Understanding farmer motivations: Very Small and Small farms

Final Report

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Contents

Understanding farmer motivations

Draft Final Report

The Welsh Government contracted IHS Markit to help provide an understanding of individual motivations and decision-making processes taking place within those farming households economically defined as very small and small. This Draft Final Report presents our analysis. The report authors are Dr Dylan Bradley (IHS Markit) and Professor Berkeley Hill (Imperial College London). Survey work was carried out by Wavehill (Llorenc O'Prey and Endaf Griffiths. Eirwen Williams (Menter a Busnes) provided helpful insights.

Executive summary

The UK formally left the European Union (EU) on 31 January 2020 and entered a transition period in which the UK remained *de facto* a member of the EU Single Market and subject to the EU's common policies, including the Common Agricultural Policy (CAP). This transition period ended on 31 December 2020. From 1 January 2021 the UK and EU embarked on a new relationship as defined under the EU-UK Trade and Cooperation Agreement reached on 24 December 2020. Also from 1 January 2021 agriculture in Wales, which is a devolved responsibility in the UK, has been subject to a national agricultural policy designed and operated by the Welsh Government; this has replaced the CAP.

The Welsh Government (WG) has, with external stakeholders, explored the evidence needed to help address the challenges that leaving the EU has brought. This work highlighted a number of evidence gaps, including around understanding how farmers are likely to react to the range of challenges the agricultural industry faces. Little was known about what motivates farmers in Wales; how they make decisions and their likely actions in the face of uncertainty. In particular, there was a knowledge gap in relation to farms defined as economically "Very Small" and "Small" (VS&S).

Although VS&S units account for less than 30% of Welsh agricultural business turnover, they comprise about 21,000 (87%) of the 24,500 farms in Wales and, despite their diminutive average land holdings, a little over half (57%) the total Welsh farmed land area.

The WG therefore launched a public call for tenders in April 2020 to carry out research into the motivations of farmers operating farms falling into these economic size groups. IHS Markit, in association with Wavehill, was awarded the contract. This document constitutes our final report.

As set out in the tender specifications (slightly edited), the aim of this research is to:

- Provide an understanding of individual motivations and decision-making processes taking place within those farming households [operating farms] defined as economically Very Small and Small (VS&S).
- Assess the effects individual motivations and decisions will have on intentions for action given the possible scenarios for trade and proposed changes to farm support mechanisms.
- Investigate the extent to which those farming households [operating VS&S farms] [are] linked to and support their communities and larger farms and whether this differs from other businesses and activities.

The objectives of the research are:

- To provide future land use policy development with an insight into what factors are likely to influence those farming households [operating VS&S farms] and how it will affect their decision-making processes. This should include any indication of likely behaviours and possible actions.
- Using the most up to-date evidence on anticipated future trading arrangements as a basis, [to] assess the potential impact of different ongoing trade agreements to the economic prospects for farming.
- To collect additional information on Very Small farms such as figures concerning farm ownership/tenure/succession and also use the Wales Agricultural Industry Segmentation Model (WAISM) questions to assess their decision making.

Methodology

Our methodology for this research comprised a (i) literature review; (ii) the development of a questionnaire; (iii) the administration of a survey; and, (iv) descriptive and statistical analysis of the survey results.

Our comprehensive literature review covered UK and OECD-country literature on the definitional issues around households; motivations and the decision-making process; segmentation and typologies of farmer behaviour; income sources and pluriactivity; expected and observed responses to policy change; and, the use of scenarios in exploring the likely impact of the UK leaving the EU.

The survey questionnaire, developed on the basis of the literature review, was discussed with the WG Steering Group for this research project. A survey pilot was carried out in December 2020, which resulted in some minor modifications. A sample of farming households operating farms falling within the definitions of Very Small and Small, as determined by economic size, was developed from the Farming Connect database and the WG June survey. Within the framework provided by the two contacts databases, the random sampling approach taken meant that the sample was broadly representative of region, farm type, etc.

The survey was launched on 11 January 2021 and completed on 02 March 2021. In line with our intentions, over 400 (419) usable completed responses were produced following initial contact with 1,916 individuals yielding a response rate of 21.9%.

Validated data were used to produce a preliminary descriptive analysis which was then developed to produce a number of cross-tabulations based on respondent characteristics that the study team considered would provide useful insights. Trends in the quantitative data were then explored through a suite of statistical methods.

Key findings

The Very small and Small farms

Our project focused on the occupiers of farms in Wales at the small end of the spectrum by economic size. Very Small and Small (VS&S) farms, which together account for almost 9 out of 10 of farms in Wales, are numerically important in terms of people and land and are of interest to policy makers, especially in the context of reorientating support towards the provision of public goods and away from more production-based approaches. The importance of S farms to some land use and livestock categories should also not be ignored. The majority of respondents to our survey held in early 2021 run farms in which the main enterprise is sheep and/or beef. While beef farms and sheep farms are similar in physical size (average of 51 hectares and 52 hectares respectively), beef-and-sheep farms are larger (average 83 hectares). There is a relationship between physical and economic size with larger average areas amongst S farms compared to VS farms (with the exception of dairy which is probably explained by degree of intensity).

Most respondents own, or mostly own, their farm. The most frequent route into farming their current holding was having bought the land (46%), with a further 31% taking over the family farm; 19% inherited the holding. Two-thirds of respondents have previous experience of working on the family farm (66%); this was far more common on S farms compared to VS farms. The average length of time that respondents had been running their holding was 23 years.

Half the farms in our sample (50%) are, or have been, entered into an agri-environment or conservation scheme.

Households operating VS&S farms

Most households operating VS&S farms comprise two adults (53%) with three-adult households accounting for 20% of the sample and single-adult households for a further 13%. Larger farms tend to have larger households associated with them. There was no clear difference between VS and S farms in terms of household composition.

The average age of the respondent was 57 and the second adult 54.

Almost half of respondents (44%) hold non-agricultural qualifications while 26% hold a qualification in farming-related subjects. Respondents from VS farms are twice as likely to have a degree than those from S farms (16% c.f. 8%).

Combining farming with some form of off-farm employment or self-employment is the norm (71% of VS and 64% of S farm households); only a third of households (32%) have no off-farm gainful activities of any kind. A third (31%) have one adult household member in some form of off-farm activity and just under a third (30%) have two adult household members (7% have more than two adult members) in some form of off-farm activity. Almost half (47%) of respondents run other, non-agricultural activities from their holding.

Incomes of households operating VS&S farms

Four-fifths (80%) of our respondents were able and willing to say into which band their household income fell. Very few households (5%) fall into the less than £10,000 band – this is a little higher than the single person annual state old-age pension. More than four-fifths (82%) have household incomes between £10,000 and £69,999, while 13% have household incomes in excess of £70,000. On balance it would appear that the average income of the VS group is a little lower than that of the S group, though the difference is not likely to be substantial. The more important conclusion has to be that the economic size of farm is not a reliable guide to the level of household income.

The most frequently cited source of income was trading surplus (sales minus production costs) from farming activity (91%), followed by the Basic Payment Scheme (76%), off-farm wages, salaries and self-employment earnings (64%), environmental payments (54%), pensions (46%), on-farm diversification (35%) and return on investments such as rental income (33%). For households with particular income sources, income from trading surplus and the Basic Payment Scheme tends to be considered more important compared to income from environmental schemes and pensions. Perhaps counter-intuitively, VS farms are statistically more likely to attach greater importance to trading surplus than S farms where these payments exist, while the reverse is true for surplus from activities on the farm unrelated to food production (tourism, renewables, etc.).

Succession

The results from our survey resonate with many of the findings in the literature about the importance of succession to many aspects of decision-making in farming, and add some further dimensions. More than half of respondents (57%) have considered succession, marginally higher among the operators of S farms (61% c.f. 55%). Almost half (47%) of respondents have a plan to pass on their holding to someone else. Among those who had thought about succession, the majority (73%) intend to pass the farm on by gift, reflecting the family nature of the farming industry at the VS and S scale; there were no differences by farm economic size band.

Use of Welsh language

Just over a third (36%) of our total sample are fluent in Welsh while a further 6% can speak a fair amount. Welsh speaking is slightly more prevalent among operators of S farms. This general level of Welsh speaking is in line

with the 2011 population census that found it more frequently among the agricultural community than in society as a whole. Respondents who speak Welsh fluently appear also to be associated with somewhat higher levels of household income.

Engagement in the local community

Respondents overwhelmingly feel themselves to be part of the farming community with this feeling statistically stronger among the operators of S farms than among those of VS farms. Respondents also overwhelmingly feel their household to be part of the rural community; again, operators from S farms felt slightly more strongly about this compared to those from VS farms. The large majority of VS and S farm households participate in social and farming organisations.

Decision-making and learning

In looking at a range of decisions relating to running the farm (including entry into agri-environment schemes) respondents to our survey of VS&S farms in Wales found these all tend to be taken by the main decision maker (33% to 38%) or the main decision maker with their spouse/partner (31% to 34%). Decisions on investments in off-farm businesses appear to tend to be made jointly slightly more often, and decisions concerning off-farm employment or self-employment by household members are usually taken by the main decision maker (21%), jointly with a spouse/partner (32%) or by another individual (23%).

Operators of VS and S farms say, in response to a range of questions, that they are always actively learning, are happy to take advice about managing the natural environment, are open to new technology and to accessing information and advice on the internet. However, operators of VS farms are marginally more likely than operators of S farms to feel strongly about these issues.

Reasons for farming

Almost three-quarters of respondents on VS&S farms say that they see their farm primarily as a business (73%); this is much more likely among operators of S farms than those on VS farms (83% c.f. 67%). However, when asked later in the questionnaire to what extent they agreed that their holding is more of a business than a lifestyle choice, approximately a third agreed, a third disagreed and a third neither agreed or disagreed. Again, operators of S farms were more likely to agree that their farm is more of a business than a lifestyle choice. While those who see their farm primarily as a business are less likely to agree that achieving a good quality of life is more important than maximising income from the holding (73% c.f. 88%), the main point is that even amongst this group, nearly three-quarters believe that lifestyle is more important than income maximisation.

More than three-quarters of respondents (79%) consider that embracing environmental conservation is important to the future of their farming household; this is slightly more the case in VS farms (80% c.f. 75%).

Developed from the literature review, questions were asked that help us understand the absolute and relative importance of the following different, but sometimes overlapping and mutually reinforcing, groups of motivating factors:

- ***Instrumental*** (using the farm as a way of achieving something) – making a satisfactory income; safeguarding the income for the future; expanding the business; providing congenial working conditions.
- ***Social*** – gaining recognition and prestige; belonging to the farming community; continuing the family tradition; working with other members of the family; maintaining good relationships with workers.

- ***Expressive*** – feeling pride of ownership; gaining self-respect for doing a worthwhile job; exercising special abilities and aptitudes; the chance to be creative and original; meeting a challenge, achieving an objective, personal growth of character.

- ***Intrinsic*** – enjoyment of work tasks; preference for a healthy outdoor farming life; purposeful activity, value in hard work; independence – freedom from supervision and to organise time; control in a variety of situations.

Respondents to our survey overwhelmingly report ***intrinsic*** factors as the most important reasons for them being in farming. The next most frequently cited group of important reasons are ***social*** and ***expressive*** factors, with greater strength of feeling generally attached to social factors. In both cases these groups of factors are considered more important by operators of S farms than for those of VS farms. The least important reasons for farming are ***instrumental*** (although of course these reasons are very important for some); again, operators of S farms are more likely to cite these factors as important than operators of VS farms. Our results are in line with the literature, which establishes that it is unwise to assume that income maximation is the dominant aim of farmers. Instrumental reasons are also the most polarised, with the largest proportions of respondents saying that these are unimportant (10%); 8% of respondents feel that social reasons are unimportant. In contrast, only 2% of respondents claim that intrinsic factors and expressive factors are unimportant.

Responses to the UK leaving the EU

Our survey, conducted early in 2021 (after the end of the withdrawal transition period and near the start of the new trading arrangements and domestic agricultural policy) captured information on income expectations and on what had been the impact of anticipated shifts in the economic and regulatory circumstances during this period of uncertainty (that is, decisions that have already been taken) and the changes that were intended now a clearer picture (though not one fully defined) was emerging (decisions that are anticipated, though with a range of likelihoods possible). A distinction was drawn between, on the one hand, the impact on the farm and farming and, on the other, the impact on the household of the farm operator. These changes can be expected to reflect the motivations of operators of farms falling into these classes of economic size.

Operators of VS&S sheep farms are more likely to expect income from agriculture to decrease as a result of leaving the EU (65% c.f. 57%) while there is no difference expected by operators of beef farms; operators of beef-and-sheep farms have expectations between these responses, suggesting that there is an expectation of a decrease in agricultural income in the sheep sector specifically. There is a marked difference in response to this question depending on whether the respondent sees their farm primarily as a business. Some 65% of this group expect income from agriculture to decrease compared to just 35% in those that do not see their farm primarily as a business.

In order to better understand the way that our information on motivation relates to responses by farmers to the UK leaving the EU, two additional forms of analysis have been undertaken.

(a) Classification of operators according to their dominant motivational factors

Respondents were divided into groups according to their dominant group of motivational factors, i.e. intrinsic, instrumental, social and expressive. Respondents were assigned to the group for which their individual scores were highest compared to the average for the sample as a whole.

(b) Classification of operators according to intensity of motivating factors

One group ("enthusiasts") was defined by giving higher than average scores within each of the four brigaded motivational factors and another by giving lower than average scores within each of these groups ("pessimists"). The majority of respondents did not fall into either camp ("neither").

Less than a third (31%) of respondents had already made a change on their holding as a result of the UK leaving the EU; slightly more operators of S farms had already made a change compared to VS farms (31% c.f. 27%). Those motivated primarily by social factors are more likely to have already made a change on their holding than those motivated by expressive factors (42% c.f. 20%), intrinsic factors (25%) and instrumental factors (32%). "Enthusiasts" are more likely to have already made a change than "pessimists" (34% c.f. 19%). There were no appreciable differences by farm type or whether the farm is viewed primarily as a business.

