Should I stay or should I go? Factors affecting farmers' decision to convert to organic farming as well as to abandon it

George Alexopoulos[a], Alex Koutsouris[a] and Irene Tzouramani[b]

[a]*Dept. of Agricultural Economics & Rural Development, Agricultural University of Athens, galexop@aua.gr, koutsouris@aua.gr*
[b]*Agricultural Economics & Policy Research Institute, National Agricultural Research Foundation, tzouramani.inagrop@nagref.gr*

Abstract: *The current piece of work utilises data drawn from a survey conducted in the Western Greece region (2004) and concerns the exploration of the differences between a) conventional and organic farmers and, most important, b) organic farmers who intend to continue organic farming and organic farmers who intend to re-convert to conventional farming. Analysis shows that the conversion to organic farming relates positively to factors such as age, farm size, farmer's innovativeness and farm planning along with perceptions about markets and the contribution of organic farming to environmental protection as well as the influence of 'important others'. On the other hand, less innovative and pluriactive farmers, owning larger farms, experiencing low prices and without supportive networks seem more likely to abandon organic farming. Given the deficiencies of organic farming in Greece (training, markets, etc.) the present piece of work aims at critically discussing the aforementioned research findings and detect measures that (will) allow for consistent farmers' involvement in organic farming.*

Keywords: *organic farming; adoption (conversion); discontinuance (reconversion), Western Greece.*

Introduction

Organic farming, as an approach to agriculture that emphasises environmental as well as other benefits and a break with the productivist paradigm of conventional farming, has recently experienced considerable growth. Recognising potential benefits, the European Union has, since the early 90s provided a legal definition of organic farming as well as policy support (notably financial incentives) for its development (Stolze and Lampkin, 2009). In Greece, up to the mid 90s, the organic sector was of limited importance. Since then, however, the Greek organic sector has experienced considerable growth. For the period 1998-2002, Greece had one of the highest annual growth rates within the EU (Eurostat, 2005). According to the Greek Ministry of Agriculture, in 2004, organic farming covered around 2.7% of the agricultural land (with the predominance of olive orchards covering 38.2% of the organically cultivated lands). Among the 13 Greek regions, Western Greece ranked first with around 18% of the agricultural land having been converted to organic; it has to be mentioned that organic farming was introduced in the Achaia Prefecture through the initiative of the Aegialia Cooperative in the early 80s, thus independently of the Reg. EC/2092/91, for raisins and since 1993 for olive oil (Yotopoulou et al., 2005).

Furthermore, such developments took place within a context characterised by: a) farmers' productivist ethos (a rather common characteristic of the Mediterranean region; Wilson and Hart, 2000); b) the privileged access of larger farmers, especially those located in plains, to the extension service along with the general lack of occupational, agricultural training (Koutsouris, 1999; Genious et al., 2006); c) the fact that especially conventional olive and citrus plantations had been under extensive production techniques, i.e. quite similar to organic farming, beforehand (Vlahos, 2009); d) markets predominated by middlemen and corporate interests; and e) on the one hand, low prices for (conventional) citrus and, on the other, the preparedness of consumers to pay more for high quality, thus organic as well, olive oil (Vlahos, op. cit.).

In Greece the great majority of studies concerning organic farming relate to either its economic aspects or the marketing of organic produces (especially consumers' attitudes and behaviour). On the other hand, two studies have shown the heterogeneity of organic farmers, their production systems as well as of motivations for adopting organic farming in Greece (Yotopoulou et al., 2005; Santorinaiou, 2009). In parallel, very few studies have addressed the issue of farmers' participation in agri-environmental programmes (Beopoulos and Louloudis, 1997; Damianos and Giannakopoulos, 2002). For example, Damianos and Giannakopoulos (2002) examined farmers' participation in agri-environmental programmes (R. 2078/92), in Larissa, Central Greece. The findings are in line with similar studies: young and well-educated (in terms of both general and agricultural education) farmers, in larger (in terms of economic size units) farms, with neighbours or relatives participating in the programme were found to be more likely to participate.

