16.3	26.0	16.9			
	- PhD degree	2.8	0	2.8	1.4			
Share of farms where the household lives on the farm		67.6	83.7	74.0	74.6	*		
Share of farms according to their production specialisation:	- Field crops	39.4	39.5	71.2	52.5			
	- Wine	2.8	0	0	0.7			
	- Fruit and vegetables	5.6	4.7	1.4	2.7		***	***
	- Dairy or beef cattle	43.7	44.2	23.3	37.3			
	- Pig	0	4.7	4.1	2.4			
	- Sheep or goats	8.5	7.0	0	4.4			
Share of farms according to the percentage of their revenue stemming from agriculture:								
	- < 10%	9.9	4.7	6.9	7.2			
	- 10-29%	9.9	2.3	4.1	6.5			
	- 30-49%	18.3	18.6	12.3	15.4			
	- 50-69%	16.9	30.2	27.4	22.6			
	-70-89%	8.4	11.6	12.3	9.6			
	- ≥ 90%	36.6	32.6	37.0	38.7			
Share of farms with non-production (diversification) activities on the farm		21.1	41.9	17.8	23.1	**		***
Average percentage of farm head's labour allocated to off-farm activities		9.1	4.2	7.2	8.6			
Share of farms in each size category:	- Small farms	23.9	18.6	30.1	23.4			
	- Medium farms	25.4	18.6	32.9	23.7			*
	- Large farms	21.1	25.6	17.8	24.1			
	- Very large farms	29.6	37.2	19.8	28.8			
Average number of full-time employees on the farm		0.17	0.14	0.26	0.22			
Average number of part-time employees on the farm		1.10	0.37	0.47	0.66			
Average amount of the farm's SFP per hectares in 2008 (Euros)		79.0	187.5	322.8	199.3	***	***	***
Share of farms having an AES		63.4	51.2	35.6	49.8		***	*
Share of individual farms		56.3	32.6	50.7	48.1	**		*
Share of farms located partially or fully in LFA		83.1	72.1	52.1	65.1		***	**
Share of farms in mountainous areas		67.6	69.8	41.1	53.2		***	***

Notes: The definition of the clusters is introduced in Section 2.2., while the clusters per se are described in Section 3.2.
The tests are t-tests for continuous variables and Chi^2 tests for categorical variables. *, ** and *** indicate significance levels at 10, 5 and 1 percent respectively.

As an example, the smallest crop farms (small farms category) had a UAA of less than 99 hectares, while the largest crop farms (very large farms category) had a UAA greater than 200 hectares. The smallest dairy farms had less than 45 dairy cows, while the largest had more than 80 dairy cows. It should be kept in mind that the smallest farms in the sample used here are nevertheless relatively large compared to the farms' population in the two regions studied.

The second part of the survey of intentions consisted in questions about the farmers' strategies with a ten-year horizon. The questions related to the strategy of maintaining the farm or closing it and, for those intending to keep the farm, to the use of production factors and the development of non-production (*i.e.*, diversification) activities. The same questions regarding the farmers' strategies were asked in two policy scenarios. In both scenarios, the CAP was assumed to evolve as planned between 2009 and 2013. The future of the CAP after 2013 varied between the scenarios. The first scenario, the "CAP continuation scenario", was defined by the maintenance until 2020 of the CAP as it is anticipated to be in 2013 considering the so-called "Health Check". The second scenario, the "No CAP scenario", was characterised by the total suppression of the CAP, namely subsidies, quotas, guaranteed prices etc., after 2013. As for other economic conditions such as market prices, in both scenarios they were assumed to remain similar until 2020 to those in place at the time of the survey in 2009.