More respondents thought that they would make future changes as a result of the UK leaving the EU in the next five years than had made changes already, with most expecting to make changes. Almost half (45%) thought this "extremely likely" and 12% "somewhat likely". Just under a third (31%) were undecided either way, leaving 7% thinking it "extremely unlikely" that they would make changes and 6% "somewhat unlikely". There were few differences by farm economic size band, although operators of S farms were marginally more likely to not yet have a firm view one way or the other.

A key point to note is that starting the new provision of public goods is the only change that a majority (64%) of those expecting to make a change say they will make. The degree of certainty with which respondents hold this expectation is also noticeably greater than with respect to other expected changes. The only other change intended to be made by more than a third of respondents (37%) who said they would make changes was the development of new on-farm diversification activities. Operators of VS farms consider it much more likely that they will develop new on-farm diversification activities than operators of S farms.

In terms of changes to the farm household, the key finding is that only 11% of respondents indicated that they had made changes in their household already as a result of the UK leaving the EU; respondents were explicitly asked NOT to include any changes as a result of the COVID-19 pandemic.

Looking to the future and intentions, respondents were asked to consider how likely they thought it was that changes would take place in their household as a result of the UK leaving the EU over the next five years. The general picture is one of only modest levels of adjustment. The most likely expected change is that a family member will take over the holding (10% "extremely" and "somewhat" likely). This is considered marginally more likely on VS farms than on S farms (13% c.f. 7%). However, the extent to which this change can be attributed to the UK leaving the EU it is not entirely clear.

Many small differences can be seen in actions already taken in response to Brexit or anticipated in the next five years that can be linked to the primary motivation group to which the operators of the farm belong, the level of intensity of their expressed responses, and their attitude to the farm as a business. However, the patterns are complex and, while rationales for many could be constructed, some of which might be explored using the rich bank of data provided by our survey, there appears to be no simple and overwhelmingly important associations between the motivational characteristics we encountered and the actual or intended responses to the new environment brought about by Brexit.

1 Introduction

The UK formally left the European Union (EU) on 31 January 2020 and entered a transition period in which the UK remained *de facto* a member of the EU Single Market and subject to the EU's common policies, including the Common Agricultural Policy (CAP). This transition period ended on 31 December 2020, From 1 January 2021 the UK and EU embarked on a new relationship as defined under the EU-UK Trade and Cooperation Agreement reached on 24 December 2020. Also, from 1 January 2021 agriculture in Wales, which is a devolved responsibility in the UK, has been subject to a national agricultural policy designed and operated by the Welsh Government; this has replaced the CAP.

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The objectives of the research are:

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- Using the most up to-date evidence on anticipated future trading arrangements as a basis, [to] assess the potential impact of different ongoing trade agreements to the economic prospects for farming.
- To collect additional information on Very Small farms such as figures concerning farm ownership/tenure/succession and also use the Wales Agricultural Industry Segmentation Model (WAISM) questions to assess their decision making.

Section 2 sets out our methodology for carrying out this research; essentially this comprised a literature review to provide a theoretical foundation, and a survey of farmers falling into the economic size groups of interest. A summary of the findings of the literature review is set out in Section 3 (the full literature review is available as a separate Annex). Section 4 puts VS&S farms in Wales in context. Section 5 sets out the characteristics of the farms in our sample while section 6 sets out their household characteristics. The following sections assess engagement in the local community (section 7), attitudes to decision making and learning (section 8). A typology of farmer motivations for farming is developed in section 9 and this is used to understand farmer responses to the UK leaving the EU in section 10. Section 11 places our survey within the context of the Welsh Segmentation Model. Finally, section 12 presents the key findings from our research.

2 Methodology

Our methodology for this research comprised a (i) literature review; (ii) the development of a questionnaire; (iii) the administration of a survey; and, (iv) descriptive and statistical analysis of the survey results.

2.1 Literature review

Our comprehensive literature review covered UK and OECD-country literature on the following subjects:

- The definitional issues involved in using statistics based on agricultural/farm households and practical problems that need decisions to address.
- Motivations and decision-making process of farmers and farm households, with special reference to those operating VS&S farms. This included both theoretical literature and what is known from empirical studies of understanding farmer behaviour. This element also drew on the preparatory work carried out internally by the Welsh Government.
- Segmentation and typologies of farmer behaviour, especially in the UK, and information on their use in anticipating behavioural responses.
- The economic, environmental and social roles of households operating VS&S farms within the farming industry, food chain and rural communities.
- Income sources, pluriactivity and other characteristics of households operating VS&S farms.
- Expected and actual observed responses by farm households to policy change, particularly to reforms in European agricultural policies.
- Review of the use of scenarios in exploring the likely impact of Brexit.

2.2 Questionnaire development

A draft questionnaire was developed by the study team using the output of the literature review (see Section 3). Drafting also benefitted from the output of a small piece of earlier in-house work by the Welsh Government on farmer motivations. Due to the central importance of the survey to this research, and given the evolving situation with regard to how the UK would leave the EU and what domestic agricultural policy might look like, considerable time was spent discussing the proposed questions with the Welsh Government Steering Group.

Once the set of questions to be used had been agreed, further time was spent refining the question phrasing to ensure full understandability amongst farmers. This process benefitted greatly from the involvement of team members and Steering Group members who also farm in Wales.

Once the English language version of the questionnaire had been agreed by the Steering Group, it was translated into Welsh. The Welsh language version was then thoroughly checked for understandability by a Welsh-speaking farming member of our team.

A pilot was carried out with 11 survey participants in the week beginning 14 December 2020 to test the questionnaire. All respondents were happy with the overall length of the survey and did not react negatively to any of the questions. Overall, there were no substantive concerns regarding the acceptability of the survey, either in terms of focus of the research, or the line of questioning. Some minor modifications were made to the questionnaire following the pilot exercise before the questionnaire was finalised for use in the full survey.

The final questionnaire (see separate Annex) included 63 questions exploring a range of topics. Areas of investigations included, amongst others, the characteristics of the farm, decision making and motivating factors for engaging in farming. The survey also included questions taken from the Welsh Government's Farm Segmentation Model which explore attitudes and beliefs of respondents towards farming in general (Lee-Woolf, *et al*., 2015). The questionnaire also incorporated a range of techniques designed to address or eliminate certain biases, such as choice randomisation of response options to address potential order biases.

2.3 Survey of farmers

The intention was to obtain 400 completed responses from farm households falling within the definitions VS&S, as determined by economic size. The first task was to produce a set of contacts capable of providing a random sample of farmers falling into these economic size groups. While it would have been possible to pull together potentially suitable contacts from a range of disparate data sets, it was far more efficient to start with more comprehensive data sources.

To this end, the contractor obtained permission to use the Farming Connect database which includes all farmers who have engaged with Farming Connect, the organisation that provides a wide range of subsidised Knowledge Exchange and advisory service to farmers in Wales; this may have resulted in some bias towards more engaged farmers. However, due to reasons of eligibility for assistance under Farming Connect, the Farming Connect database is under-representative of VS farm households (those with under €25,000 Standard Output, especially at the lower end). To address this difficulty, the Welsh Government's June survey contacts database was subsequently made available to the contractors to allow sampling at the smaller end of the farm economic size spectrum to be increased so that the final survey sample more closely matched the Welsh farming sector as a whole. Figure 1 shows the correspondence between survey respondents and the Welsh farming population estimates from the June census data. This shows clearly the divergence at the smaller end of the economic size spectrum; this resulted in a slight under-representation of VS farms in our sample compared to the population.

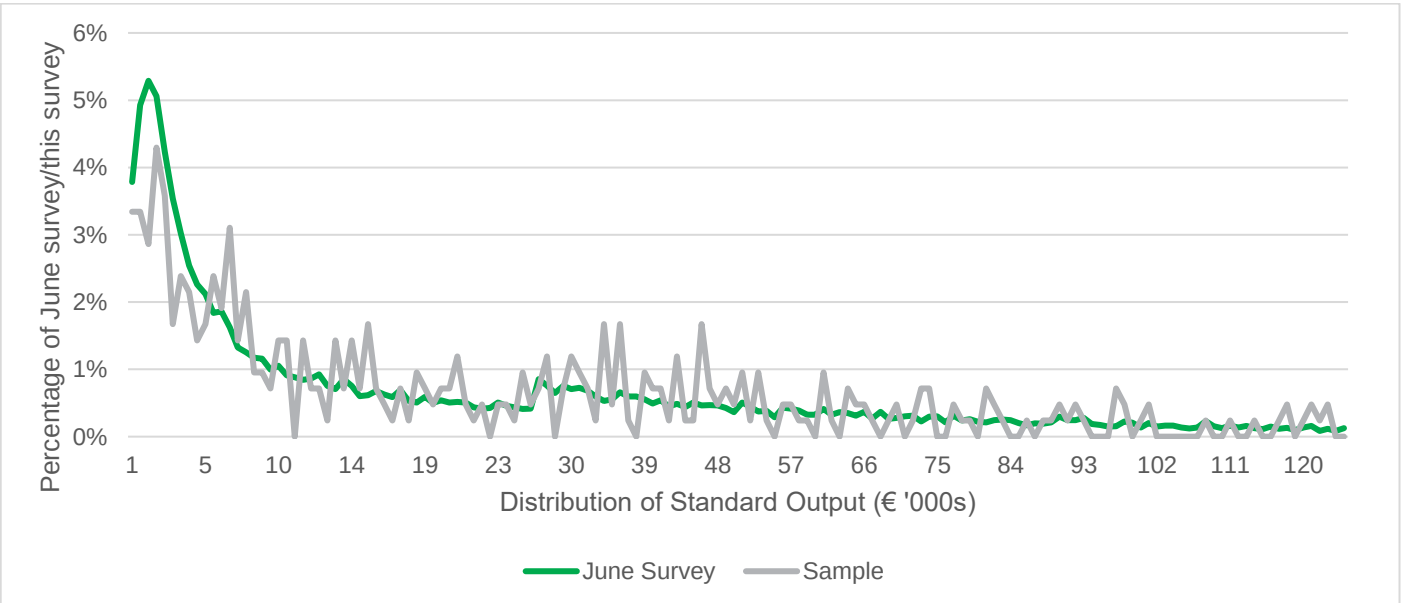


Figure 1: Final correspondence between June survey and our survey

Source: IHS Markit.

Within the framework provided by the two contacts databases, the random sampling approach taken meant that the sample was broadly representative of region, farm type, etc.

The full survey was launched on 11 January 2021 and completed on 02 March 2021. In line with our intentions, over 400 (419) usable completed responses were produced following initial contact with 1,916 individuals yielding a response rate of 21.9%. This includes 1,249 contacts that were unresponsive and did not return calls, and 248 that either opted out, or did not meet the sampling criteria. The response rate is a little lower than other research Wavehill has undertaken with similar populations; as the survey was conducted via telephone, the COVID-19 pandemic is unlikely to have been a factor. One factor, among others, might have been the time of year that the research was undertaken in early 2021 when some farms were engaged in lambing. However, the sample was geographically representative across Wales and, as discussed in Chapter 5, broadly representative of the sector.

2.4 Survey analysis

Once completed, the data collected were checked and validated. Individual variables were cleaned, and dummy variables were created in order to support further analysis. For example, responses to the farm size question where give in acres were converted to hectares to provide a standard measure. Categorial variables to questions exploring attitudinal constructs were also converted to numerical values to support further analysis. Survey data were matched with Farming Connect and June Survey data to complement and expand the analysis.

The validated data were then used to produce a preliminary descriptive analysis setting out the number and percentage of responses to specific questions. This preliminary analysis was then used to produce a number of cross-tabulations based on respondent characteristics that the study team considered would provide useful insights when applied to all questions. In addition, specific cases were identified where it was clear that the different answers provided to one question would be a useful filter through which to examine responses to other questions. These cross-tabulations were used to produce a final set of survey results which formed the basis of our analysis.

Trends in the quantitative data were then explored through a suite of statistical methods, including descriptive summaries and tests of association where appropriate. In exploring the statistical significance of observations, Chi-squared tests were performed to examine the relationships between farm economic size and the variables of interest. A p-value of less than 0.05 was determined as statistically significant. Small sample sizes in some of the more detailed cross-tabs mean that identified differences are often not statistically significant.

A standardised definition was used in determining whether responses should be categorised as from Very Small or Small farms. Drawing on June Survey data, which provides robust estimates of Standard Output of each holding, those with under £25,000 were considered Very Small, and those with between £25,000 and £125,000 were considered Small. A dummy variable was created in order to cross tabulate cases under this definition.

In theory the data allow a rich and comprehensive analysis, but only the most relevant in the context of this research have been investigated here. The main disaggregation has been into operators of Very Small (n=265) and Small farms (n=154) and this is used throughout the analysis where differences, not always statistically significant, were observed between the two groups.

3 Literature review summary

The overarching purpose of our extensive literature review, which appears in a separate Annex, was to help service the aims and objectives of this research project (see Section 1). The specific purpose was to provide a foundation from which to develop the set of questions to be used in this project's survey of VS&S farms. The summary below provides an overview of the findings from the literature. The reader is encouraged to refer to the full review for references and further details.

Agriculture in Wales, as in the whole UK, is operated predominantly by households as unincorporated businesses (household-firms), and this will be particularly the case among VS&S farms. Even among larger businesses, where a corporate legal form is more common, these family-owned companies typically act as if they were unincorporated household firms, their corporate business form being largely for taxation reasons, or to spread ownership among family members. It can therefore be expected that the behaviour of VS&S farms will be better explained by models based on the household than on the simple theory of the firm. The centrality of understanding the behaviour of the farm household is thus important to policy making and implementation, something also acknowledged in the USA.

Studies of farm responses have often adopted the notion of the 'principal decision maker', though this appears outmoded. More recent research indicates that farmers in Wales are not usually lone decision makers, and often consider the impact of their decisions on their family, even if family members are not directly involved in decision making. Thus, it is important to consider how the farm works as a family unit and the stresses and strains of running such an enterprise, where there are often multiple sources of employment and associated demands being made. This is equally likely to apply to small family businesses in other sectors, though the commonly found close long-term association between families and particular land holdings may give the family unit a particular resonance in agriculture. An implication for the present research is that in the survey of VS&S farms, ***questions need to be asked about the nature of the household and how the various members influence decisions***.