Given that no previous studies concerning the adoption and/or abandonment of organic farming are explored from a Greek perspective, this study investigates the differences of various characteristics between, first, conventional and organic farmers and, second, organic farmers who intent to continue organic farming and those who intent to reconvert to conventional farming. Such an effort is undertaken in the framework of exploring the difficulties on the part of farmers to simultaneously fulfil economic and environmental requirements and personal expectations, i.e. satisfactory compromises in engaging with and securing the liveability of such a novel farming system. More specifically, the current piece of work utilises part of the data drawn from a survey conducted in 2004 in the region of Western Greece (comprising the Prefectures of Achaia, Ilia and Aetoloakarnania). The survey took place within a research project, commissioned by the Regional Authorities to the National Agricultural Research Foundation, triggered by the worrying incidence that in the 2003-2004 period 37% among the Achaia Prefecture organic farmers abandoned organic farming (AGEPRI, 2004). It has to be mentioned that research in the pioneering Aegialia area (Achaia Prefecture) in 2000 had already indicated trends of abandonment of organic farming on the part of younger farmers, mainly pluriactive and owning small farms ones (Yotopolou et al., 2005).

Literature review

The literature identifies a broad range of factors associated with the adoption and non-adoption of organic farming (for reviews see, for example: Darnhofer et al., 2005; Fairweather, 1999; Lamine and Bellon, 2009; Midmore et al., 2001; Padel, 2001 and 2008; Rigby et al., 2001; Sierra et al., 2008). Most studies are site-specific investigations of possible correlations between adoption and independent variables. Given the rich tradition of diffusion research, many studies have directed their attention to certain characteristics of farmers and their farms in line with Rogers' (2003) generalizations about early adopters. However, the model has been found to suffer from various constraints, including the omission of external factors, such as economic circumstances, and the complexity of organic farming (Padel, 2001 and 2008). Another strand of research takes a behavioural approach (Burton, 2004) suggesting that motives, values and attitudes determine farmers' decision-making processes. Thus, for example, farmers' types and their rationale have been identified (Fairweather, 1999; Darnhofer et al., 2005). Furthermore, Lamine and Bellon (2009) argue that studying conversion through the identification of farmers' biographical trajectories may be more fruitful. Moreover, debates have emerged on the importance of various factors in determining the adoption and diffusion of organic farming, such as, for example, between, on the one hand, socio-demographic and economic variables, and, on the other hand, of perceptions and attitudes - including the influence of the former on the latter and, generally, on behaviour and decision-making (Lamine and Bellon, 2009; McEachern and Willock, 2004; Sattler and Nagel, 2010; Selfa et al., 2008; Toma and Mathijs, 2007; Wilson and Hart, 2000). This clearly points to the complexity of factors influencing farmers' decision-making environment and processes.

Therefore, many studies stress a weighing of a number of influences. Factors found to influence the decision to convert include the age of the farmer, his/her education and professional experience, income, farm characteristics (including the intensity of farming practices), expectations with regard

to succession, the information environment and social networks (especially 'important others'). There has also been recognition of the importance of farmers' reasons or motivations (especially risk-aversion) and their antecedent variables, in attempting to explain their propensity to adopt organic farming. Furthermore, institutional rules (scheme factors), organic food market structure, policy awareness and support, research and information services, social acceptance and public support for organic farming are all influencing factors. It should be noted though that the empirical record contains many ambiguities and inconsistent results owing to the variation in locales of analysis, sample sizes, methodologies (quantitative vs. qualitative methods as well as statistical techniques) and, as expected, to outcomes.

In contrast to organic adoption, research on why some organic producers revert to conventional production has yet received little attention and relevant literature is sparse. This, to a large degree, owes to the fact that most diffusion-adoption research is concerned with the process of initial adoption or rejection of particular innovations, with very few studies concentrating on the decision to reject a previously adopted innovation due to dissatisfaction with its performance owing to flaws, inappropriateness for its original purpose or lack of (the initially perceived) relative advantage (disenchantment discontinuance; Rogers, 2003). In this respect, studies investigating why some farmers discontinue previously adapted environmental technologies have shown that relevant factors relate to both specific characteristics of each technology (including its compatibility with other farming practices and the additional labour and/or capital expenditures required to maintain them) and to the wider socioeconomic context (see: Miller and Mariola, 2008).

As far as organic reconversion is concerned, Rigby et al. (2001) identified four categories of reasons for discontinuing organic production in the UK: marketing and market incentives; cost issues; agronomic problems, including access to technical information; and, other issues, including changing personal circumstances. The authors note that farmers motivated by economic considerations or lifestyle choice are the types of producers most likely to discontinue organic production. Furthermore, they identify factors such as age and education, gender, membership in producer groups and access to information as being significant in determining the likelihood of 'reversion' to conventional production. In the Netherlands, Regouin (2003) identified a number of reasons for discontinuing organic production such as lack of market, economic viability, restrictive legislation, and other. He also hypothesizes (with caution) that smaller organic farms may be less viable than larger ones. In their study in Austria, Kimer et al. (2006) found that problems concerning organic guidelines and strict inspections are prominent in taking the actual decision to abandon organic farming. Furthermore, farms' structural characteristics were found to relate to the reconversion reasons: smaller farmers opt-out due to factors relating to organic regulations and management; larger farms take a similar step due to added-value or a combination of factors. Environmental attitudes, social embedding and the presence of a successor were also found to influence farmers' decision.