Farmers were asked whether they intended to maintain the farm or whether they intended to let it go (by selling, leasing or abandoning it) in each of the two scenarios. The effect of the CAP removal could then be assessed by comparing each farmer's answers in both scenarios. Farmers who did not change their intention were those who answered "maintain" in both scenarios, those who answered "cease" in both scenarios, and those who answered "I do not know" in both scenarios. For this group of farmers, CAP removal is considered to have no effect on their strategies. By contrast, farmers who gave a different answer in both scenarios are those whose strategies would be modified by the suppression of the CAP. These farmers include those for whom CAP suppression induces an exit of the household from the agricultural sector (*i.e.*, farmers who would intend to keep the farm in the "CAP continuation scenario" but close it in the "No CAP scenario"). The opposite behaviour, namely farmers who intend to cease farming in the "CAP continuation scenario" but continue in the "CAP continuation scenario" was not observed. Finally, the CAP changes induced more uncertainty for some farmers, who answered "maintain" or "cease" in the first scenario, and who stated that they did not know what to do in the second scenario.

In each scenario, farmers who stated that they intended to keep their farm were then asked to choose a strategy concerning factor use and diversification activities: they had to state whether they intended, within the next ten years, to increase the level of factor use or diversification activities; not to change the level; to decrease the level; or whether they did not know. The difference in farmers' answers, that is to say the change in intentions, between both scenarios was then used to assess the effect of a potential CAP removal. Four groups of farmers were then created: 1) the "No change in intention" group comprises farmers who do not change their intended strategies between the "CAP continuation scenario" and the "No CAP scenario"; 2) the "More uncertain" group includes farmers who become uncertain of their intentions, and answer that they do not know which strategy to choose in the "No CAP scenario", while they had chosen one in the "CAP continuation scenario"; 3) the "Increased intentions" group consists of farmers who adjust their intention upward; 4) the "Decreased intentions" group consists of farmers who adjust their intention downward (Table 2).

Table 2: Definition of the farmers' groups based on their intentions in each of the scenarios regarding the level of factor use and of diversification activities

Name of farmers' group	Farmers' intention in first scenario "CAP continuation scenario"	Farmers' intention in second scenario "No CAP scenario"
1) No change in intentions	To increase the level	To increase the level
	To not change the level	To not change the level
	To decrease the level	To decrease the level
2) More uncertain	To increase the level	Does not know
	To not change the level	Does not know
	To decrease the level	Does not know
3) Increased intentions: to upgrade the strategy	To not change the level	To increase the level
	To decrease the level	To increase the level
	To decrease the level	To not change the level
4) Decreased intentions: to downgrade the strategy	To increase the level	To not change the level
	To increase the level	To decrease the level
	To not change the level	To decrease the level

2.2. Exploration of farmers' intentions by cluster analysis

Inconsistent data and outliers were removed before any analysis. Then, farmers' intentions were analysed with descriptive statistics for the full sample, in order to shed some light on the general trend of the effect of the removal of the CAP. In addition, farmers' profiles were identified using a cluster analysis and the strategy of each cluster was analysed, in order to investigate whether the effect of a potential CAP removal would be different according to farming system. Farmers were partitioned with the help of a hierarchical cluster analysis using Ward's method as the linkage method, where the sum of squares of two clusters is minimised at each step of the procedure (Hair et al., 1998)[2]. The number of clusters was determined by the dendrogram and the stopping rules based on the Duda-Hart indices (see Milligan and Cooper, 1985).

The variables used to partition farms into clusters are those shown in Table 1. They are the following: a) farmer's age; b) household's highest education level (six levels); c) whether the farm household lived on the farm (a dummy equal to 1 if yes and 0 otherwise); d) the farm specialisation (six categories); e) the degree of dependence on agriculture (six categories based on the share of gross household revenue stemming from agricultural activities; estimated by the farmers); f) whether the farm was diversified, *i.e.*, had activities other than production (a dummy equal to 1 if yes and 0 otherwise); g) the share of farm head's time allocated to off-farm activities; h) the farm size (four categories, as explained above); i) the number of full-time employees working on the farm; j) the number of part-time employees working on the farm; k) the value of the farm SFP per hectare of UAA in 2008 (in Euros); l) whether the farm had an AES at the time of the survey (a dummy equal to 1 if yes and 0 otherwise); m) the farm's legal status (a dummy equal to 1 if the farm was an individual farm, and equal to 0 if the farm was a partnership or a company); n) location in an LFA (a dummy equal to 1 if the farm was fully or partially located in LFA, and equal to 0 if it was fully located outside LFAs); o) the altitude location (a dummy equal to 1 if the farm was mainly located in mountainous or hilly areas, and equal to 0 if it was mainly located in plains). The various categories of the categorical variables can be found in Table 1.