Various projects encountered in the literature have used the Theory of Planned Behaviour (TPB) in research to explain behavioural responses and seeking ways to influence them. TPB is a psychological theory that assumes an individual's behaviour is influenced by three determinants, namely beliefs about:

- the likely outcomes of behaviour;
- societal norms; and,
- an individual's control over the outcomes of a behaviour.

Taken together, these beliefs influence an individual's intention to adopt that behaviour. The implication for this current research is that ***questions in the survey of VS&S farms should cover these beliefs***; the literature review contains suitable examples.

A broad understanding of the values held by farmers and the goals and objectives behind decisions is essential in explaining why the agricultural industry behaves as it does in response to economic and policy stimuli. Various farming styles or orientations can be identified which demonstrate that motives in addition to that of generating income can be important in shaping behaviour. Taking part in farming activities is a major source of (intrinsic) satisfaction, and family succession can be important where successors are identified. The implication for the current research is that the ***questions to VS&S farms should cover orientation and succession***.

Literature on the characteristics of VS&S farms, especially in Wales, has found them to be very heterogeneous, both in their origins and in their current range of activities and income sources. Surveys have found that they

have ranged from traditional family smallholdings yielding a modest living for their occupiers, through farms which were merely side-lines or convenient residential bases for their occupiers, whose main livelihood was non-agricultural, to units purchased with outside resources and run for the purpose of indulging a vision or a philosophy. There seems to be a conflict between, on the one hand, a general intention that the small farm makes money and, on the other, the reality of dependency on other income sources. Rather dated evidence (from the 1980s) suggested that Welsh very small farms tended to be characterised by a lack of change, with many occupiers being of long standing and unlikely to see the farm as a way of progressing to something larger. The implication for the current project is that its survey ***questions should be capable of capturing the heterogeneity found among VS&S farms in terms of the backgrounds of their occupiers and diversity of income sources***.

Evidence in the literature on the economic, social and environmental roles of the VS&S farms is mixed and hides complex patterns. In terms of employment, small farms on average used smaller amounts of labour per farm, but higher levels per 100 hectares. Though farmers undoubtedly, but not uniquely, contribute to social capital, there is not clear evidence about whether in today's conditions there is any relationship with farm size. The empirical evidence on the relationship with the environment is again complex. Smaller farms (<50 ha) were more likely than larger farms (>200 ha) to have zero stock of conservation capital (habitats, biodiversity, etc.) (39% versus 23%), but it was the very small farms that had highest concentration of high conservation stock parcels. However, this varied by landscape type, suggesting that location and landscape factors are important in determining conservation value, as well as farm size. Overall, the loss of small farms is associated with fewer people on the land and fewer to play formal or informal roles in communities, although this consolidation may improve efficiency and farm incomes among those remaining in the sector. The environmental implications would depend very much on what replaces small farms and it would be just as dangerous to assume that all large farms are environmentally damaging as it would to assume that all small farms are environmentally beneficial. The implication for this project is that ***questions needed to be included in the survey of VS&S farms that probe their occupiers' economic, social and environmental roles***.

The behavioural responses to past economic crises, which may hold the key to those that may flow from income pressures associated with the UK's departure from the EU and a shift away from direct payments towards payments for public goods under a Welsh agricultural policy, show great diversity and need to include factors that go beyond the simple business model of the profit maximising firm. Farmers' and farm households' actions may be viewed as the outcome of interplay between the individual's own "disposition-to-act" (the product of socialisation and interaction), the farm household's material resources (size of farm, capital, labour skills, cultural capital, position in the life cycle, tenure) and external structures (relative prices, policy, labour market opportunities, social and cultural norms, etc.). As such, on the ground a wide variety of responses may be encountered, including some (such as expanding output) that may be counterintuitive. Non-response will be the behaviour of some, though this seems to be less common once the changes in circumstance appear permanent. Various typologies have been generated that reflect different behaviours. There is also a gap between the intended response and the actual response. The implication for the current project is that the ***questions put to VS&S farm occupiers should cater for the wide varieties of response seen in previous studies and the extensive range of factors that have been observed as influencing behaviour***.

Innovation can be seen as one possible response to the spur of income pressure, though, *inter alia*, lower incomes will also squeeze the resources required to undertake the investment often associated with innovation. Analysis of the process of awareness of innovation opportunities and stages leading to adoption is well-established. Individual farmers appear to display broadly consistent behaviour over time (for example, as an innovator or laggard). The implication for the present study is that questions to VS&S farms should include how they view innovation (and associated investment) as a response strategy and which methods of knowledge transfer are most used to obtain information.

When considering behavioural responses to policy schemes, there appear to be three main elements in the change process, each with its own set of factors affecting them:

- how policy interventions are communicated to farmers;
- the willingness of farmers to change; and,
- the capacity (or ability) of farmers to change.

These elements are shared with how farmers become aware of innovations, mentally accept them as desirable, and finally adopt them (dealt with above). The implication for this research project is that ***innovation and planned behavioural responses to policy initiatives can probably be dealt with using one set of questions cross-tabbed against others where appropriate***.

The literature includes examples of the use of segmentation frameworks when developing models of farmer behaviour. The importance of segmentation is in bringing a deeper understanding of who farmers are, what they do, what they think and feel, and how they respond to policies in order to help policy makers articulate messages and design long-lasting solutions. Segmentation can help with:

- promoting awareness and understanding;
- tailoring (and not a "one size fits all" approach); and,
- recognising why people behave differently.

Several examples are examined in detail, almost all of which use statistical techniques to brigade answers to questions on behaviour (actual or intended) in response to particular circumstances, including changes to policy implementation mechanisms. For some of these examples the actual questions applied are available. Each analysis produced its own set of clusters, to which in most cases descriptive labels have been applied (the exception being the Wales attitudinal segmentation model where neutral labels are purposely chosen). The implication for the current research project is how to benefit from these previous studies in terms of their methodologies, questions put to farmers and their households? There appears a good argument for at least ***adopting the key nine questions from the Welsh attitudinal segmentation model*** (see questionnaire in separate Annex) within the questionnaire applied to our sample of VS&S farms to provide a degree of comparability. This does not prevent alternative analyses being explored.

The final section of this literature review considers a specific issue; the use of scenarios in exploring the likely impact of the UK leaving the EU (the use of scenarios formed an element in the research methodology specified by the Welsh Government). In summary, in the years immediately before leaving, over thirty significant *ex-ante* studies on the potential impact on UK agriculture were produced by and for various organisations with diverse, but often overlapping, sets of interests. Important among them were representatives of consumer interests; farmers and horticulturalists and their unions; firms elsewhere in the food chain; government and politicians concerned not only with all of these but also with a wide range of other impacts, such as on the UK's trade position, its broader economy, the provision of public goods and changes in the social capital of rural communities.

These studies were published mostly between 2015 and 2019. They displayed a diversity of approaches and generated a range of results. In the present context it has to be noted that all but eight made use of multiple scenarios; these formed a useful device in the absence of hard evidence on how the four main impact factors (national agricultural policy, trade arrangements between the UK and EU, labour migration control, and the post-

Brexit regulatory framework) would play out in reality. How these scenarios were specified, such as which impact factors were covered, the details of each factor, and the future date to which they were linked, were critical to the outcomes. Rather than second-guess the actual situation that would result when the UK left the EU and its CAP, for which they had no reliable guide, many of the studies used scenarios aimed at illustrating extreme positions (boundary situations) which could then be used to prepare the agricultural industry for best- or worse-case outcomes. With the passing of time, and uncertainties being narrowed or reduced (especially as proposals for national agricultural support have been set out in legislation in England and consultations in Wales), and a Trade and Cooperation Agreement achieved between the UK and EU (24 December, 2020), the scenarios have tended to shift away from boundary positions and move nearer to expectations, and to be fewer in number. Results in terms of income per farm are set out for Wales as found in the most prominent studies. The implication for the current research project is that farmers ***should be questioned on steps they have already embarked on and those they are likely to consider for the next five years as the result of the UK withdrawal from the EU and the replacement of the CAP with a domestic agricultural policy (which may include scaling back of direct income support and expansion of payments for the supply of public goods) both in terms of their farm business and in their household's adjustments***. These adjustments can take many forms, up to and including decisions to exit the industry, either by leasing land to other farmers, or more permanently by retiring. There may also be a layer of impact resulting from the 2020-21 COVID-19 pandemic.

4 Very Small and Small farms in Wales: the context

Small (S) farms form a significant component of the agricultural industry in Wales and its rural sector, though this importance varies according to the metric chosen. However, for some social metrics, such as number of households in farming, Very Small (VS) farms dominate.

The 2019 June Agricultural Survey in Wales estimated a total of 24,807 farms. The majority (14,658, 59%) of these are classed as VS in terms of economic size; a further 6,943 (28%) are classed as S (Figure 2). Together these VS&S farms account for almost 9 out of 10 Welsh farms and thus the overwhelming majority of households operating farms fall into these size classes. This fact makes them of great importance to societal and political issues. However, because these farms are small in economic terms, they account for a relatively minor proportion of the estimated turnover from farming in Wales; VS farms contribute €101 million (5%) and S farms €415 million (22%) to the €1,906 million total. By way of context, agriculture, forestry and fishing as a sector contributed 1% of total Welsh GVA in 2019 (StatsWales).

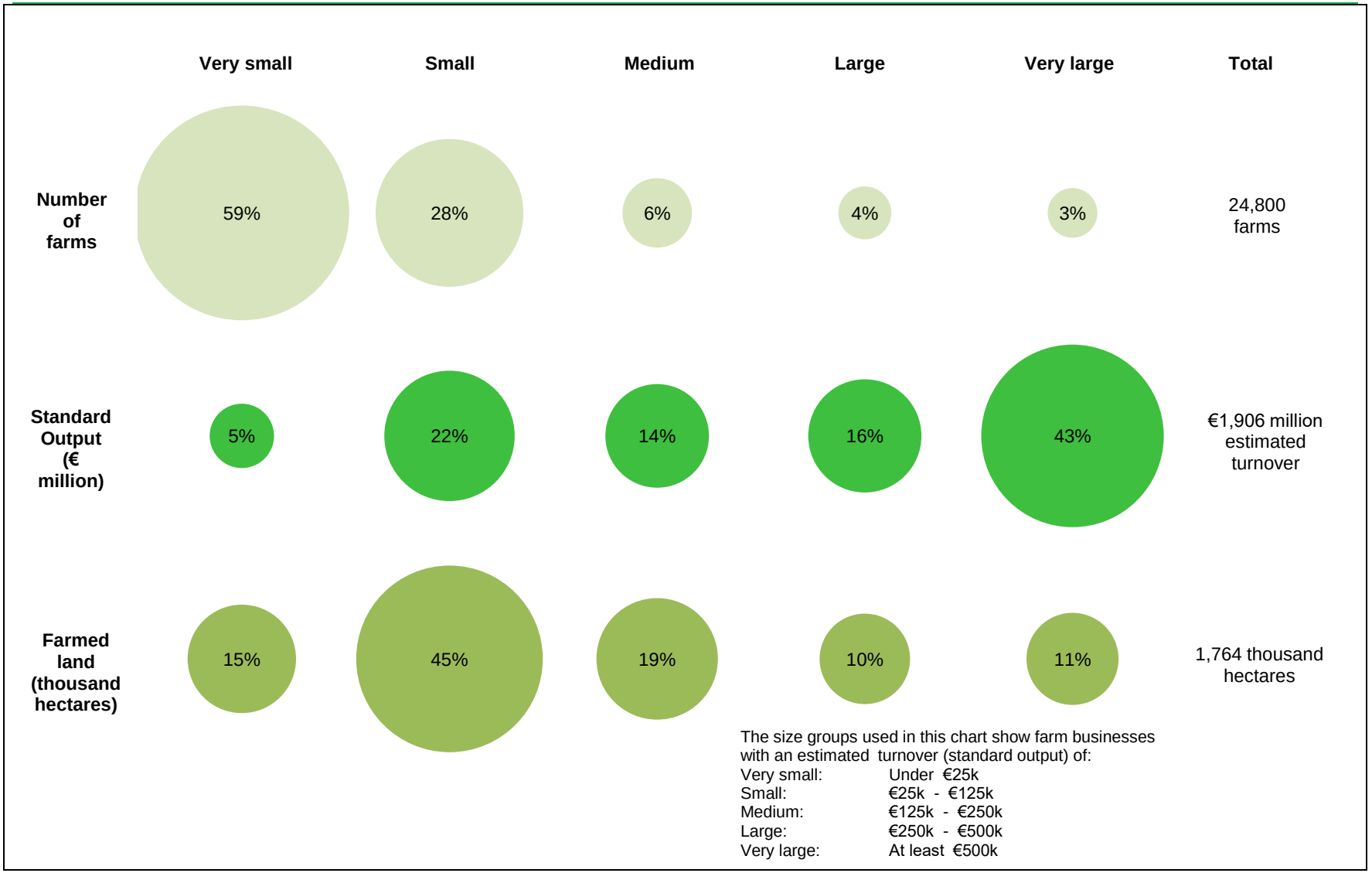


Figure 2: Number of farms, business turnover and farmed land – by economic size of farm (Wales, 2019)

Source: June Agricultural Survey, 2019.

S farms account for over a third (36%) of labour used on all Welsh farms, with VS farms accounting for a further 13%. The Standard Labour Requirement (a proxy for the number of full-time equivalents (FTEs) needed by the farm rather than the count of people actually engaged in working them) on S farms is 12,600 FTEs and 4,000 FTEs on VS farms. By way of context, 41,400 people were employed in the agriculture, forestry and fishing sector in Wales in 2018 (many not full-time), some 2.8% of total employment in Wales (StatsWales).