In their study in California, Sierra et al. (2008) have found that the main reasons offered by farmers for discontinuing organic production were organic regulatory issues followed by land tenure and/or personal, production, or market issues and to a lesser degree by management or price issues. According to this research, regulatory problems (paperwork, certification, etc.) were not only the principal reason for reverting to conventional agriculture; it is also ranked as the most significant challenge on the part of organic farmers. Furthermore, the authors' review of US related literature indicates that 'dropout' may be principally attributed to factors such as certification costs, farm size, cultivation system and organic farming experience; and, economic (increased production costs, lower yields, difficulties finding buyers) rather than production factors. Additionally, external or beyond the farm gate issues have also been shown to effect farmers' decision to cease organic farming.

Lapple and Donnellan's (2009) exit model for Irish organic farmers shows the significance of factors such as labour units in the farm, livestock density and number of information sources (negative) as well as off-farm job and adoption based on advisor's influence (positive) on the decision to exit from organic farming. Furthermore, factors such as location, farm size, farmer and household

characteristics, education, number of memberships, knowing another organic farmer and attitudinal variables were not found to significantly effect exit decisions.

Methodology

As already mentioned the current piece of work utilises part of the data drawn from a survey conducted in 2004, in the region of Western Greece, addressing 187 organic farmers (10.2% of the organic farmers in the region) and 177 neighbouring conventional farmers. The survey questionnaire covers: i) farm characteristics , ii) farmer characteristics, iii) cropping patterns and cultivation methods, iv) input use, v) farm economics, vi) information sources and networks, and vii) farmers' perceptions and motivations on various aspects concerning organic farming.

Given that probit and logit analysis are well-established approaches in the literature on adoption of agricultural technology (Feder et al., 1985) data were processed according to the probit model. A Probit model deals with a choice between two alternatives (Greene, 2000); thus, the dependent variables in the following probit models are a) the adoption of organic farming and b) the intention of organic farmers to reconvert to conventional farming, i.e. a binary dependent variable, taking on a value of 1 if a) the respondent is an organic farmer and b) if the organic farmer intents to abandon organic farming, and 0 otherwise, was used. The tentative explanatory variables (farmer and farm characteristics and farmers; perceptions and motivations) comprised both continuous and binary variables (Table 1).

Table 1. Definition of variables used in the probit models.

Variable	Description
Dependent	
	Organic = 1, Conventional = 0; Exit organic = 1, Continue organic = 0
Independent	
Farmer characteristics	
Gender	Male = 0, Female = 1
Age	Farmers with age less than 40 years
Education	Farmer's education level (post-secondary); 1=Yes, 0=No
Successor	Successor in the farm; 1=Yes, 0=No
Agricultural training	Agricultural training (seminars); 1=Yes, 0=No
Innovator	Farmer among the first to adopt innovations in the area; 1=Yes, 0=No
Farm plan	Plans for the farm, 1=Yes, 0=No
Off-farm job	Other occupation, 1=Yes, 0=No
Farming experience	Years in farming
Farm characteristics	
Size	Farm size (in 0.1ha)
Olives	Dummy; equals 1 if the main product (acreage) is olives
Vineyards	Dummy; equals 1 if the main product (acreage) is grapes
Citrus	Dummy; equals 1 if the main product (acreage) is citrus
Plain	Dummy; equals 1 if the area is plain
Mountainous	Dummy; equals 1 if the area is mountainous
Perceptions and motivations	
Organic prices	Prices for organic produces are higher; Yes=1, No=0
Organic demand	Demand for organic produces is higher; Yes=1, No=0
Organic market	The market for organic products is secure; Yes=1, No=0
Organic prospects	The prospects for organic agriculture are limited; Yes=1, No=0
Production costs	Organic agriculture has higher production cost; Yes=1, No=0
Labour	Organic agriculture incurs more labour; Yes=1, No=0
Organic techniques	Difficult to apply organic farming techniques; Yes=1, No=0
Environment	Organic agriculture contributes more to the protection of the environment; Yes=1, No=0
Policy	Worries about (foreseen) reduced support of agricultural prices and incomes; Yes=1, No=0
Producer health	Conventional agriculture may cause health problems to producers due to the use of agrochemicals; Yes=1, No=0
Consumer health	Conventional agriculture may cause health problems to consumers due to the use of agrochemicals; Yes=1, No=0

