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Analysing Dutch dairy farmer behaviour towards the provision of public goods: The added value of an economic simulation experiment

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ABSTRACT

The objective of this paper is to examine the value of experiments for assessing the impact of the proposed Common Agricultural Policy of 2013 on farm income and farming strategies. We focus specifically on the impact of an alternative direct payment system based on a flat rate and green payments. We show the added value of an economic simulation experiment to existing economic micro- and sector modeling analysis when analyzing farmer behavior. It is shown that the suitability of and rewards for the provision of green services play a significant role in their uptake by farmers and the support for them. These results are useful in implementing a revised direct payments system in the Netherlands for the future.

Introduction

Since the start of the European economic integration, agriculture has played a major role in European policies. Under the current European Common Agricultural Policy (CAP), Dutch farmers receive payment entitlements based on historic production levels; each farmer is granted rights corresponding to the payments he received during 2000–2002 (Dutch Government, 2011). These so called direct payments are conditional on satisfying minimum standards with respect to nature, environment, sustainability and animal welfare (cross-compliance). If farmers fail to meet these criteria, their payments are decreased or completely cancelled.

In 2013 the current CAP will be reformed. In October 2011, the European Commission published their proposal for this reform (European Commission, 2011). The main aim of the proposal is to redistribute, redesign and better target support to farmers, by enhancing competitiveness and improving sustainability. The base of allocating direct payments to farmers is planned to change from entitlements based on historic production levels into a flat rate payment per eligible ha.

Helming et al. (2010) conclude that the transition to flat rate farm payments and the abolition of direct payments will potentially lead to a reduction in production and an induced increase in agricultural prices in the EU. The average gross value added per farm will decrease and the total area used for agricultural production will decrease as well (Helming et al., 2010: p. 12). Vrolijk et al. (2010: p. 47) argue that an abolishment of direct payments will result in less stable farm incomes, as the subsidies are a significant part of farm incomes nowadays. Consequently, the abolishment of direct payments is argued to speed up the process of structural change in the agricultural sector, although this will differ by country given the heterogeneity in original subsidy levels and differences in the implementation of the direct payment system over EU member states. Focusing on the Dutch dairy sector, Jongeneel et al. (2012: p. 75) state that the proposed changes of the direct payment system will negatively affect the financial position of farms. On average, the loss of income for this sector is estimated to be €7000 per year per farm. The relative more intense farms, i.e. the farms having a larger density of livestock per hectare, are affected more than extensive ones.

A new element in the CAP reform proposal is the introduction of a so-called 'green payment' (European Commission, 2011). This will be paid for agricultural activities meeting climatic and environmental policy goals, such as payments for crop diversification, ecological focus areas and permanent grassland. For this greening component, the European Commission proposes three (controversial) requirements (European Commission, 2011). These include (i) uptake of permanent grassland per individual farm, (ii) growing at least three types of crops for farms with a minimum agricultural area of 3 ha and (iii) 7% of the eligible farm area, excluding permanent grassland, needs to be an ecological focus area, i.e. set-aside area. This 'package' is highly criticized by

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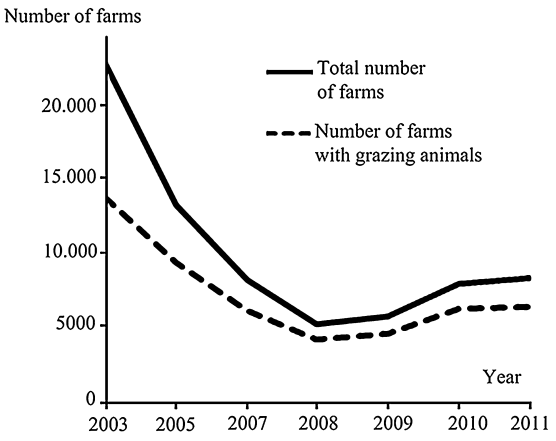

Fig. 1. Number of farms participating in agri-environmental schemes. Source: CBS (2012)

many European national governments as too rigid. In May 2012, Commissioner Dacian Cioloş announced therefore some adjustments to the propositions of the European Commission. One option might be dispensation of the requirements for farms producing under a label (certification) or supplying agricultural landscape management services. Also the propositions on crop diversification and permanent grassland might be relaxed. Nevertheless, the 7% set-aside requirement will most likely be maintained (European Commission, 2012). Whereas generally greening has been associated with voluntary farmer behavior (e.g. farmer participation in CAP agri-environmental schemes), the requirements associated with the green payment are compulsory in order to obtain this payment. The proposed green payments go beyond the already existing cross-compliance requirements (European Commission, 2011).