Although small in economic terms, these VS&S farms collectively occupy 60% of farmed land in Wales; 266,000 hectares (15%) on VS farms and 788,000 hectares (45%) on S farms (see Figure 2). S farms in particular make a significant contribution in terms of certain categories of land use and to total livestock numbers. As Figure 3 shows, VS farms are unimportant for crops, but have more than a fifth (23%) of the area of woods, buildings, ponds, paths and areas on farm not used for agriculture in Wales (Figure 3). They also have 17% of permanent grassland and 12% of rough grazing land. S farms also account for a substantial proportion of total woods, etc. (45%), more than half (53%) of rough grazing land and 46% of permanent pasture in Wales. Crops are a substantially more important land use on S farms than on VS farms accounting for a quarter of all crop land in Wales (26%).

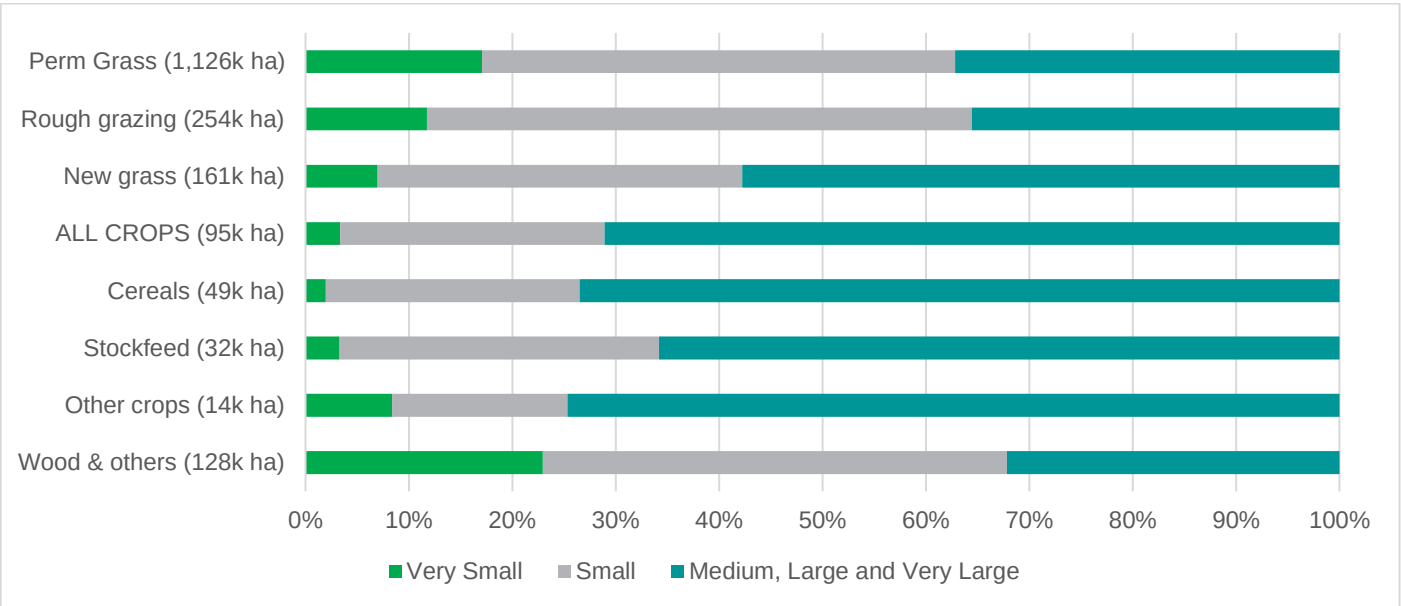


Figure 3: Proportion of total land use by economic size of farm and total area of crops for context (Wales, 2019)

Source: IHS Markit based on June Agricultural Survey, 2019.

In terms of contribution to total livestock numbers in Wales, S farms are very important in terms of beef and sheep numbers with 53% of beef cows on this size holding, along with 49% of all sheep. Dairy cows are not important with less than 3,500 kept on S farms (Figure 4). VS farms are of far lesser importance for the main livestock species, but account for almost two-thirds (64%) of horses, 41% of goats, 23% of other sheep (rams and non-breeding sheep aged at least one year) and 19% of pigs; fewer than 500 dairy cows are kept on VS farms.

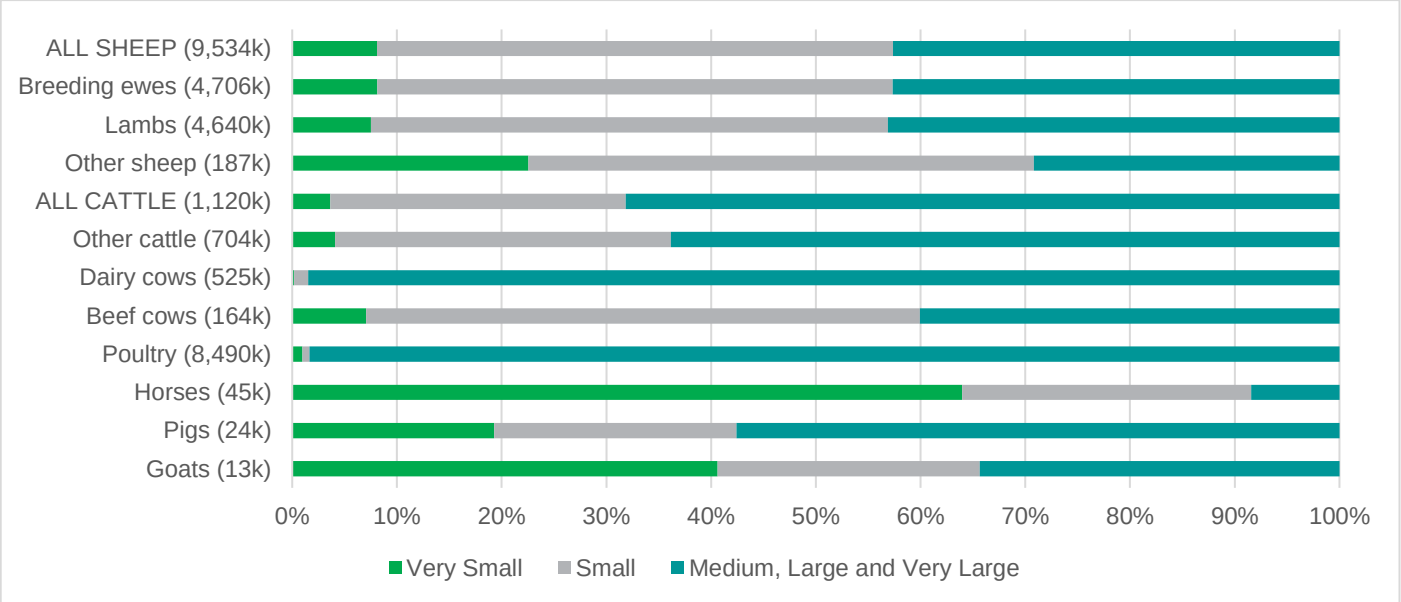


Figure 4: Proportion of total livestock numbers by economic size of farm and total number of livestock for context (Wales, 2019)

Notes: lambs are aged under one year, other sheep are rams and non-breeding sheep aged at least one year, other cattle are males and uncalved females, beef cows are calved females of a beef breed, dairy cows are calved females of a dairy herd, poultry are mainly chickens for meat or eggs, including turkeys, ducks, geese and others, excluding bird raised for shooting.

Source: IHS Markit based on June Agricultural Survey, 2019.

To summarise, VS&S farms are important within the agricultural sector in terms of people and land and are of interest to policy makers, especially in the context of reorienting support towards the provision of public goods. The importance of S farms to some land use and livestock categories should also not be ignored.

5 Farm characteristics

This section provides a description of the structural characteristics of the survey sample.

5.1 Farm economic size

Our sample was composed of 265 (63%) Very Small (VS) and 154 (37%) Small (S) farms. VS farms are those with a Standard Output under €25,000; S farms have a Standard Output between €25,000 and €125,000. This is slightly lower than the ratio of VS&S farms at the population level (14,500 c.f. 6,700) (Figure 5). This resulted from the initial use of the Farming Connect database which contains a known inherent bias towards S versus VS farms. The survey was reoriented once the June survey database became available to address this issue as far as possible in the remaining survey window.

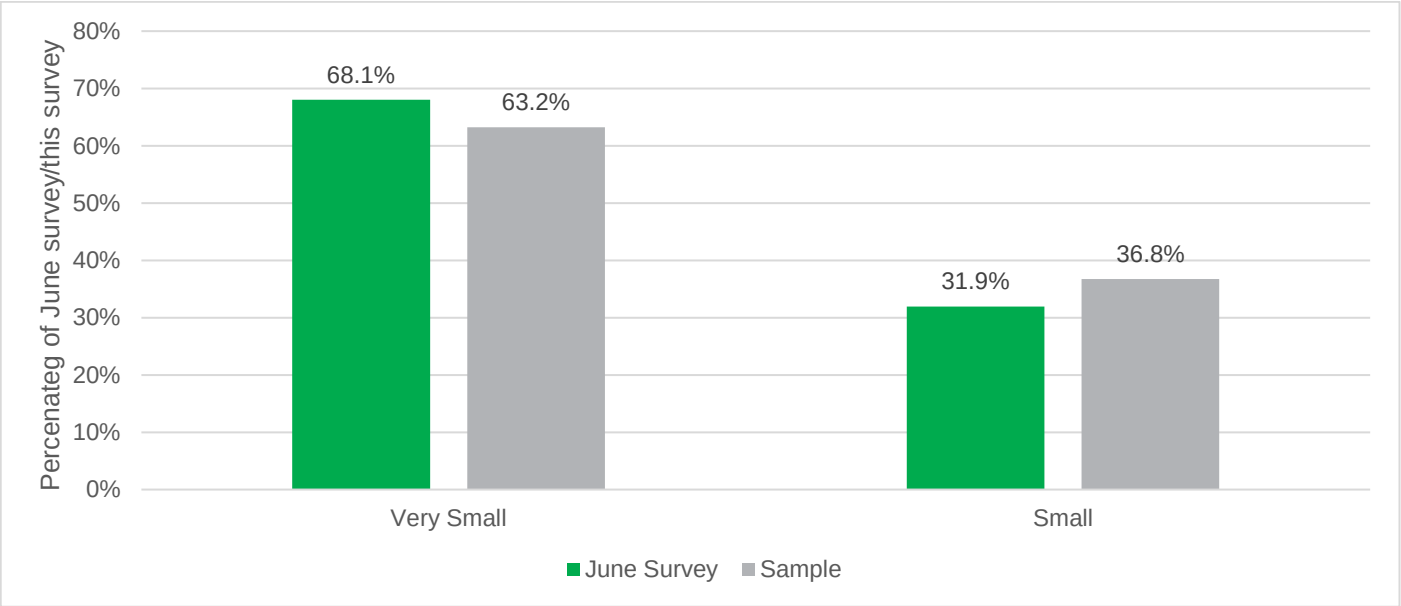


Figure 5: Farm economic size bands in the June survey and our survey

Source: IHS Markit.

5.2 Farm type

The majority of respondents run farms in which, according to their self-declaration, the main enterprise is sheep and/or beef. The breakdown by farm type is presented in Figure 6. Directly comparable data are not presented in either Farming Facts and Figures, Wales 2020,[1] which is based on the June survey (VS farms are not included in the farm type classification), or within the Farm Business Survey which does not include farms with Standard Output below €25,000. However, Farming Facts and Figures, shows that there were 7,128 holdings with a beef

[1] https://gov.wales/sites/default/files/statistics-and-research/2020-07/farming-facts-and-figures-2020-658.pdf

herd (29% of 24,807 total farms) and 14,135 with a sheep flock (57% of total farms) in 2019 (some of these holdings will have both enterprises). In comparison, 36% of our respondents have a beef enterprise and 58% have a sheep enterprise showing that the prevalence of (self-described) beef, sheep, and beef and sheep farms in our survey is broadly what one would expect.

Dairy farms are under-represented in our sample (2% c.f. 6% in the typology based on the 2019 June survey, though this does not include types for VS farms) and mixed farms are over-represented (13% c.f. 2%). In both cases this is likely to be due to our focus on VS&S farms, although some farms self-categorised as "mixed" might be officially categorised to other specific types.

VS farms were less likely to be beef and sheep than S farms (17% c.f. 32%); this was also the case in the dairy sector, although this was not statistically significant (1.9% c.f. 3.3%).

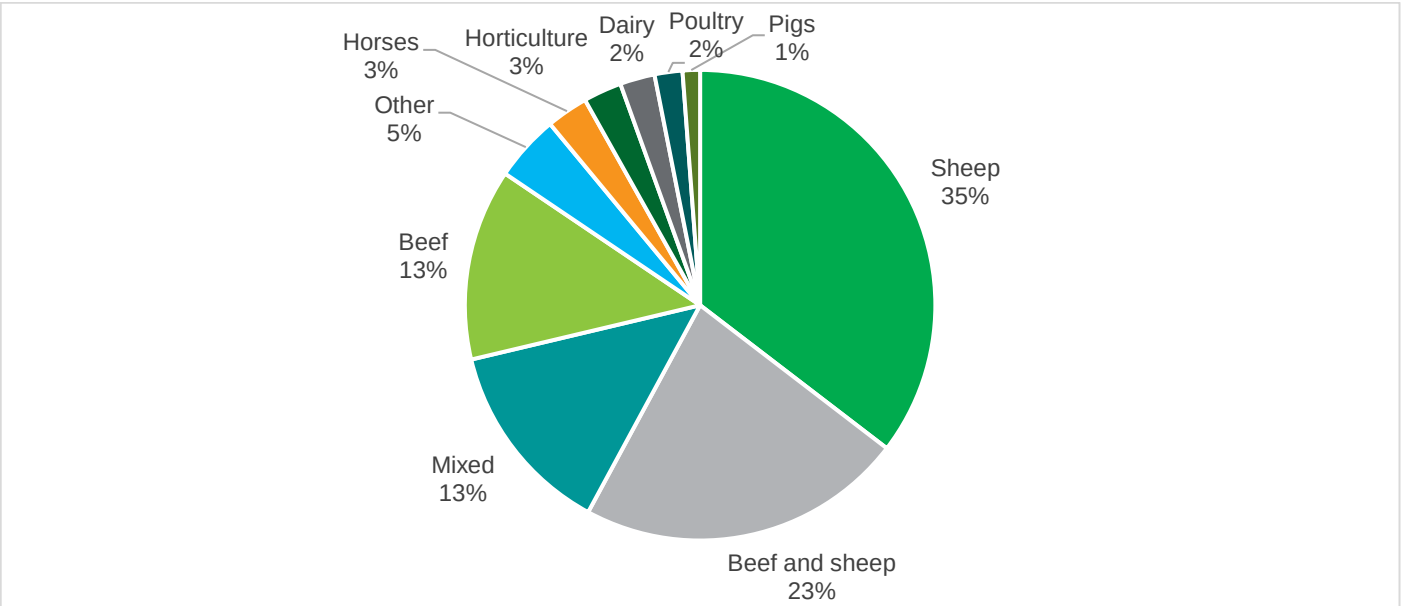


Figure 6: Which of the following best describes your type of farm's main enterprise? (n=418)

Source: IHS Markit.