[2] Because of missing information for some variables and for some farmers, not all 295 farms from the full sample could be partitioned into the clusters.

3. Results

3.1. General trend of the effect of a CAP removal

The effect of the CAP removal was assessed by comparing each farmer's intentions in the first scenario of "CAP continuation scenario" with the second scenario of "No CAP scenario". Based on their answers in both scenarios, farmers were categorised into several groups, depending on whether they would change their strategy or not, and if "yes" the direction of the change, and whether they were more uncertain in the second scenario.

The general trend of the effect of CAP removal is shown by the shares of the full sample in each category, as presented in the last column of Table 3. Regarding the existence of the farm in the next ten years, there is no change in intentions for most of the farmers: 64.2 percent of the respondents intend to do the same in both scenarios (either keep the farm in both or close the farm in both). However, the removal of the CAP would make 12.8 percent farmers uncertain, while they would know which strategy to adopt in the first scenario of CAP continuation. Moreover, 18.7 percent of the sample would change their intentions: for them, the removal of the CAP would induce an exit of their household from the farming sector. Farmers whose intentions stay the same in each scenario are characterised by a larger share of farm head's time allocated to off-farm activities and more full-time employees, on average, than the other two groups of farmers. Farmers who become more uncertain are characterised by a larger UAA and fewer part-time employees, on average, than the other two groups of farmers. Farmers for whom the CAP would induce a cessation of the farm are characterised by a larger average SFP per hectare and by a larger part of individual farms than the other two groups of farmers.

For those intending to maintain their farming activity in the next ten years, the change in their intention regarding the farm size and activities is also shown for the full sample in the last column of Table 3. The categorisation of respondents into the groups "No change in intentions", "More uncertain", "Increased intentions" and "Decreased intentions" shows that for all questions in the survey a large share of respondents fall into the category "No change in intentions" (between 30 and 45 percent respondents, depending on the question), that is to say they do not change their intentions in the "No CAP scenario" compared to the "CAP continuation scenario". For instance, regarding the allocation of household's time to off-farm activities, 34.2 percent of the respondents have the same intention in both scenarios.

Table 3: Effect of the CAP removal on farmers' intentions

Share (%) of farmers within each category [a]		Cluster 1 (71 observations)	Cluster 2 (43 observations)	Cluster 3 (73 observations)	Full sample
Change in intentions regarding the maintenance of the farm within the family or the cessation of it					
	No change in intention (cease in both scenarios or maintain in both scenarios)	67.6	55.8	65.8	64.2
	More uncertain (maintain in first scenario and does not know in second scenario)	11.3	18.6	11.0	12.8
	Maintain in first scenario and cease in second scenario	16.9	23.3	17.8	18.7
Among those intending to maintain the farm, change in intentions regarding the level of:					
Household's labour allocated off farm	No change in intentions	35.2	44.2	27.4	34.2
	More uncertain	0	9.3	1.4	2.7
	Increased intentions: upgrade the strategy	14.1	11.6	24.7	17.6
	Decreased intentions: downgrade the strategy	4.2	0	1.4	2.1
Farm head's labour allocated off farm	No change in intentions	32.4	39.5	21.9	29.9
	More uncertain	4.2	9.3	2.7	4.8
	Increased intentions: upgrade the strategy	16.9	13.9	24.7	19.2
	Decreased intentions: downgrade the strategy	0	2.3	2.7	1.6
Hired labour used on the farm	No change in intentions	46.3	51.2	41.1	45.5
	More uncertain	1.4	0	2.7	1.6
	Increased intentions: upgrade the strategy	1.4	2.3	1.4	1.6
	Decreased intentions: downgrade the strategy	7.0	13.9	8.2	9.1
Owned UAA	No change in intentions	38.0	41.9	38.4	39.0
	More uncertain	5.6	9.3	2.7	5.3
	Increased intentions: upgrade the strategy	7.0	2.3	4.1	4.8
	Decreased intentions: downgrade the strategy	7.0	14.0	9.6	9.6
Rented UAA	No change in intentions	35.2	48.8	41.1	40.6
	More uncertain	5.6	7.0	2.7	4.8
	Increased intentions: upgrade the strategy	8.4	2.3	4.1	5.3
	Decreased intentions: downgrade the strategy	8.4	9.3	8.2	8.6

