Analysing behavioural differences of farm households: An example of income diversification strategies based on European farm survey data

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ABSTRACT

Different forms of income diversification represent important strategies of farmers to either cope with the changing economic framework conditions or to valorise given territorial potentialities. Nevertheless, the decision to diversify economic activities on or off the farm will heavily depend on the agricultural business and household characteristics. Our study used a survey of 2154 farms from eleven European regions to identify distinct farm types in order to investigate differences regarding the willingness to diversify in the future. Two scenario situations with continuation (baseline) and without any market intervention ("No CAP") were tested. A factor and cluster analysis depicted six farm types both previously described and novel. The typology proved validity across all case studies, whereas single types occurred more frequently under specific site conditions. The six farm types showed strong variations in the stated future diversification behaviour. Young farm households with organic production are most likely to diversify activities particularly on-farm, whereas farm types characterised by intensive livestock holding and also already diversified and part-time farm households are least likely to apply this strategy. Results have further shown that under hypothetical conditions of termination of economic support by the Common Agricultural Policy (CAP) an increasing share of farmers – throughout all types – would apply income diversification, mainly off-farm diversification, as a survival strategy.

1. Introduction

Among other strategies, such as intensification and specialisation, diversification as an extension of on-farm and off-farm business activities represents an important adaptation strategy to cope with market pressures and changing political framework conditions, and to reduce economic risk. Pluriactivity is a widely-used concept that includes all agricultural or non-agricultural income generating activities of farm households (Præstholm and Kristensen, 2007; Robinson, 2013). In this paper, we exclusively focus on diversification of the income basis into non-agricultural activities. According to Bowler (1992) this represents a distinct farm development path. We subdivide this path by location of the

respective activity and define on-farm diversification as any business activity on the farm holding different from crop or livestock production and refer to off-farm (self-) employment of any farm household member as off-farm diversification. Particularly small-scale and family farms tend to broaden their off-farm income basis by employing additional family labour (Gasson et al., 1988; Maye et al., 2009; McNamara and Weiss, 2005; Meert et al., 2005). On-farm diversification includes agricultural services or access to new markets, like tourism or direct marketing (Ilbery et al., 1997; Piorr et al., 2007; Præstholm and Kristensen, 2007).

The regional and institutional environment in which farms are embedded affects decision-making for on and off-farm diversification. A number of studies have provided evidence for the role of regional labour market conditions for off-farm employment (McNamara and Weiss, 2005), and for the access to (urban) consumer markets or the prevalence of natural amenities especially to adopt on-farm diversification strategies (Lange et al., 2013; Meraner et al., 2015; Pascucci et al., 2011; Zasada et al., 2013;

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Zasada and Piorr, 2015). The support measures of the European Common Agricultural Policy (CAP) also frame farmers' diversification strategies. First pillar payments, now mostly decoupled from production, represent direct income support. The Rural Development Programmes (RDP) included in the second pillar are focused on specific objectives. Some of them are explicitly aimed at income diversification, often at the boundary between agriculture and non-agricultural activities. Other measures provide support to investment, including, in some cases, non-agricultural activities.

The decisions for on and off-farm diversification have been studied on the theoretical basis of agricultural household models of optimal labour allocation in which households maximise their utility over consumption and leisure time subject to time and budget constraints, formally derived for example in Loughrey et al. (2013). Main motives introduced in these models have been efficiency by allocating work according to a comparison of marginal returns from farming with off-farm wages (Huffman, 1980) and stabilization of income variability associated with farming by compensating risk with off-farm work (Mishra and Goodwin, 1997) or increasing the number of different farm enterprises (McNamara and Weiss, 2005). These models as well as empirical applications show that the optimal allocation depends on household and farm business characteristics, including intrinsic perceptions, attitudes and value settings, the socio-demographic farm household characteristics, economic business structure, ownership or local labour market conditions (Barbieri and Mahoney, 2009; García-Arias et al., 2015; Hansson et al., 2013; McNamara and Weiss, 2005; Sharpley and Vass, 2006).