5.3 Farm physical size

Farm size ranged from less than 1 hectare to 800 hectares with an average (mean) size of 53 hectares and a median of 33 hectares, meaning that the average size was skewed upwards by a small number of farms with substantial land areas. The average size of S farms was 74 hectares, with a median of 56 hectares, while VS farms had an average size of 40 hectares and a median of 22 hectares (Figure 7). The greater difference between the mean and median for VS farms shows a greater incidence of relatively large farms. A range of factors could explain why occasionally farms can be found that are VS in terms of economic size, but large in area; these include farms where occupiers are in the process of leaving the sector, complications of tenure arrangements, and situations where the farming system is one of very extensive land use, especially in Severely Disadvantaged Areas. However, the general association between larger economic size and larger physical size remains broadly valid.

Average farm size by farm type was 51 hectares for beef farms, 52 hectares for sheep farms and 83 hectares for beef and sheep farms (there were not enough responses in the other farm type groups to allow meaningful

analysis). As would be expected, there is a relationship between physical and economic size with larger average areas amongst S farms compared to VS farms (with the exception of dairy which is probably explained by degree of intensity).

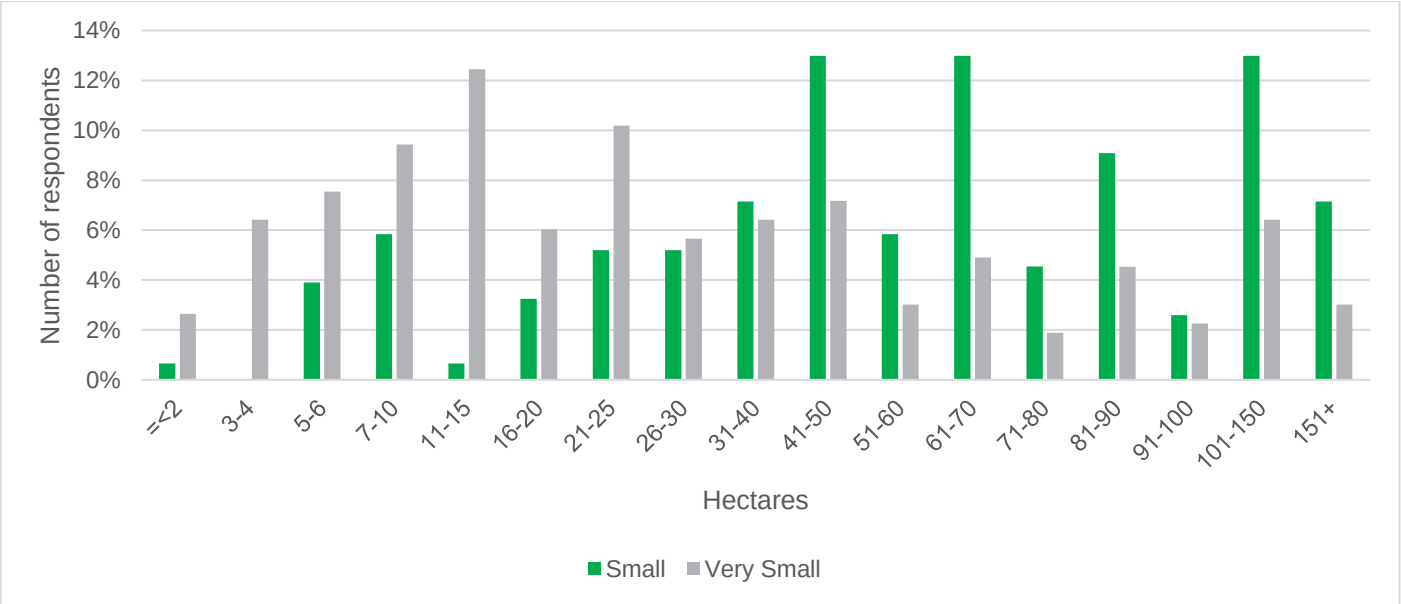


Figure 7: Distribution of farm economic size by physical area (n=419)

Source: IHS Markit.

5.4 Farm ownership

Most respondents own their farm, or mostly own their own farm, with only 8% entirely renting (Figure 8). This is very similar to the 7% for VS&S farms reported in the 2017 June survey; the all-Wales figure is also 7%. The June survey data show considerable variability within the VS&S group with all renting most common on small lowland grazing farms (13%), small DA grazing and small dairy (both 10%). Complete ownership in our sample is more a feature of VS farms than it is of S farms (72% c.f. 53%, significant, 82% and 49% in the 2017 June survey), while S farms are more likely to also rent land.

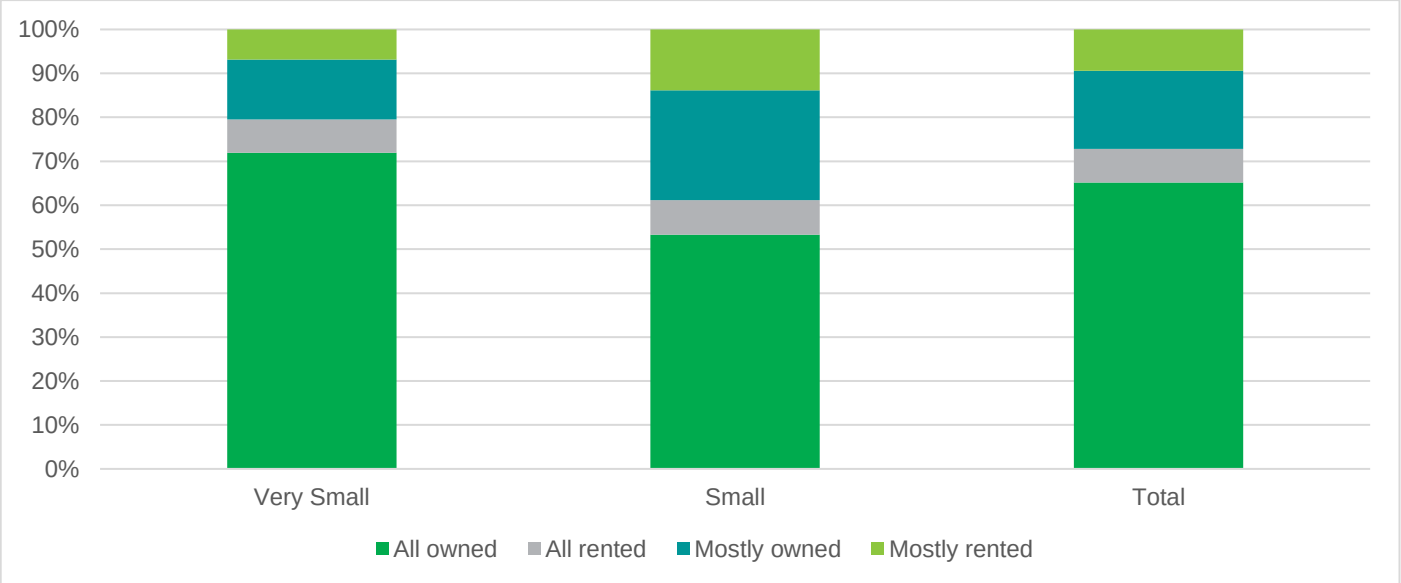


Figure 8: What is the tenure of your land? (n=419)

Source: IHS Markit.

5.5 Previous farming experience

Two-thirds of respondents have previous experience of working on the family farm before they took on their current holding (66%) (Figure 9). This was far more common on S farms compared to VS farms (77% c.f. 59%, significant). Only 16% of respondents had no previous agricultural experience. Again, this was quite different by farm economic size band with 21% of respondents from VS farms having no previous experience compared to 8% on S farms (significant).

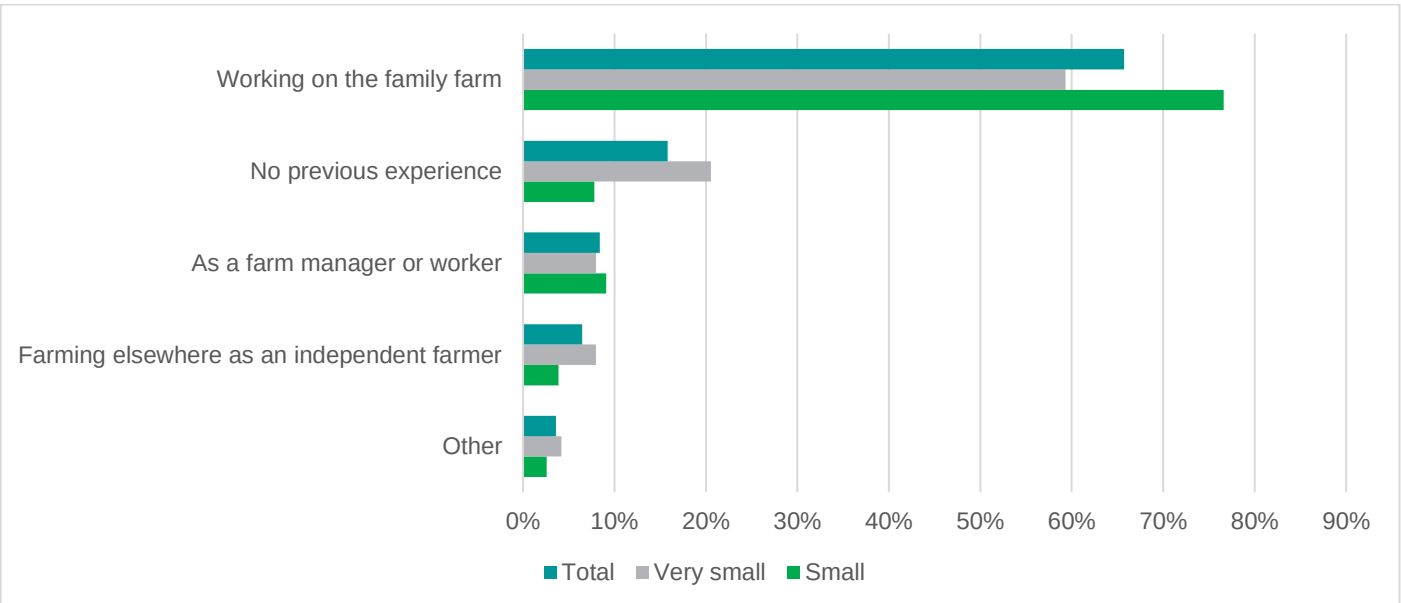


Figure 9: Do you have any previous experience of working the land before you started this holding? (n=417)

Source: IHS Markit.

5.6 Route into farming the current holding

The most frequent reason cited for farming their current holding was given as having bought the land (46%) with another 31% taking over to run the family farm; a further 19% inherited the holding (Figure 10). While there is a difference between taking over the running of the family farm and inheriting it (for example, a child could have taken over the running of the family farm with rent forming a pension for parents), there may be some overlap between these groups as understood by the respondent. It is also possible that some of those saying that they rent the land could be renting from parents; some of those who bought their farm could also have bought it from parents. Almost 7% of respondents cited combinations of reasons, mainly: (i) inherited land and to run the family farm; (ii) inherited land and bought land; and (iii) bought and rented land. The key points to note are the widespread ownership of the land and the importance of a family connection.

Respondents from S farms were more likely to have taken over the holding to run the family farm (42% c.f. 24%) and inherited land (22% c.f. 17%); respondents from VS farms were far more likely to have bought the land (54% c.f. 32%, significant).

Interestingly, those who say them can speak Welsh are more likely to have inherited their farm (27% c.f. 9%) while those who do not speak Welsh are more likely to have bought their farm (58% c.f. 35%); there was no difference with respect to those renting.

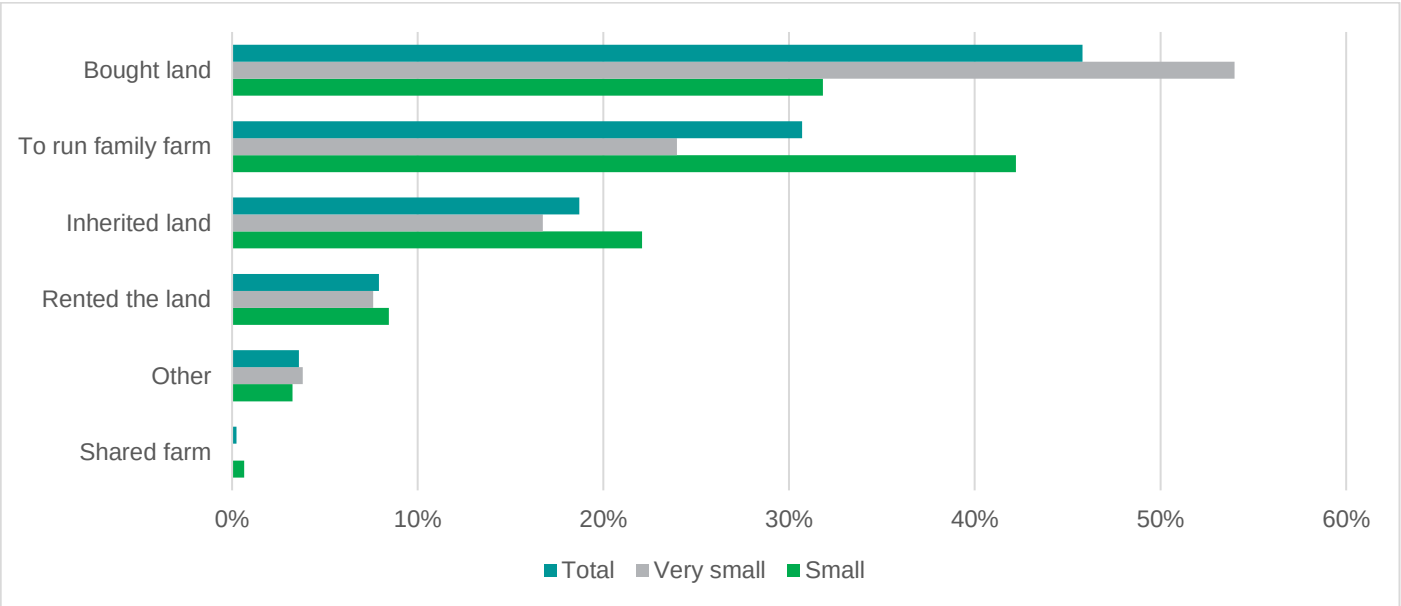


Figure 10: How did you come to farm this holding? (n=419, multiple answers were possible)

Source: IHS Markit.