Membership	Membership in farmers' organisations implies gains; Yes=1, No=0
Organic farmers	Acquaintance with organic farmers; Yes=1, No=0
People	Important others (people I trust) believe that I have to follow organic agriculture; Yes=1, No=0
Consumer needs	Organic agriculture will satisfy consumer needs; Yes=1, No=0
Market information	Concerns about insufficient information on market trends; Yes=1, No=0
Technical information – organic	The information on organic agriculture techniques is limited in the area; Yes=1, No=0

Results

Bivariate analysis (Table 2) indicates the existence of differences between organic and conventional farmers in terms of a series of characteristics.

Table 2. Farmer and farm characteristics.

Variables	Statistic	Organic farmers	Conventional farmers	Organic farmers – intention to continue	Organic farmers – intention to reconvert
Farmer characteristics					
Gender	% females	20.9	19.2	22.8	12.2
Age	% < 40 years old	26.7*	55.9	29.0**	17.1
Education	% post-secondary	16.8*	2.8	17.6	12.2
Successor	% yes	46.0*	24.3	47.6	41.5
Agricultural training	% yes	26.7	33.1	28.3	19.5
Innovator	% yes	59.4*	13.0	64.1**	41.5
Farm plan	% yes	16.1	14.1	18.6	7.5
Off-farm job	% yes	46.4	44.2	46.9	51.2
Farming experience	Years, mean (SD)	21.6 (0.97)*	17.3 (0.96)	23.4 (13.9)	25.4 (13.3)
Farm characteristics					
Size	Area in 0.1ha, mean (SD)	37.7 (3.77)	31.7 (1.55)	33.7 (2.24)**	52,06 (15.21)
Olives	% of olive farms	31.6	26.0	31.9	29.3
Vineyards	% of vineyard farms	16.0*	35.0	14.6	22.0
Citrus	% of citrus farms	42.2**	33.3	42.1	43.9
Plain	% of farms in plain areas	50.8*	41.2	53.8	41.5
Mountainous	% of farms in mountainous areas	21.9*	39.5	19.3	31.7
Perceptions and motivations					
Organic prices	% yes	83.4*	51.2	99.3*	80.5
Organic demand	% yes	70.6*	15.7	77.9*	43.9
Organic market	% yes	72.2*	21.7	79.3*	48.8
Organic prospects	% yes	19.6*	56.6	12.4*	43.9
Production cost	% yes	73.7	78.5	68.3*	92.5
Labour	% yes	82.8*	92.1	79.9*	92.7
Organic techniques	% yes	56.0*	77.4	49.7*	82.9
Environment	% yes	95.2*	48.0	99.3*	80.5
Policy	% yes	95.7**	89.3	97.9**	87.8
Producer health	% yes	70.1*	38.4	77.9*	41.5
Consumer health	% yes	69.9*	36.2	76.6*	45.0
Membership	% yes	80.7	83.1	86.2*	61.0
Organic farmers	% yes	73.3*	25.4	75.9**	63.4
People	% yes	85.0*	26.7	98.6*	36.6
Consumer needs	% yes	64.2*	29.9	72.4*	36.6
Market information	% yes	76.5	81.4	77.9	70.7
Technical information - organic	% yes	25.1*	42.9	21.4**	39.0

* Significant at the 0.01 level, ** significant at the 0.05 level

Organic farmers are likely to be older and more experienced in farming; they are also more likely to be better-educated as well as to have a successor; they are mostly established in plain areas and cultivate more citrus and less vines than conventional farmers. Additionally, the two groups differ in terms of perceptions and motivations (organic farming results in better prices, higher demand and secure market, can satisfy consumer needs and has good prospects; labour demands are not high and farming techniques are easy; organic farming contributes to the protection of the environment and conventional farming has adverse effects to the health of both producers and consumers due to the use of agrochemicals; eagerness to try innovations). Organic farmers are more knowledgeable of other organic farmers and supported by 'important others' in engaging with organic farming. Finally, they are more concerned about changes in agricultural policy and claim, to a larger degree, that there is adequate information on organic farming techniques in their area.

The main reasons provided by farmers for joining organic farming were (responses not mutually exclusive): the better prices of and the secure market for organic produces (74.4% and 61.3%, respectively), followed by environmental protection (45.2%) and health problems due to the use of chemicals as well as agronomic problems in conventional farming (26.8% and 25%, respectively). Only 16.6% of the farmers maintained both conventional and organic fields (10.2% farming conventionally at least 50% of their lands).

