Deterrents of farmers’ uptake of animal health and welfare technologies under the Common Agricultural Policy

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Introduction

There is an ever growing literature analysing technology adoption behaviour in agriculture. Part of this literature focusses on the factors that influence decision making as regards adoption of technology (Fairweather & Keating, 1994; Beedell & Rehman, 2000; Nuthall, 2001; Flett et al., 2004; Rehman et al., 2007). This study builds on existing literature and analyses the impact of a priori identified determinants of adoption of innovative animal health and welfare technologies by Scottish livestock farmers.

We used structural equation modelling (SEM) with observed and latent variables to test the impact of factors on technology adoption intentions and behaviour, and assess the strength of these relationships. We performed model estimation with the Diagonally Weighted Least Squares (DWLS) method using the statistical package Lisrel 8.80 (Jöreskog and Sörbom, 2007). The variables included in the model are:

• socio-economic characteristics (age, education, income);
• perceived effects on business (from changes in technology, access to advice/information on new opportunities and changes in animal welfare regulations and policies);
• changes to business (intensity of production, number of livestock, amount of family labour, level of animal welfare, amount invested in new technologies);
• intentions to make changes to business (as above);
• perceived difficulty to change (as above);
• being recipient of a Single Farm Payment (SFP);
• perceived usefulness of information sources;
• frequency of access to novel technology information;
• animal health and welfare technology adoption behaviour and intentions (new genomic technologies, farm management systems that use individual animal electronic ID, cattle surveillance through British Cattle Movement Service, qualitative behaviour assessment, anaerobic digestion, pedometers or activity monitors to detect oestrus and increase fertility/conception, webcams/ smartphones/ tablets for animal husbandry).

Methods

The data used in this study were collected in 2013 through a large scale survey of Scottish agricultural holdings, which investigated farmers’ behaviour and intentions under the previous and current CAP reform. The dataset analysed in this study comprises 1,764 observations for livestock farmers.

The model has a good fit according to the measures of absolute, incremental and parsimonious fit (Hair et al., 2006). The model explains 72 per cent of the variance in current adoption behaviour and 54 per cent of the variance in intentions to adopt new technologies (Table 1).

Table 1. Standardised total effects (b-values in parentheses)

Conclusions

• Having made changes to business under the past and current CAP reforms;
• effects of technology and information on business under the past and current CAP reforms;
• economic characteristics;
• perceived usefulness of info sources;
• being recipient of a single farm payment;
• access to information on new technologies;
• age;
• perceived difficulty to change have significant influence on both technology adoption behaviour and intentions.

Current adoption behaviour is also influenced by:
• farmer education,
while intentions to adopt technologies are also influenced by:
• intentions to make changes to business under the next CAP reform.

The results suggest that the CAP reforms, through both the single farm payment and the fostering of knowledge transfer and innovation have influenced and will continue to influence farmers’ decision making.

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References