5.7 Time on the holding

The average (mean) length of time that respondents had been running their holding was 23 years; the median was only slightly less at 20 years, pulled down slightly by the large number of respondents who have been on their holding for twenty years or less (Figure 11). The longest period of occupancy was 80 years and the shortest just one year. There was no appreciable difference by farm economic size band.

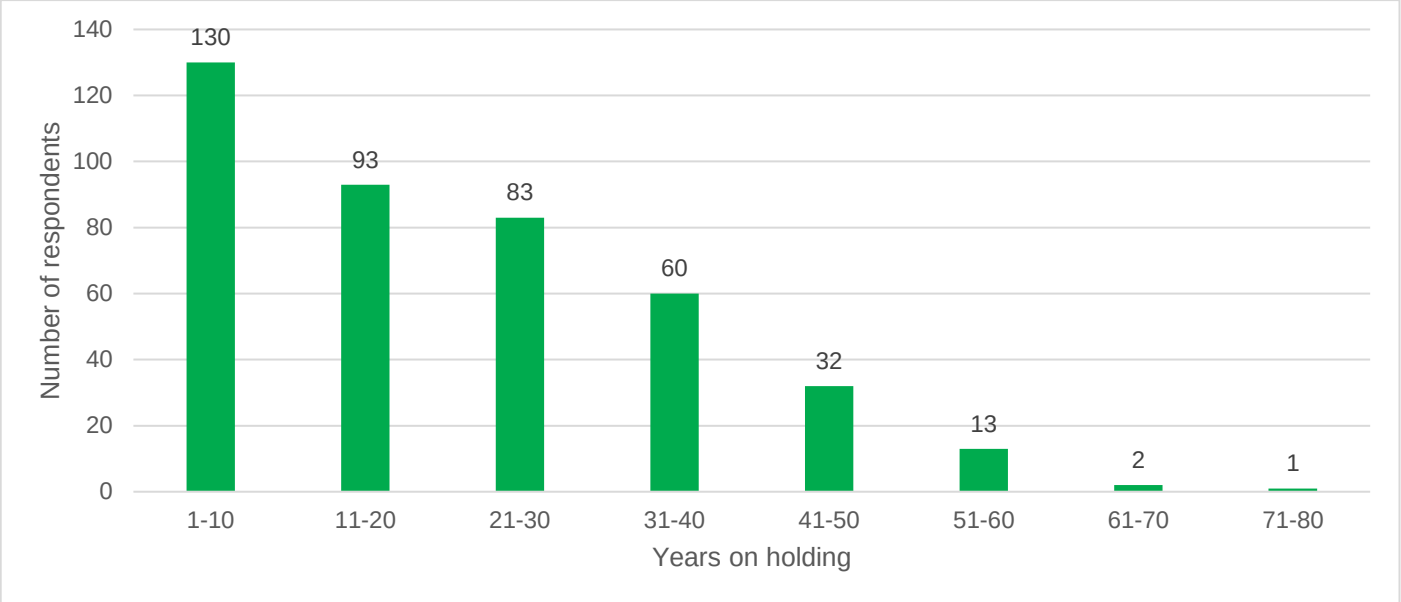


Figure 11: How long have you farmed this holding? (n=419)

Source: IHS Markit.

5.8 Engagement with agri-environment schemes

Half the farms in our sample (50%) are, or have been, entered into an agri-environment or conservation scheme. S farms are more likely to be, or to have been, entered into an agri-environment or conservation scheme than VS farms (58% c.f. 46%, significant). Figure 12 shows the schemes which farms are or have been entered into (it is possible to have been in more than one scheme, as 11% of respondents were). Some 37% of total respondents have been or are in Glastir Entry or Glastir Advanced (the minimum size eligibility requirement is three hectares and the applicant must have management control for the duration of the contract which is a minimum of five years).

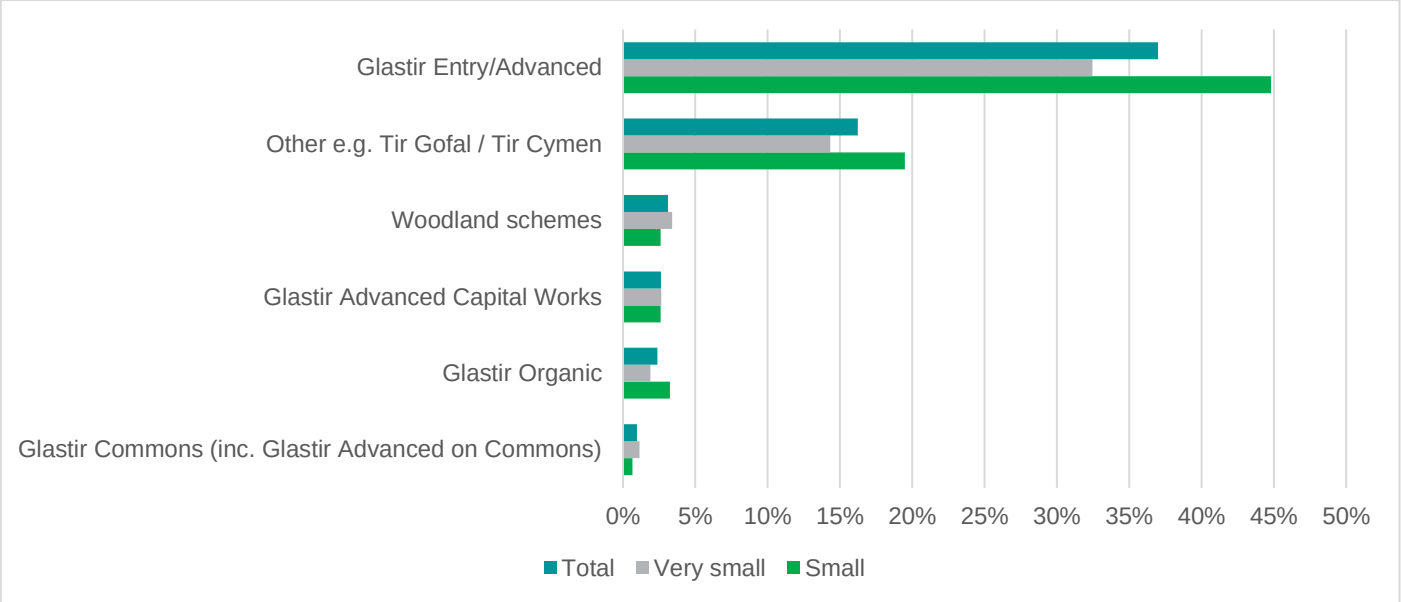


Figure 12: Have you accessed any of the following schemes? (n=211, multiple answers were possible)

Note: Woodland schemes include: Glastir Woodland Creation Scheme / Glastir Woodland Management Capital Works / Farm Woodland Scheme / Farm Woodland Premium Scheme.

Source: IHS Markit.

6 Household characteristics

6.1 Household composition

Figure 13 breaks down the composition of households in our survey by the number of adults, age of the responding adult and presence of children in the household. A slim majority of households comprise two adults (53%) with three-adult households accounting for 20% of the sample and single-adult households accounting for a further 13%. One in ten households comprise four adults, with almost 5% of households having at least five adults. These proportions were broadly similar to the findings of the 2010 survey of Welsh households on all sizes of farm (WRO, 2010), though in that sample the percentage of households of two persons was rather lower (at 39%) and single person household also lower (4%). The larger households were more frequently found in the WRO survey (at about 15%), suggesting that larger farms tend to have larger households associated with them. In our 2021 survey there was no clear difference between VS and S farms in terms of household composition.

While 71% of respondents have no children under the age of 18 living within the household, 10% have one child, 11% two children and 7% three or more children (figures do not add due to rounding). While this snapshot does not allow a full understanding of household dynamics over time, survey data show that many of the young adults present in households now would have been children when the holding was taken over.

Bringing the variables together, the households of just over a fifth (22%) of our sample comprise two adults with the respondent aged between 40 and 66 and with no children living at home. Households comprising two adults with the respondent aged between 40 and 66, but with children living at home accounted for 11% of our sample, the same proportion of households with three adults and no children at home. The ages of third adults ranged from 18 to 92, so are likely to encompass cases where the respondent has grown up children in their household (54% of third adults were aged 30 or under) and, less commonly, cases where elderly parents live with their children (18% of third adult are aged 75 or over). While it is not possible to be certain about the relationships within the household, it is likely that respondents in several other groupings also split between the respondent and their adult children (most usually) and the respondent and their (or their partner's) parent(s).

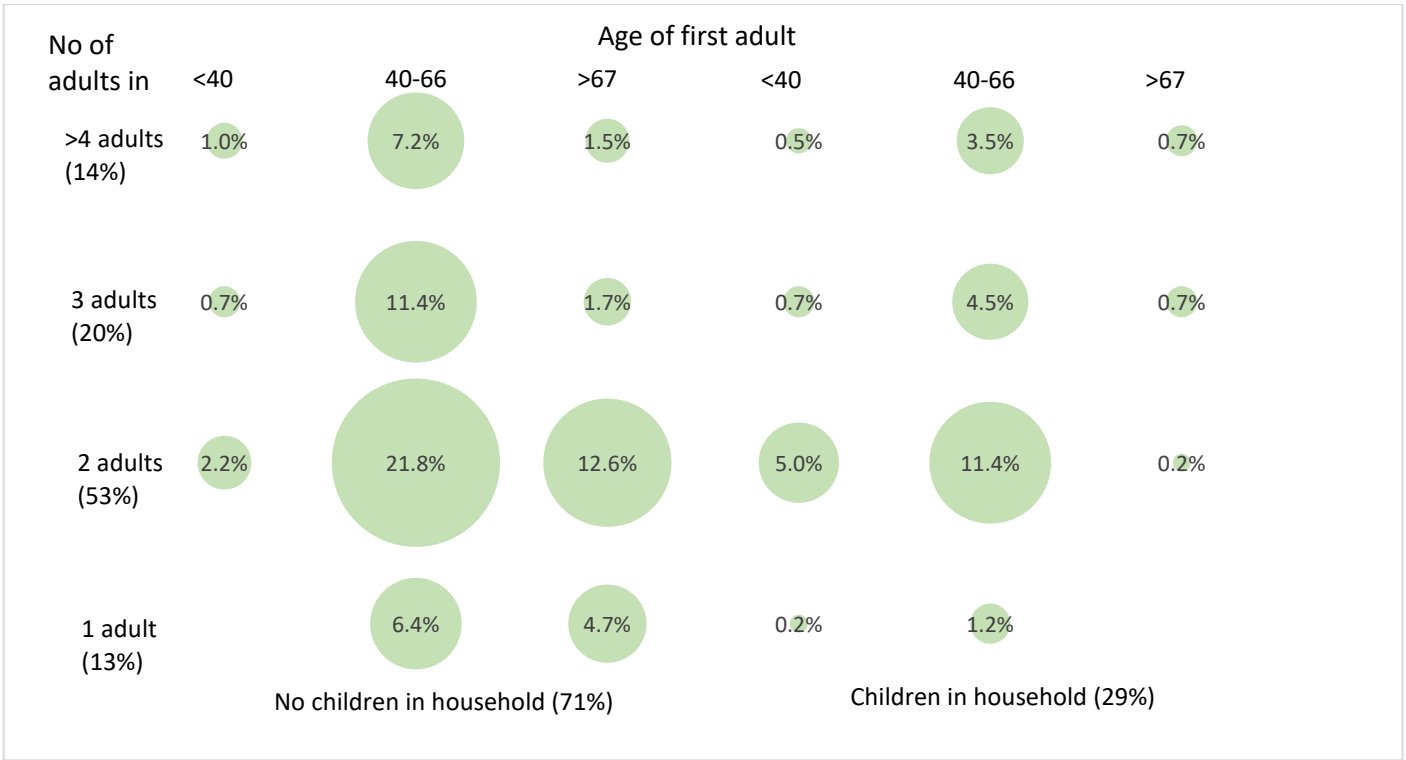


Figure 13: Composition of households by number of adults, age of first adult and presence of children in the house (n=404)

Source: IHS Markit.

The average age in households with only one adult was 63 (median 64). In households with two adults the average age (mean and median) of the respondent was 57 and the second adult 54 (median 55). (WRO (2010) found 56% of respondents were aged over 55 years.) Where other adults were present in the household their average ages were 39 (third adult, median 30) and 38 (fourth adult, median 29). The median ages of the third and fourth adults, coupled with the number of children present, supports the analysis above in that multi-generational households appear to be typically composed of parents with children who are yet to start families of their own.

Just over a third (37%) of households had at least one adult aged 66 or over and therefore receive at least one state pension.