Further, 41 farmers (21.9%) expressed the intention to abandon organic farming, out of whom 30 where at the end of the compulsory 5-year period for being eligible for subsidies and six at the 4th year. Organic farmers are discerned according to all the aforementioned perceptions and motivations with the addition of those concerning production costs and the membership in farmers' organisations. Furthermore, those with the intention to reconvert are older, with larger farms and find more difficulties in accessing appropriate technical support. They are also less knowledgeable of other organic farmers and have less support from 'important others. The main reasons identified by farmers for (tentatively) discontinuing organic production were (responses not mutually exclusive): the end of the subsidisation period (22.9%), income losses (21.4%) and lack of markets (20.6%) followed by labour shortages (19.1%); the bureaucracy involved in certification and/or participation in the programme (15.3%); poor organic farming prospects (13.7%) and to a lesser degree lack of information on the part of consumers about the advantages of organic produces (11.5%) and lack of information on their own part on market trends (10.9%).

Total Sample

The probit model indicates that 90 percent of the observations were correctly predicted (Table 3). Results show that older farmers (Age), those with bigger farms (Size) as well as innovators (Innovator) and those with a farm plan (Farm plan) are more likely to be organic. While the prices of organic produces (Organic prices) are not considered as being higher by organic farmers, they highlight qualitative dimensions of organic markets; farmers' perceptions that organic produces have higher demand (Organic demand) along with secure markets (Organic Market) and can satisfy consumers' needs (Consumer needs) prove to be important factors in adopting organic farming. As expected, the same holds true for farmers claiming that organic farming contributes more to environmental protection (Environment) and whose social networks support them in their decision to follow organic farming (People). Finally, organic farmers seem less oriented to collective action (Organisation).

Organic Farmers

The probit model indicates that 93 percent of the observations were correctly predicted (Table 3). Results show that less innovative farmers (Innovator) as well as those whose social networks do not support them in engaging in organic farming (People) are more likely to reconvert to conventional farming (14% and 72.7%, respectively). The intention to reconvert is also (positively) related to

disappointment with organic produces' prices (Organic price; 29.6%), pluriactivity (Off-farm job; 20.1%) and farm size (Size; 0.23%).

Discussion and conclusions

The present piece of work aims at identifying factors that influence a) farmers' decisions for converting to organic farming b) farmers' intentions to reconvert to conventional farming in the region under consideration. The probit model results, correctly predicting 90% of the observations, show that the conversion to organic farming relates positively to factors such as age, farm size, farmer's innovativeness and farm planning along with optimistic perceptions about organic markets, the perceived contribution of organic farming to environmental protection and the encouragement of 'important others'. It is worth mentioning though that in our case older farmers owning larger farms are more likely to have adopted organic farming.

Table 3. Estimation results of probit models.

	Total Sample		**Organic farmers**	
	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	-0.5971	0.7855	1.7622	4.5996
Farmer characteristics				
Gender	-0.1225	0.2596	-0.6252	0.6745
Age	-0.8791***	0.2442	-0.4385	0.6458
Education	-0.0002	0.0011	0.0022	0.0258
Successor	-0.1444	0.2463	-0.2262	0.5216
Agricultural training	0.1202	0.2653	-0.1320	0.6228
Innovator	0.8471***	0.2491	-0.888*	0.4786
Farm plan	0.0012**	0.0005	0.0016	0.0137
Off-farm job	0.0506	0.2245	1.2693**	0.5586
Farming experience	-0.0005	0.0010	0.0014	0.0032
Farm characteristics				
Size	0.0031*	0.0018	0.0146**	0.0065
Olives	-0.2065	0.4716	2.0273	1.5051
Vineyards	-0.3517	0.5146	2.5058	1.6241
Citrus	0.1750	0.4343	2.3719	1.5164
Plain	-0.1821	0.2970	-0.5906	0.6708
Mountainous	0.1002	0.3047	-0.1562	0.6114
Perceptions and motivations				
Organic prices	-0.7338*	0.3834	-1.8703**	0.8018
Organic demand	0.6330**	0.2876	-0.3691	0.6043
Organic market	0.7166**	0.3018	-0.3151	0.7313
Organic prospects	0.3261	0.2888	0.5233	0.6641
Production cost	-0.0010	0.0057	-0.4964	0.8691
Labour cost	-0.2429	0.3905	0.4705	1.0503
Organic techniques	-0.0076	0.2610	0.5156	0.5331
Environment	0.7746**	0.3682	-1.0724	3.9195
Policy	0.2717	0.3716	-0.6063	1.2293
Producer health	0.1534	0.5065	-0.1139	0.5467
Consumer health	-0.4930	0.4952	-0.0054	0.0116
Membership	-0.9463***	0.3372	1.0133	0.9144
Organic farmers	0.4413	0.2787	0.9207	0.7485
People	1.2997***	0.3229	-4.5926***	1.1270
Consumer needs	0.6046**	0.2358	-0.2940	0.4854
Market information	-0.4015	0.2784	0.4218	0.6384
Technical Information-organic	0.1035	0.2575	-0.5958	0.7021
Model chi-square	297.94		135.41	
McFadden's R	0.5908		0.6884	
% correct predictions	90%		93%	