In the framework of the agricultural household model, decoupled payments influence the labour allocation decision by providing a non-labour source of income (wealth effect) and more freedom for the use of labour resources (substitution effect) (Loughrey et al., 2013) or by reducing income variability (Hennessy and Rehman, 2008; Mishra and Goodwin, 1997). Considering that farmers are in general rather risk adverse, the higher the risk-free support payments, the more farmers are likely to take riskier business decisions on-farm (Hennessy, 1998). Overall, the wealth effect appears less relevant than the risk reduction effect in assessing the effects of the CAP (Moro and Sckokai, 2013). Most studies have focused on single farm payments although second pillar payments might have more direct effects due to their targeted nature. As one example, evaluating first and second pillar CAP payments based on a theoretical partial labour adjustment model, Petrick and Zier (2012) found positive on-farm employment effects for investment aids to farmers. Comprehensive studies on the overall impact of the CAP are rare, and the effects even less straightforward to interpret due to the interplay of different CAP components. Considering the effects of the CAP in different French regions, Latruffe et al. (2013) found that having it in place reduces the propensity to diversify off-farm although the effect varies across different farming systems.

Considering the theoretically and empirically established drivers of income diversification decisions, an increasing number of diversification pathways can be expected with increasing diversity of the investigated farm population. Moro and Sckokai (2013) claim that in order to use results for policy adjustments individual farm-level responses need to be coherently aggregated. To differentiate driving effects, the use of farm types as a consolidated model is particularly helpful for representing this diversity of the farming community (Huynh et al., 2014; Præstholm and Kristensen, 2007; Schwarz et al., 2009).

Farm typologies generally aim to enhance understanding about decision-making behaviours and strategic development trajectories of individual farm households and holdings. Examples include the elaboration of farm-type specific development pathways (Iraizoz et al., 2007) or land and resource use behaviour

(Kurz, 2008; Schwarz et al., 2009). In the field of income diversification, several typologies have been developed in the past, for instance to identify (potential) initiators or adopters of alternative farm enterprises (Daskalopoulou and Petrou, 2002; Præstholm and Kristensen, 2007) or to depict differences in the willingness to diversify (Chaplin et al., 2004; Lange et al., 2013; López-i-Gelats et al., 2011). However, empirical evidence is often restricted to specific regional contexts and farming communities for which the study has been conducted. Explanatory value for decision-making behaviour beyond the regional context is limited in much the same way as the rare knowledge of inter-regional distribution of farm types and their responsiveness to changes in the policy framework. Especially for agricultural policies such as the CAP, a wider perspective which takes the diversity of farming communities into account is required to improve targeting of addressees and financial cost-effectiveness (Pacini et al., 2015).

As any other classification effort, farm typologies aim at maximisation of heterogeneity between and homogeneity within individual types (Köbrich et al., 2003). Therefore either qualitative assignments, e.g. through self-perception or behavioural studies (van der Ploeg and Marsden, 2009), or statistical clustering methods using farm household and business structure characteristics (Bidogeza et al., 2009; Landais, 1998) are applied in order to differentiate farm types and their behaviour. Cluster analysis often used in combination with factor analysis is an explorative structure-seeking method to detect patterns in a population based on a predefined statistical measure of distance (Aldenderfer and Blashfield, 1984) and thus has a relatively high objectivity assigning farms to types compared to other assignment measures. However, many empirical applications do not critically derive the choice of cluster building components such as fusion algorithms or distance measures dependent on the data format. This means that results are in danger to impose a certain structure rather than to reveal one (Dolnicar, 2002).

The main research objective of this paper is to contribute to an enhanced understanding of the willingness of farmers to employ diversification on and off the farm. In contrast to many regionally defined studies, our ambition is to analyse future farm behaviour based on empirical data from a large sample covering a variety of case study regions and farms across the European Union. To analyse behavioural differences between farms and acknowledge their diversity, we aim at identifying different farm types based on their household and business structure using a quantitative modelling approach of factor and cluster analysis. We expect to find distinct diversification pathways across types. Relevant factors describing these farm types are depicted as well as their distribution across the case study regions. To additionally account for the relevance of the policy setting for the analysis of future diversification strategies, we are interested in the influence of the CAP as a whole, including single farm payments and rural development measures. Therefore, we investigate the variation between different scenario settings, including the assumption of abolishment of any financial support, in order to identify farm type related benchmark reactions to policy shocks. We explicitly take into account potential shortcomings arising from inadequate use of standard factor and cluster method by focusing on the selection and connection of methods that address mixed-variable datasets. Methodology is explained in detail in Section 2. Section 3 presents the results from an analytical and a thematic perspective, pointing to the regional distribution and decision behaviour. The following discussion takes up these aspects and contextualizes them with the literature and the policy dimension. Finally, we conclude on how our results add to an improved understanding of farmers' diversification behaviours across diverse regional settings.