The respondent was female in 27% of households and, as the interviewers asked if they were speaking to the main decision maker, by implication almost a third of decision makers are female; this was more likely to be the case for households on VS farms than on S farms (31% c.f. 21%). (In the WRO (2010) survey of farm households occupying farms of all sizes a very similar proportion (26%) were female.) However, decision making is often more nuanced than questioning at this stage could reveal; this is assessed in greater depth in section 8.1.

6.2 Agricultural and non-agricultural qualifications

The WRO (2010) survey of households operating farms in Wales, covering all farm sizes, found that just under a third (32%) of respondents held no educational qualifications; 15% were university graduates with a first or higher degree, and 15% held a professional qualification or national diploma. Our 2021 survey took this a little further by identifying separately post-school qualifications (such as HND, degree or NVQ) specifically related to agriculture, the remainder being non-specific or related to some other profession or occupation.

In view of the small-scale level of agricultural operations among VS and S farms it is perhaps not surprising that the level of non-agricultural qualification among these groups was higher than their agricultural qualifications. Qualifications in non-farming related subjects were held by 44% of respondents. The level of these qualifications is somewhat polarised, with 18% having A levels and 13% having a degree. Respondents on VS farms are more likely to have a non-farming-related qualification than those on S farms (48% c.f. 38%, significant). Of particular note is that respondents from VS farms were twice as likely to have a degree than those from S farms (16% c.f. 8%), although this is not statistically significant. Non-farming qualifications were just as common for second adults. In 9% of cases, both the respondent and the first adult (spouse/partner) were graduates or post-graduates, much more usually so on VS holdings (31 respondents c.f. 8 respondents). Almost a fifth of third adults (17%) had non-farming qualifications, as did 6% of fourth adults. There were no differences by farm economic size band in respect of non-farming qualifications.

A rather lower proportion (just over a quarter, 26%) of respondents have a qualification in farming-related subjects; 7% of respondents have a degree or higher-level qualification and 11% of respondents have a Higher National Certificate or a Foundation Degree. A qualification in farming-related subjects is more common for respondents on S farms compared to those on VS farms (32% c.f. 23%, significant). Qualifications in farming-related subjects was far less common for other household members (5% for second adult and 1% for third adult, for example.

6.3 Employment by members of the farm household

Our literature review cited the Welsh Rural Observatory survey of farm households in Wales (WRO, 2010) which found that the operation of Welsh farms was heavily dominated by the farm family. Almost half (46%) had two family members working on the farm; 24% had one family member; and 20% had three family members. Smaller proportions of the total surveyed had from four to nine working family members. The large majority of farms did not employ any full-time non-family labour (90%) or any part-timers (87%) or casual labour (68%). However, working on the farm does not necessarily imply that they have a role in decision-taking or entrepreneurial responsibility.

The general picture from our survey of VS&S farms in 2021 is similar in that members of the farm household are important to the operation of the farm.

Adult household members other than the respondent (who is assumed to work on the farm in some capacity, at least as a proprietor) have worked on farm over the past 12 months in 89% of cases. This was slightly more likely to be the case on VS farms compared to S farms (91% c.f. 85%, significant). Typically, assistance was provided by one (37%) or two (21%) other household members. Oddly, zero is more likely among S than VS, though a single member more likely among VS than S.

However, perhaps of more interest is that these households are heavily engaged in off-farm activity. Our literature review found that pluriactivity (the combining of farming with some form of Other Gainful Activity – OGA) is commonplace in Wales, as in the rest of the UK (and throughout OECD countries). The WRO survey of Welsh farm households (WRO, 2010) found that 41% had non-farming as well as farming incomes, with 39% of very small farms seeing off-farm income as the most important source of income. Though not confined to small farms, it is at that end of the size spectrum that OGAs seem most significant to maintaining living standards and economic sustainability.

The findings of our 2021 survey of the operators of VS&S farms are very much in line with the general picture but provide a degree of detail not available before. We have divided off-farm activities into those where the individual is employed off-farm (that is, in dependent activity) from those with the status of being self-employed

(independent activity), as these have rather different connotations in terms of working conditions, flexibility and so on.

Just over a third of respondents (38%) said that they, or other adult members of the household, were employed off-farm full-time (at least 35 hours per week). Typically, only one member of the household was employed off-farm full-time (26%), but in 10% of cases, two household members were employed off-farm full-time. Some 17% of respondents indicated that they, or other adult members of the household, were employed part-time (less than 35 hours per week) off-farm; in almost all cases this was just one household member. These two groups are not mutually exclusive. Taken together, 49% of responding households had adults in either full-time, part-time or both full and part-time employment off-farm, while 6% had adults in both (typically one in each). There was no difference by farm economic size band.

Self-employment off-farm was less common, with 18% of respondents indicating that they, or other adult members of the household, were self-employed off-farm full-time (at least 35 hours per week). Again, this most commonly described just one household member (13%), but this was more likely to be the case on VS rather than S farms (17% c.f. 8%, significant). Some 18% of respondents indicated that they, or other adult members of the household, were self-employed off-farm part-time (less than 35 hours per week); in almost all cases this was just one household member. While this was more common on S farms compared to VS farms (21% c.f. 15%), this was not statistically significant. A third (33%) of households had adults in either full-time, part-time or both full and part-time self-employment off-farm while 3% had adults in both (typically one in each). There was no difference by farm economic size band.

Bringing together full-time and part-time off-farm employment and self-employment shows that combining farming with some form of other gainful activity is the norm for two-thirds of the household with VS&S farms, and only a third of households (32%) have no off-farm gainful activities of any kind. A third (31%) have one adult household member in some form of off-farm activity and just under a third (30%) have two adult household members (7% have more than two adult members) in some form of off-farm activity. VS farm households are slightly more likely to have some form of off-farm gainful activity (71% c.f. 64%, significant).

6.4 Involvement with non-agricultural activities on the holding

Our literature review notes that, in conventional UK terminology as used by Defra, farm diversification means non-agricultural work of an entrepreneurial nature, on or off the farm, but utilising farm resources (Defra, 2018). Conceptually it is a small step away from pluriactivity, and a case can be made that the distinction is primarily a matter of definition, terminology and data collection systems than a meaningful one in terms of management and generation of income, as the resources used will all be controlled by the farm household. What is clearer is that diversification, defined in Defra's way, has to be seen as normal. In 2016-17, 64% of farm businesses (FBS in England) engaged in such activities (up from 51% in 2009/10), earning an average of £17,000 (among those with these activities).

Almost half (47%) of respondents to our 2021 survey of operators of VS&S farms in Wales run other, non-agricultural activities from their holding. The most common is some form of tourism activity such as bed and breakfast, farm accommodation, camping or glamping (Figure 14, "other" includes a diverse range of activities from testing race cars to showing birds of prey). There were no statistical differences by farm economic size band.

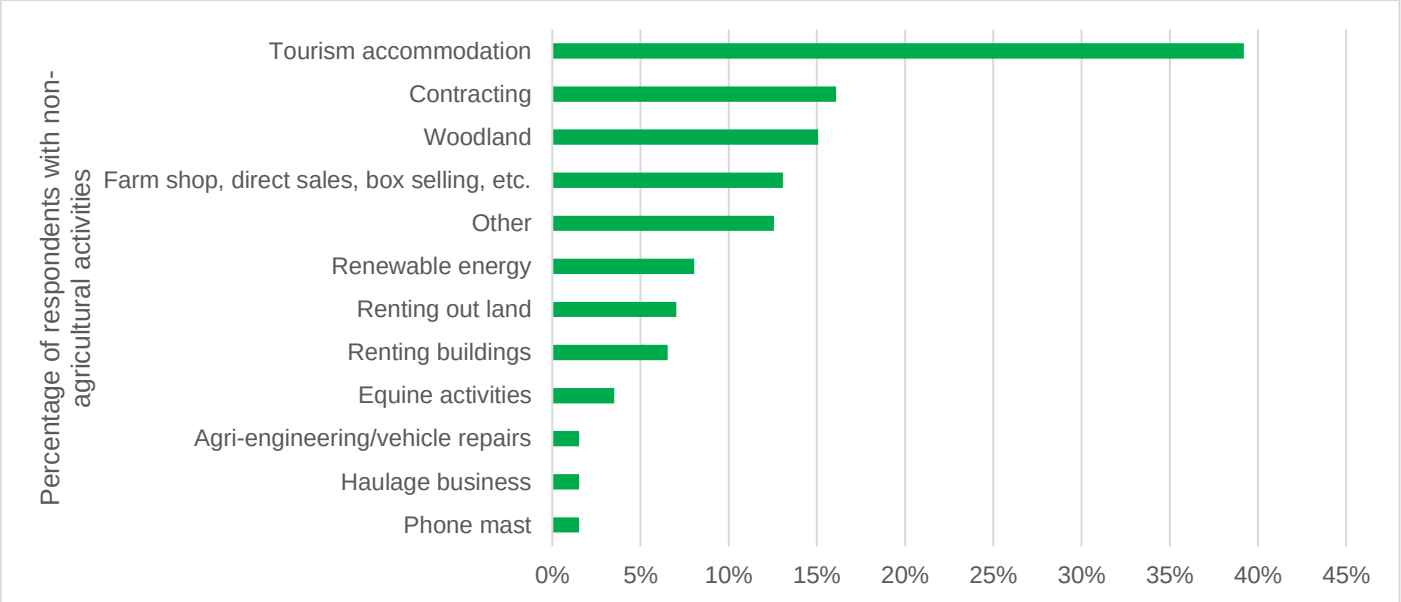


Figure 14: Are there any other non-agricultural activities run from your holding? (n=199, multiple answers were possible)

Source: IHS Markit.

6.5 Farm household finances

Our literature review found that financial data at the household level (i.e. in contrast to the farm business level and therefore including off-farm income) are relatively rarely available, despite evidence that this is the appropriate basic analytical unit for researching living standards, viability, investment and even land-use decisions in an industry dominated by unincorporated family-owned businesses. While in some countries farm household income data are regularly collected by farm survey (as in the ARMS survey in the USA), this is not part of the coverage of the EU's Farm Accountancy Data Network, nor is it a regular part of the UK's Farm Business Survey (collection of household income was introduced for the 2004-05 year but ended in England after the 2014-15 year). Rare examples of partial information for Wales are found in Ansell, *et al.* (1991) and WRO (2010), both obviously dated and, on examination, rather incomplete. Consequently our 2021 survey of the households operating VS&S farms helps fill an important lacuna in the information.

Four-fifths (80%) of our 2021 survey respondents were able and willing to say into which band their household income fell (16% refused and 4% did not know), a response rate higher than might have been expected given concerns about how farmers regard issues of privacy. Figure 15 shows these income bands for those able to provide this information. Very few households (5%) fall into the less than £10,000 band – this is a little higher than the single person annual state old-age pension, currently £9,300 or £179.60 per week (the 17% of households on VS farms with gross household income below this level seen in the WRO 2010 survey, and the 23% of S farm households, are too dated to be of meaning in 2021). More than four-fifths (82%) have household incomes which fall between £10,000 and £69,999, while 13% have household incomes in excess of £70,000 (only 3% to 5% had household incomes above £78,000 in WRO 2010).

While the proportions of households falling into the various income bands are generally very similar by farm economic size band, slightly more households on VS farms fall into the £10,000-£29,999 income band (42% c.f. 35%) while the reverse is true for the £50,000-£69,999 income band (24% c.f. 17%). These differences are not statistically significant due in part to the relatively small numbers in each income band. On balance it would appear that the average income of the VS group would be a little lower than the S group, though the difference is

not likely to be substantial. The more important conclusion has to be that the economic size of farm is not a reliable guide to the level of household income.

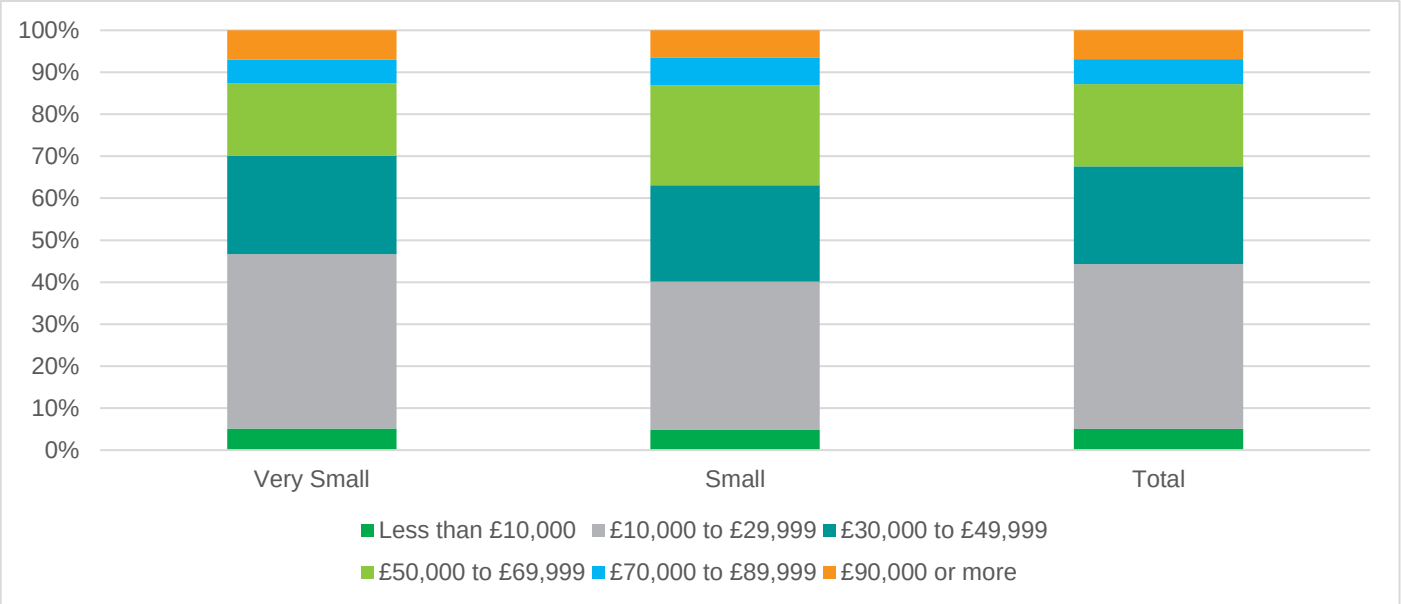


Figure 15: Into which of the following ranges does the total income from all sources of the farmer and spouse fall (before any taxes have been deducted) (n=336)

Source: IHS Markit.