Livestock numbers	No change in intentions	40.8	37.2	41.1	40.1
	More uncertain	4.2	9.3	4.1	5.3
	Increased intentions: upgrade the strategy	4.2	14.0	1.4	5.3
	Decreased intentions: downgrade the strategy	8.4	7.0	5.5	6.9
Fertiliser and pesticide use	No change in intentions	32.4	44.2	35.6	36.4
	More uncertain	4.2	4.6	4.1	4.3
	Increased intentions: upgrade the strategy	2.8	0	0	1.1
	Decreased intentions: downgrade the strategy	16.9	20.9	16.4	17.6
Water use	No change in intentions	40.8	46.5	46.6	44.4
	More uncertain	1.4	9.3	0	2.7
	Increased intentions: upgrade the strategy	1.4	2.3	1.4	1.6
	Decreased intentions: downgrade the strategy	11.3	9.3	8.2	9.6
Area of farm buildings	No change in intentions	42.2	44.2	38.4	41.2
	More uncertain	5.6	9.3	2.7	5.3
	Increased intentions: upgrade the strategy	2.8	4.6	0	2.1
	Decreased intentions: downgrade the strategy	8.4	11.6	12.3	10.7
Number of farm materials	No change in intentions	39.4	39.5	34.2	37.4
	More uncertain	5.7	4.7	4.1	4.8
	Increased intentions: upgrade the strategy	2.8	0	1.4	1.6
	Decreased intentions: downgrade the strategy	9.9	23.3	16.4	15.5
Resort to contract work (outsourcing)	No change in intentions	45.1	48.8	34.2	41.7
	More uncertain	2.8	4.6	1.4	2.7
	Increased intentions: upgrade the strategy	1.4	11.6	13.7	8.6
	Decreased intentions: downgrade the strategy	7.0	4.7	8.2	6.9
Diversification activities	No change in intentions	45.1	46.5	41.1	43.8
	More uncertain	4.2	7.0	2.7	4.3
	Increased intentions: upgrade the strategy	5.6	13.9	12.3	10.2
	Decreased intentions: downgrade the strategy	1.4	2.3	0	1.1

[a] For each question, the shares do not always add to 100 percent due to the fact that some farmers did not provide an answer to some questions.

Among those for which the CAP removal would have an effect on their strategy, only a few farmers would become more uncertain (between 1.6 and 5.3 percent of the group of farmers who would change their strategy between scenarios). For the other farmers, that is to say for farmers who were certain about their strategy in the second scenario, the tendency is to either upgrade or downgrade their strategy. The upgrade of strategies relates to pluriactivity: 17.6 percent of the respondents intend to increase the time allocated to off-farm activities by household members, while the corresponding number is 19.2 percent for the farm head, in the "No CAP scenario" compared to the "CAP continuation scenario". Besides, the use of hired labour on the farm shows a decreased tendency for those intending to change their intentions between both scenarios (9.1 percent of the respondents downgrade their intentions, against 1.6 percent who upgrade them). The decrease of household labour on the farm seems to be compensated for to an extent by an increased resort to contract work (8.6 percent of the respondents upgrade their intentions regarding outsourcing, against 6.9 percent who downgrade them). Regarding the land area, among those who would modify their intentions in the "No CAP scenario" compared to the "CAP continuation scenario", the tendency is to downgrade the strategy (for 9.6 and 8.6 percent of the farmers regarding owned UAA and rented UAA respectively) rather than upgrading it (for 4.8 and 5.3 percent of the farmers regarding owned UAA and rented UAA respectively). The same observation can be made regarding the number of livestock, and, more noticeably, regarding fertilisers and pesticide use, water use, farm buildings' area and number of farm materials. As for the diversification activities, for respondents who choose to change their strategy in the "No CAP scenario" compared to the "CAP continuation scenario", most of them intend to upgrade their strategy (10.2 percent of the farmers) rather than downgrade it (1.1 percent of the farmers).