*** Significant at the 0.01 level, ** Significant at the 0.05 level, *significant at the 0.10 level

This may owe to the aforementioned contextual factors, especially larger farmers' privileged relationship with extension services, thus to information about the (non-negligible) subsidies provided through the Reg. EC/2092/91 for the produces under consideration, the suitability of their large-scale extensive olive and citrus cultivation systems to convert to organic farming, these farmers' need to enter market via 'product differentiation' as well as the abandonment of organic farming by younger farmers. Consequently, our findings while tending to verify Regouin's hypothesis, as far as age is concerned it contrasts most references. Furthermore, organic farming in our research area seems to have been an exciting professional challenge to more innovative farmers as also shown elsewhere (see: Flaten et al., 2006). Besides, our findings also indicate that motives for conversion have changed from early to late adopters thus implying that organic farming is becoming a modified version of conventional farming (see, for example, Padel (2008) and Darnhofer et al. (2010) on the 'conventionalisation' thesis). To this, the fact that organic farms in our research area are not highly diversified but follow the regional specialisation has to be added, thus implying that farmers take an 'input substitution' rather than a 'system redesign' approach (Lamin and Bellon, 2009).

As far as farmers' intention to reconvert to conventional farming is concerned, the probit model, correctly predicting 93% of the observations, shows that factors such as less innovativeness, unsupportive networks and low prices as well as farm size and pluriactivity relate positively to it. Given that, on the one hand, the most important reasons farmers cited for taking up organic farming were better prices and secure markets and, on the other hand, the prime reasons for tentative reconversion were the end of subsidization, income losses and lack of markets, such findings are not surprising. Previous research in Aegialia has shown that two thirds of organic farmers had not, in 2000, improved their income while for another 14% it had deteriorated (Yotopoulou et al., 2006). AGEPRI's research (2004) showed that, in 2004, on the one hand, 60% of the organic farmers sold their citrus at the same price as conventional ones (while olives were sold at a price 20% higher), and, on the other, farmers were uncertain on the prospects for the continuance of the subsidisation of organic farming.

In general, low prices have been found to drive farmers with larger farms (more concentrated on short-term financial gain and less willing to take risks; McCann et al., 1997) and relative independence of their income from farming who also are less innovative and not supported in their endeavour, to abandon organic farming. Our findings are in line with Rigby et al. (2001) and Lapple and Donnellan (2009) stressing the increased likelihood of those among the farmers motivated by economic considerations to reconvert as well as with Padel's (2008) argument about the importance of professional background and with research stressing the importance of social networks (Kaufmann et al., 2009; Selfa et al., 2008). It thus seems that this group of tentatively reconverting farmers is quite close to the group characterised as 'pragmatic organic' by Darnhofer et al. (2005). The allegation that ecologically and economically sound farming should go hand in hand (de Buck et al., 2001), i.e. that in some cases discontinuance of environmental farm technologies may be a reasonable farmer's choice (Miller and Mariola, 2008), should not be overlooked.

Of course, the actual decision taken by Greek organic farmers will have to be investigated and confirm or disconfirm our findings. In this respect, it should be noted that Kimer et al. (2006) found a connection between reversion to conventional farming and farmers' intentions to abandon organic farming expressed on an earlier stage, although the reasons that determined the actual decision were different. Further, the considerable variation among both organic and conventional farmers and the specificity of circumstances of farming and farm families should be also taken into account; thus, the disaggregation of data (for example, between early and late adopters as well as among locations and production systems) may provide additional useful insights. It should be also stressed that the complexity of the factors influencing farmers' decisions is not allowing for the consideration of all factors in single models (Kaufmann et al., 2009) like the one used in this piece of work; thus, other research approaches may also needed (Lamin and Bellon, 2009). Consequently, further cross-country research is deemed necessary in complementing our results - which may to varying degrees be dated due to the rapid development of organic farming in Greece (Eurostat, 2007).