The Dutch government supports these reform proposals in principle although they would like the greening component to be more ambitious (Dutch Government, 2012). One potential option to achieve this would be to move money from the first pillar to the second pillar of the CAP which could strengthen the provision of a broad array of green services. However, questions arise whether it is realistic to involve more farmers in the provision of green services in order to reach the policy goals set by the European Commission. Besides the standard agricultural activities, such as dairying, Dutch farms already exploit other agricultural activities as well, such as agricultural landscape management. This means that farms in return for a financial compensation voluntarily provide so-called green and blue services to maintain the landscape (agri-environmental schemes). These activities are different from the compulsory cross-compliance requirements. Fig. 1 shows the number of Dutch farms involved in agricultural landscape management.

As can be seen, after a period of rapid decline, in 2008 the number of farms participating in agricultural landscape management started to increase again. Nevertheless, this recent growth is very modest and there are doubts whether the total number of farms involved in agricultural landscape management will increase further in the coming years (Berkhout and Roza, 2012: pp. 91–92).

In their study on social and green services by farmers, Prins and Smit (2011: p. 11) state certification as one of the most effective options to stimulate agricultural landscape management and communal awareness. One critique, however, seems the increasing administrative burden and complex control of the requirements for obtaining the certification label. Other measures, such as performance-related payments for supporting nature, where farmers obtain payments per implemented agricultural service, are found to be effective as well (e.g. a so-called points-system, where farmers can earn valuable points for services stimulating agricultural landscape management and contributing specific services to the local economy (Hodge, 2009: p. 43). A reason why (voluntary) support for the greening component might not be that high in the Netherlands, could be the low trust farmers have in the government. Trust plays a significant role in the choice to supply public goods that are rewarded by the government (Jongeneel et al., 2008). Also farmers are afraid that the administrative burden will rise when providing (more and/or different) green services. Some farmers argue that if the subsidy for the (extra) effort they need to put in for providing the agricultural services is not sufficient, they rather prefer to not obtain the subsidy at all.

Ideally a farmer is compensated for all the extra efforts in the provision of green services (Wilson and Hart, 2000; Vanslembrouck et al., 2002; Mettepenningen et al., 2013). However, there will be cuts in the agricultural budget. In the proposals on the Multiannual Financial Framework for the period 2014–2020, the European Commission advocates to reallocate direct payments between and within (i.e. transition from historical model towards a regional model) Member States. For the Netherlands, such a reallocation will lead to a decrease of around 11% of the net ceilings for direct payments in the period 2013–2020 (Venema et al., 2013: p.14). Consequently, there will be less resources available for subsidies on landscape management as well, which will potentially reduce the number of farms involved in providing these services even further. Not surprisingly, the level of subsidy payments is therefore another hot topic in the current debate on stimulating the provision of green services by farmers.

The impact of the proposed changes of the direct payments on the agricultural sector as a whole and on the behaviour of farmers is a highly discussed topic in European policy analysis. Farmers' responses to European farm policies are usually analysed using microeconomic producer theory (see e.g. Gardebroek, 2004; Benjamin and Kimhi, 2006; Bartolini and Viaggi, 2013). Traditionally, microeconomic models are based on a reduced form representation of the actual production process (i.e. a production function distinguishing inputs and outputs, but treating the actual process of farming largely as a black box) and on data subtracted from existing "natural" markets (Davis and Holt, 1993: p. 3). Nevertheless, when these models become more specific and complex, this leads to rather stylized results, as these traditional economic models rely on several assumptions and do not allow for deviations from these.

For this reason, one of the limitations economists are often accused of is not taking the relevant natural environment into consideration accurately when developing models, which reduces the predictive contents of economic models. Other scientific disciplines, such as natural sciences but also psychology, make use of experiments to obtain naturally occurring data. This approach has been picked up by economists recently in order to bridge the gap between economic theory and observation, and is nowadays known as experimental economics (Davis and Holt, 1993: p. 4).

The objective of this paper is to examine the value of experiments for assessing the impact of the proposed Common Agricultural Policy of 2013 on farm income and farming strategies. We focus specifically on the impact of an alternative direct payment system based on a flat rate and green payments in conjunction with an agri-environmental payment system. In this study we focus on the Dutch dairy sector, which takes a special interest because this sector benefits from direct payments under the current CAP. The proposed reform potentially has a major impact on the income of dairy farmers and will possibly affect their behaviour significantly. The characteristics of the experimental research method are compared to more traditional micro-economic research approaches.

This paper contributes to the literature in two respects. First, we focus on changes in EU policies for providing ecosystem