3.2. Results of the cluster analysis

Description of clusters' characteristics

The dendrogram (Figure 2) suggests a distribution of farmers into three clusters. This is confirmed by the Duda-Hart indices (Table 4), namely a high Je(2)/Je(1)[3] value and a sudden decrease in the pseudo-t[2] values (Milligan and Cooper, 1985). The number of farmers in each cluster is 71 in Cluster 1, 43 in Cluster 2 and 73 in Cluster 3. Because of missing information

[3] Je(2) is the within cluster sum of squared errors when the observations are separated into two clusters, and Je(1) is the sum of squared errors when observations are grouped into a single cluster.

for some variables and some farmers, not all 295 farms from the full sample could be partitioned into the clusters.

Figure 2: Dendrogram of the clustering procedure

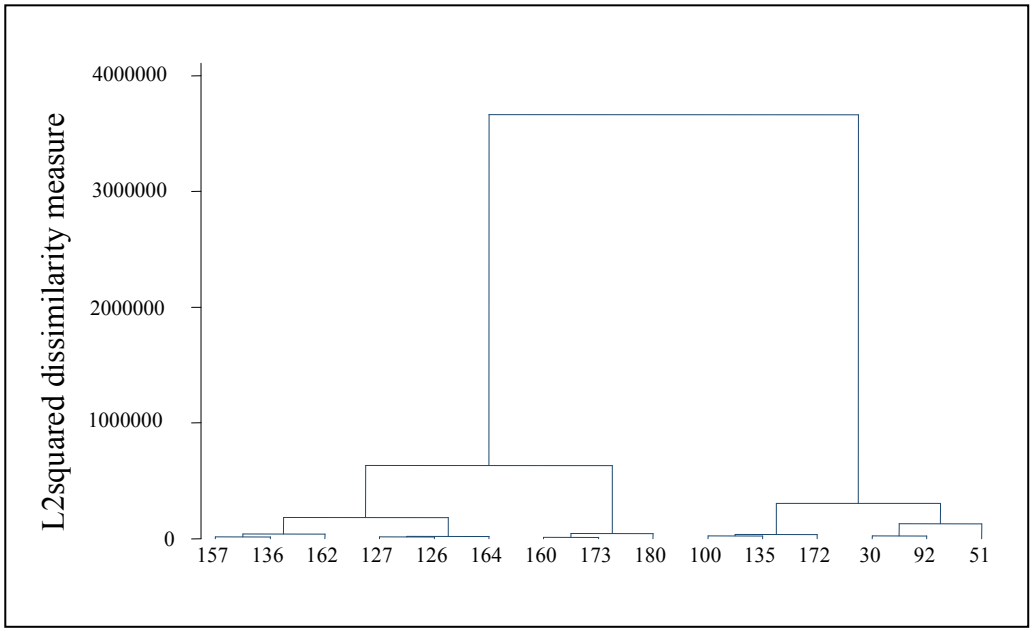


Table 4: Duda-Hart indices for the five first clusters

Number of clusters	Duda-Hart indices	
	Je(2)/Je(1)	Pseudo-t^2
1	0.3049	421.81
2	0.3887	176.10
3	0.4690	80.37
4	0.4276	92.36
5	0.3133	70.15

As well as characteristics of the full sample, Table 1 shows the characteristics of farms in each of the clusters and whether the difference between clusters is statistically significant. In summary, Cluster 1 (71 farms) contains *farms involved in off-farm activities and environment protection*. Farm heads allocated a large share of their time to off-farm labour, and had contracted an AES. The revenue of these farms was less dependent on agriculture and they received less SFP per hectare than farms in the other clusters. They tended to be located in LFA and in mountainous areas. The general profile of Cluster 2 (43 farms), which

differentiates it from the other clusters, is *large non-individual farms*. Other characteristics for farms in this cluster are that farms were more likely to be involved in non-production activities and located in LFA and in mountainous areas. Cluster 3 (73 farms) can generally be characterised as a cluster of *field crop intensive farms*. These farms were often located in the plains, were not heavily involved in AES, received a high SFP per hectare and, although they were relatively small, they used a large full-time labour force.