Nevertheless, our findings point to the need for quite serious modifications in terms of the current policy pertaining agriculture and more specifically organic farming. They underline the need to confront the decline of the Greek research and extension system as well as the extremely weak farmers' collective action and the peculiarities of the Greek markets. Additionally, the gradual transition to organic farming (Kerselaers et al., 2007) as well as the structure of incentives to join organic farming (Greiner et al., 2009) may be further concerns for improving the adoption and liveability of sustainable agriculture.

Especially the ineffective extension system, thus the ineffectiveness of attempts aiming at raising environmental awareness and farmers' knowledge about environmental problems associated with agriculture as well the challenges involved with adopting organic farming, are factors resulting in rather 'opportunistic' behaviours among quite some farmers adopting organic farming. To this, farmers' productivist ethos and their economic and pragmatic considerations may be added; thus the significance of 'important others' in both the adoption and continuance of organic farming found in this study. Moreover, it is suggested that research and extension will have to take a farming systems approach (Koutsouris, 1999; Alexopoulos et al., 2009). This is especially important in the case of organic farming, owing to its knowledge intensive character, its heterogeneity and the situational dependence of farmers' decision making.

References

AGEPRI (Agricultural Economics and Policy Research Institute) (2004) Organic Agriculture in the Western Greece region. Athens, National Agricultural Research Foundation.

Alexopoulos G., A. Koutsouris and I. Tzouramani (2009) The financing of extension services: A survey among rural youth in Greece. *The Journal of Agricultural Education & Extension* 15(2): 175-188.

Beopoulos, N. and L. Louloudis (1997) Farmers' Acceptance of Agri-Environmental Policy Measures: A Survey of Greece. *South European Society and Politics* 2(1): 118-137.

Burton, R. (2004) Reconceptualising the 'behavioural approach' in agricultural studies: a socio-psychological perspective. *Journal of Rural Studies* 20(3): 359-371.

Damianos, D. and N. Giannakopoulos (2002) Farmers' participation in agri-environmental schemes in Greece. *British Food Journal* 104(3/4/5): 261-273.

Darnhofer, I., T. Lindenthal, R. Bartel-Kratochvil and W. Zollitsch (2010) Coventionalisation of organic farming practices: From structural criteria towards an assessment based on organic principles. A review. *Agronomy for Sustainable Development* 30(1): 67-82.

Darnhofer, I., N. Schneeberger and B. Freyer (2005) Converting or not converting to organic farming in Austria: Farmer types and their rationale. *Agriculture and Human Values* 22(1): 39-52.

de Buck, A.J., I. van Rijn, N. Roling and G.A.A Wossink (2001) Farmers' reasons for changing or not changing to more sustainable practices. *The Journal of Agricultural Education and Extension* 7(3): 153-166.

Eurostat (2005 and 2007) Organic farming in Europe. In: *Statistics in Focus: Agriculture and Fisheries*. Luxembourg, EC/Eurostat.

Fairweather, J. (1999) Understanding how farmers choose between organic and conventional production: Results from New Zealand and policy implications. *Agriculture and Human Values* 16(1): 51–63.

Feder, G., R.E. Just and D. Zilberman (1985) Adoption of agricultural innovations in developing countries: a survey. *Economic Development and Cultural Change* 33(2): 255-298.

Flaten, O., G. Lien, M. Ebbesvik, M. Koesling and P. Valle (2006) Do the new organic producers differ from the 'old guard'? Empirical results from Norwegian dairy farming. *Renewable Agriculture and Food Systems*: 21(3): 174–182

Genius, M., C. Pantzios and V. Tzouvelekas (2006) Information Acquisition and Adoption of Organic Farming Practices. *Journal of Agricultural and Resource Economics* 31(1): 93-113.

Greene, W. H. (2000) *Econometric Analysis* (4th ed.), New York, Prentice Hall.

Greiner, R., L. Patterson and O. Miller (2009) Motivations, risk perceptions and adoption of conservation practices by farmers. *Agricultural Systems* 99(2-3): 86-104.

Kaufmann, P., S. Stagl and D. Franks (2009) Simulating the diffusion of organic farming practices in two New EU Member States. *Ecological Economics* 68(10): 2580–2593

Kerselaers, E., L. de Cock, L. Lauwers and G. Van Huylenbroeck (2007) Modelling farm-level economic potential for conversion to organic farming. *Agricultural Systems* 94(3): 671-682.

Kimer, L., S. Vogel and W. Schneeberger (2006) Intended and actual behavior of organic farmers in Austria after a five-year commitment period. *Renewable Agriculture and Food Systems* 21(2): 95–105

Koutsouris, A. (1999) Organisation of Extension Services in Greece, *Options Mediterranneenes*, Serie A: Seminaires Mediterraneenes, 38: 47-50.

Lamin, C. and S. Bellon (2009) Conversion to organic farming: a multidimensional research object at the crossroads of agricultural and social sciences. A review. *Agronomy for Sustainable Development* 29(1): 97-112.

Lapple, D. and T. Donnellan (2009) Adoption and abandonment of organic farming: An empirical investigation of the Irish drystock sector. Presentation held at the 83rd Annual Conference of the Agricultural Economics Society, in Dublin, Ireland, 30th March to 1st April 2009.

McCann, E., S. Sullivan, D. Erickson and R. De Young (1997) Environmental awareness, economic orientation and farming practices: A comparison of organic and conventional farmers. *Environmental Management* 21(5): 747-758.

McEachern, M. and J. Willock (2004) Producers and consumers of organic meat: A focus on attitudes and motivations. *British Food Journal* 106(7): 534-552.

Midmore, P. S. Padel, H. McCalman, J. Isherwood, S. Fowler and N. Lampkin (2001) Attitudes towards conversion to organic production systems: A study of farmers in England. Aberystwyth: Institute of Rural Studies, The University of Wales.

Miller, M. and M. Mariola (2008) The Discontinuance of Environmental Technologies in the Humid Tropics of Costa Rica: Results from a Qualitative Survey. In K.S.U. Jayarante (ed.) *Global Entrepreneurship in International Agricultural and Extension Education* (Proceedings of the 24th AIAEE Annual Conference). Costa Rica: EARTH University, pp. 338-349.

Padel, S. (2008) Values of organic producers converting at different times: results of a focus group study in five European countries. *International Journal of Agricultural Resources, Governance and Ecology* 7(1/2): 63-77.

Padel, S. (2001) Conversion to organic farming: a typical example of the diffusion of an innovation?. *Sociologia Ruralis* 41(1): 40-61.

Regouin, E. (2003) To convert or not to convert to organic farming. In OECD (ed.) *Organic Agriculture: Sustainability, Markets and Policies*. Wallingford: OECD and CABI Publ., pp. 227-235.

Rigby, D., T. Young, and M. Burton (2001) The development of and prospects for organic farming in the UK. *Food Policy* 26(6): 599-613.

Rogers, E. (2003). *Diffusion of Innovations*. New York: Free Press.

Santorinaiou, E. (2009) Introduction and diffusion of innovations in agriculture: The case of organic farming in Boeotia Prefecture. MSc dissertation, Dept of Agricultural Economics & Rural Development, Agricultural University of Athens.

Sattler, C. and U.J. Nagel (2010) Factors affecting farmers' acceptance of conservation measures - A case study from north-eastern Germany. *Land Use Policy* 27(1): 70–77

Sierra, L., K. Klonsky, R., Strochlic, S., Brodt and R. Molinar (2008) Factors associated with deregistration among organic farmers in California. Davis, CA: University of California -Sustainable Agriculture Research and Education Program.

Selfa, T., R. Jussaume and M. Winter (2008) Envisioning agricultural sustainability from field to plate: Comparing producer and consumer attitudes and practices toward 'environmentally friendly' food and farming in Washington State, USA. *Journal of Rural Studies* 24(3): 262–276.

Stolze, M. and N. Lampkin (2009) Policy for organic farming: Rationale and concepts. *Food Policy* 34(3): 237-244.

Toma L. and E. Mathijs (2007) Environmental risk perception, environmental concern and propensity to participate in organic farming programmes. *Journal of Environmental Management* 83(2): 145–157.

Vlahos, G. (2009) Evaluation of the implementation of agri-environmental policy in Greece. Doctoral thesis, Dept of Agricultural Economics & Rural Development, Agricultural University of Athens.

Wilson, G. and K. Hart (2000) Financial imperative or conservation concern? EU farmers' motivations for participation in voluntary agri-environmental schemes. *Environment and Planning A* 32: 2161-2185.

Yotopoulou, T., A. Koutsouris, E. Nellas and K. Tsiboukas (2005) The socioeconomic dimensions of the organic olive production in Aegialia. In ETAGRO (eds.) *The Greek agriculture and rural space in an enlarged EU* (Proceedings of the 8th Panhellenic Congress of Rural Economy). Thessaloniki, Agrotypos: 117-130.