Reaction of clusters to the CAP removal

Having defined the profile of each cluster, the farmers' strategies in each cluster were investigated in order to see how the removal of the CAP affects different farming systems. The change in intentions from the "No CAP scenario" to the "CAP continuation scenario" for each cluster is shown in Table 3. Similarly to the full sample, a large share of farmers in each cluster has the same intentions across both scenarios. However, among those whose behaviour is affected by the removal of the CAP, different tendencies can be observed depending on the cluster.

Except for the question regarding the livestock numbers and water use, Cluster 2 (*large non-individual farms*) has the largest share of farmers who do not change their intentions in the "No CAP scenario" compared to the "CAP continuation scenario" for all questions. For example, 48.8 percent of the farmers in Cluster 2 keep the same intention about rented UAA in both scenarios, while the shares are 35.2, 41.1 and 40.6 percent for Cluster 1, Cluster 3 and the full sample respectively. Moreover, for most of the questions the share of farmers becoming uncertain in the "No CAP scenario" compared to the "CAP continuation scenario" is higher in Cluster 2 than in the other clusters. For example, 9.3 percent of the farmers in Cluster 2 are more uncertain when it comes to the strategy about owned UAA, while the shares are 5.6, 2.7 and 5.3 in Cluster 1, Cluster 3 and the full sample respectively. Despite this, the shares of farmers in Cluster 2 willing to downgrade their intentions are greater than the shares in the same cluster willing to upgrade their intentions, except for the strategy regarding household's and farm head's pluriactivity, livestock numbers, contract work and diversification, where the reverse holds. In summary, the effect of the CAP removal on Cluster 2 is uncertainty or inaction for a large majority of farmers and, for the other farmers, downgrading the strategy regarding the size and upgrading the strategy regarding non-agricultural activities (pluriactivity, diversification).

In comparison with the general trend of the full sample and with the behaviour of the two other clusters, Cluster 1 (*farms involved in off-farm activities and environment protection*) presents the highest shares of farmers upgrading their intentions in terms of owned and rented land, and downgrading their intentions in terms of livestock numbers and water use. Therefore, it seems that for Cluster 1 farmers, although the CAP removal would not affect the strategy for a large part of the farms similar to the full sample, it would induce a size enlargement for a substantial share of farms. However, this might not be followed by an increased need for labour, as the animal activities would be decreased. It can also be noted that CAP removal would induce an increase in environmental-friendly practices, with a reduction in livestock density and decreased use of water and of fertilisers and pesticides.

As for Cluster 3 (*field crop intensive farms*), the shares of farms willing to upgrade their intentions regarding the household's and farm head's pluriactivity are the highest among the three clusters. For example, 24.7 percent of the farmers in Cluster 3 upgrade their intentions about household's pluriactivity, compared to 14.1 and 11.6 percent for Cluster 1 and Cluster 2 respectively. However, the figures regarding the other questions do not show a greater willingness to downgrade their intentions in terms of farm size, or to upgrade their intentions in terms of hired labour. The increased need for labour on these farms may in fact be compensated for by contract work, since the share of farmers upgrading their intentions regarding this type of labour is the highest among all clusters.

4. Conclusion

The paper has analysed the importance of the CAP in French farming, based on a survey of intentions of 295 farmers in 2009. The farmers surveyed were beneficiaries of CAP subsidies in 2008, and were therefore mostly specialised in field cropping and grazing livestock. Respondents had to indicate their ten-year strategy in two CAP scenarios: firstly in a "CAP continuation scenario", and secondly in a "No CAP scenario" where the CAP is fully removed from 2014 onwards. Comparing strategies in the two scenarios allowed four groups of farmers to be identified: "No change in intentions"; "More uncertain"; "Increased intentions: upgrade the strategy"; and "Decreased intentions: downgrade the strategy".

Although for the majority of respondents there would be no change in their intentions if the CAP were suppressed, a substantial share of farmers would be affected. Firstly, about 19

percent would intend to stop their farming activity and would prefer to close their farm, while they would maintain the farm if the CAP continued. Secondly, more respondents were uncertain about the strategy that they would choose for their household and their farm if the CAP were suppressed than were uncertain in the scenario of continuation of the CAP. This finding is not surprising, considering that the "No CAP scenario" seemed unrealistic to many farmers and therefore they could not think of concrete strategies. Also, such a scenario has clearly never happened in the respondents' life and therefore they have no previous experience to relate to. Thirdly, among the changes in intention induced by the CAP removal for farmers intending to keep their farm, the tendency was to downgrade the intentions regarding farm size (land, livestock, buildings, materials, water use, fertilisers and pesticides use), but to upgrade the intentions regarding the farm household's off-farm labour and on-farm diversification activities, and regarding resorting to contract work.

The cluster analysis highlighted differentiated effects of the CAP removal on the French farmers depending on their farming systems. Non-individual farms would become relatively uncertain about their strategy or would prefer not to change it. Such uncertain or inactive behaviour may be a manifestation of a "wait and see" strategy, or may be evidence that the decision-making within such farms is more complex than within individual farms. Without consulting his/her partners or shareholders, the single respondent may not be able to give a clear indication of the farm strategy in an unrealistic scenario of CAP removal. Further research is therefore necessary to understand more clearly the strategies of farms with complex decision-making. This is a crucial issue in France and, to a larger extent, in Europe where the share of partnership farms has substantially increased in the last decades.

For farms already largely involved in pluriactivity, the CAP removal could induce a farm area enlargement and an increase in environmental-friendly practices, compared to the situation where the CAP would continue. For intensive crop farms, the effect could be a greater involvement in off-farm activities, but this might not be accompanied by a reduction in production activities. Instead, the reduced availability of household labour (induced by increased off-farm activities) would be compensated for by a greater use of contract work.

The high flexibility of contract work means that outsourcing farming work is becoming more and more common on farms worldwide, and notably in France (Lee and Sivananthiran, 1996; Smart, 1997; Devey et al., 2007; Dupraz and Latruffe, 2010). Part-time farming is also becoming more and more common in developed countries. From the situation where a few

hours are spent off the farm carrying out agricultural tasks on another farm to the extreme case of hobby farming, pluriactivity has become an important characteristic of the farming sector in the EU and in France. However, agricultural policy design usually merely notes this trend, and tends to focus on the issues of land abandonment or complete exit from the farming sector, although increasing part-time farming might also be a response to policy change. Previous research has shown that decoupled subsidies such as the SFP may have two opposite effects on farmers' off-farm labour strategies. On the one hand, decoupled subsidies may maintain farms in productivist behaviour and full-time farming by relaxing credit constraints. For example, Ahearn et al. (2006) and Kwon et al. (2006) have shown that the supply of off-farm labour decreases when government subsidies increase. On the other hand, decoupled subsidies may allow farmers to reduce their on-farm activities thanks to the removal of the requirement to produce on land that receives such subsidies. However, no other studies have investigated how part-time farming would be affected in the event of the disappearance of the CAP. The present findings show that French farmers would increase off-farm activities if the CAP were removed. This is a major result for France, where the issue of part-time farming is generally sensitive. The agricultural sector is characterised by the traditionalist vision that farmers should not have to work off farm to keep up their farm (Gorton et al., 2008). This explains the furore caused by the then EU Commissioner for Agriculture Mariann Fischer Boel's 2006 declaration that within the next decade EU farmers would have to resort to non-agricultural sources of income in order to survive (Bounds, 2006).

Although this analysis is based on intentions which may not be in fact implemented as such if the hypothetical scenario of CAP removal became a reality, it shows the crucial role of the CAP in French farmers' existence. It also highlights the importance of the CAP for the rural labour market, which may be modified in the case of a disappearance of the CAP. The latter may indeed imply that off-farm employment could be more sought after by farm households, and hired labour would not be the first choice to replace household labour on the farms. Instead farmers would resort to outsourcing, a more flexible form of labour.

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