An examination of household income against Welsh language use showed that households where the respondent was fluent in Welsh had higher incomes than those where the respondent did not speak Welsh. Figure 16 shows that while 46% of households where the respondent does not speak Welsh had incomes above £30,000, this proportion was 56% for households where the respondent is fluent in Welsh. This does not appear to be related to the presence of off-farm income *per se*, but could reflect higher salaries offered for jobs which require employees to be bilingual.

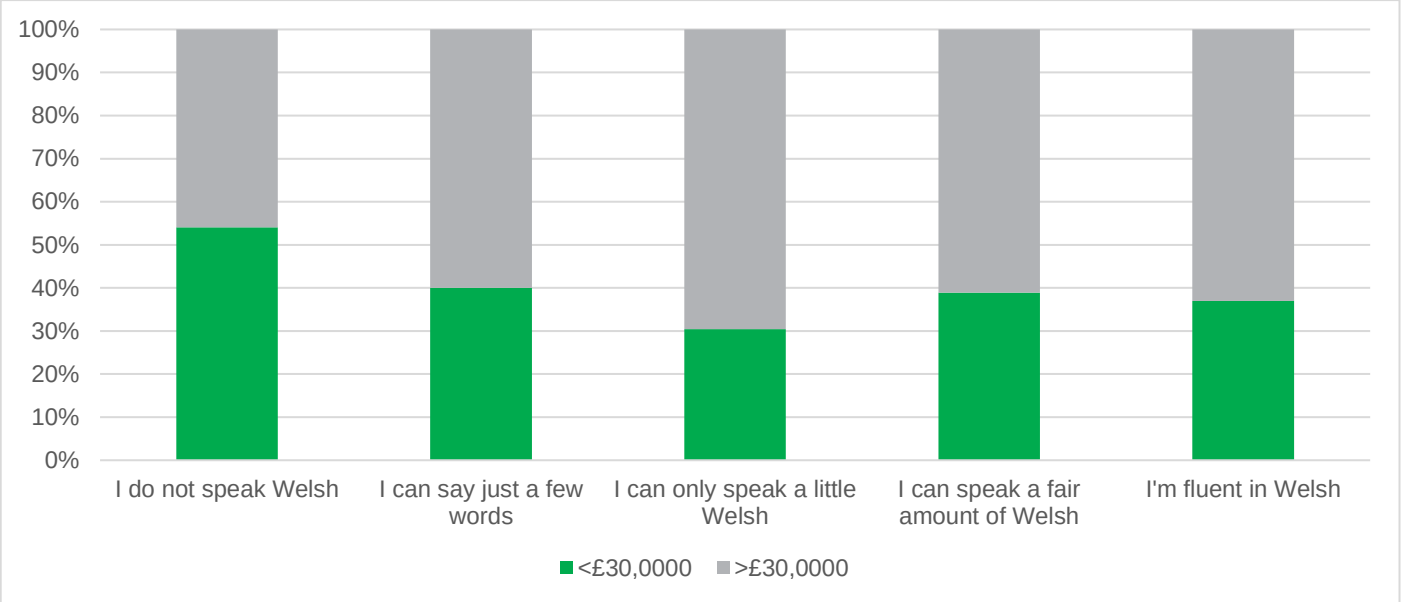


Figure 16: Into which of the following ranges does the total income from all sources of the farmer and spouse fall (before any taxes have been deducted) versus Welsh speaking (n=336)

Source: IHS Markit.

The WRO survey of farm households (WRO, 2010) ranked five sources of household income, from "the marketplace" (which included the surplus from farming) at 50% through to diversification at 7% and agri-environment schemes at 2%. Among the WRO's sample of VS farms, off-farm jobs generated 39% of household income and (on-farm) diversification 15%, whereas among S farms the proportions were much lower (7% and 5% respectively). How importance is assessed is clearly critical. For our 2021 survey of the operators of VS&S farms we have taken a more nuanced approach.

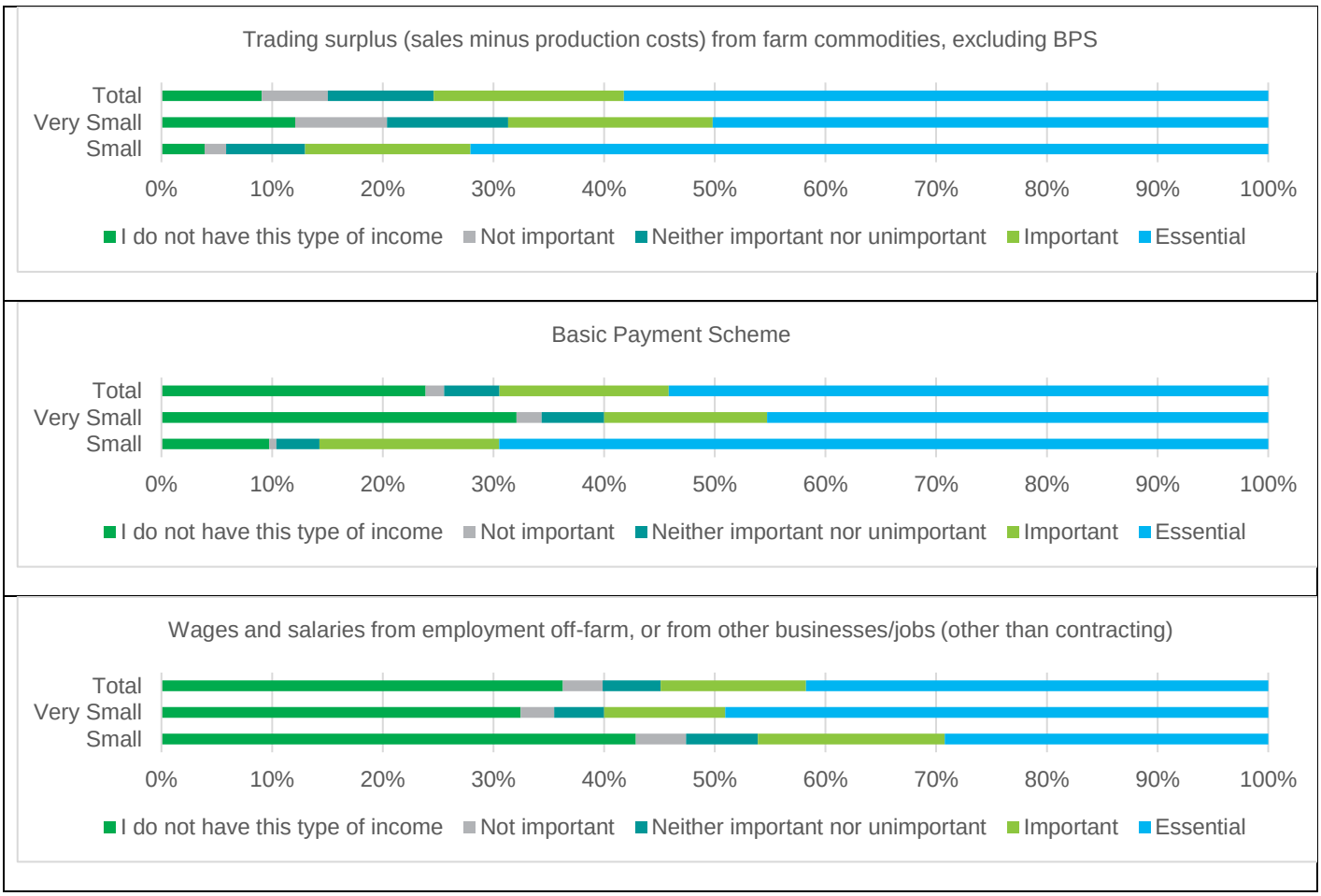
Figure 17 shows our assessment of the importance of various potential income streams to household income in terms of descending order of prevalence (in the sense of frequency with which these sources are encountered). The other key characteristic is how important each is to household income when present (see below). There are several overarching key points to note:

- ***Prevalence of income sources.*** Trading surplus (sales minus production costs) from the farm business is the most commonly encountered income source with 91% of households saying that they have this form of income. This is hardly surprising since farming will usually be undertaken with the intention to make a surplus (as noted elsewhere, 73% of respondents declared that they saw their farm primarily as a business). This was followed by the Basic Payment Scheme, stated by 76% of households. Wages and salaries from employment away from the farm or from other non-agricultural businesses provide an income source for 64% of households and environmental payments for 54% of households. A substantial minority of households report income from pensions (46%), surplus activities on the farm unrelated to food production such as tourism and renewable energy (35%) and return on investments (33%) (which includes rents from property). Rather fewer cases are encountered of contracting on other farms (19%) (which other sources in the literature have identified as generally common); this may be because operators of S and (particularly) VS farms are less likely to own equipment which would allow them to carry out contracting on other farms. Other income streams are rare (2%).

- ***Importance of different income streams.*** The importance of individual income streams tends to decline slightly with prevalence, i.e. the most prevalent sources of income tend to be more usually considered to be essential. Income from trading surplus and the Basic Payment Scheme tends to be considered more "essential" rather than "important" compared to income from environmental schemes and pensions, which is more evenly split between "essential" and "important".

- ***Unimportance of trading surplus for some.*** Although trading surplus is the most prevalent source of income, it is considered "not important" by 6% of respondents. This is almost double the proportion of "not important" for other income sources. This might be because it contributes little to household income, but could also be explained by the fact that trading surplus can be seen as an unavoidable income source whereas most of the others represent more active means of obtaining income.

- ***Differences by farm economic size band.*** Some differences are apparent, including the greater prevalence of trading surplus as an income source, Basic Payment Scheme and environmental scheme payments for S farms and off-farm wages and pensions for VS farms (see also below).



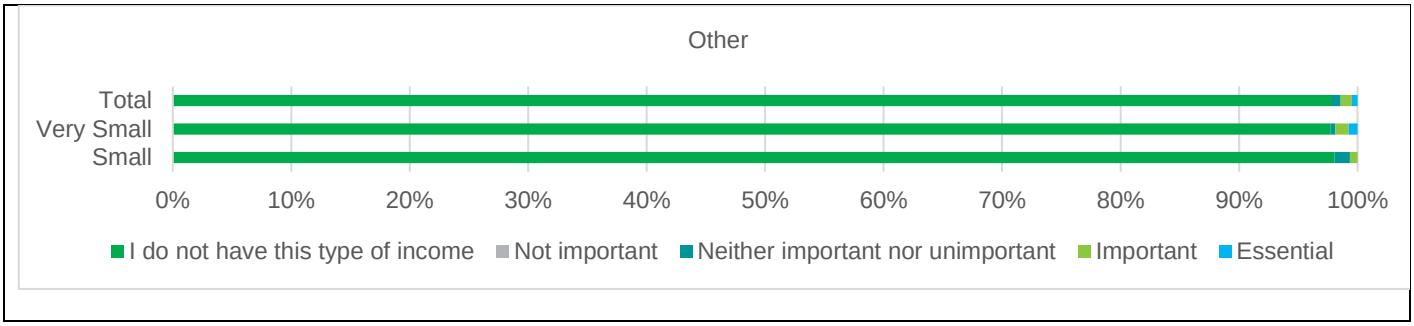


Figure 17: Please say how important these potential sources of income are to your household's income (n=419)

Source: IHS Markit.

Specifically in terms of each income source:

- ***Trading surplus.*** While trading surplus (sales minus production costs) is described as essential by a majority of farmers, this is substantially higher among the S group than among the VS group, something broadly in line with expectations. In contrast, a small minority declare that they do not have this sort of income, and this is higher (at 12%) among operators of VS farms, the corollary being that even among this group there is a perception of some trading surplus in the large majority of cases. Taking absence of trading surplus and where it is declared as not important together, 20% of VS farms have a style of operation where trading surplus is absent or unimportant. In contrast, among S farms the equivalent figure is 6%, showing the greater importance of trading surplus to household income and thus to the style of farming demonstrated.

- ***Basic Payment Scheme.*** Overall, more than three-quarters (76%) of respondents acknowledge receiving this form of income, and more than half (54%) declare it as being essential to the household. However, there are substantial differences between the VS and S groups. A far higher percentage of operators of S farms declare it essential (69%) than among the VS group (45%), something that is in line with expectations. We note that while 100 respondents do not appear to receive BPS, only 42 are below the size eligibility threshold of having at least five hectares of eligible land; it is likely that some respondents are eligible but do not claim, and it is possible that some overlooked this income source.

- ***Wages from off-farm employment and self-employment.*** Some 68% of VS farm occupiers report income from these Other Gainful Activities (OGAs) and 57% of S farm occupiers, a difference that is broadly in line with expectations and which shows an increase over time (in the WRO 2010 survey of farm households, 56% of the households on VS farms had "non-farm" income (which might encompass off-farm income other than wages as well) and 30% of S farms). Half the VS farms (49%) report that these income forms are essential, as do 29% of S farms. Confining the 'essential' assessment to only those reporting an OGA indicates that, among the VS group, for those with an OGA some 71% regard it as essential to the household; among the S group the figure is 50%. These findings are consistent with the literature that shows that off-farm income is important to the level and stability of possible consumption spending (standard of living) and to the viability of the farm-household combination as a sustainable institutional unit. Thus, an understanding of the situation of households operating VS and S farms requires their OGAs to be included.

- ***Environmental scheme payments net of costs.*** Two-thirds of S farms (66%) and half (48%) of VS farms have this form of income. The other key observation is that environmental payments are seen as essential by a third (36%) of S farms but by less than a quarter (23%) of VS farms.

- ***Pensions.*** Pensions are reported by half (50%) of the VS farm occupiers and a little less often (39%) by S farm occupiers. In 29% of VS cases there are pensions deemed to be essential to the household, and in S farms 17%. Confining consideration to only those households in receipt of pensions finds that among the VS group, in more than half of the cases with pensions (76/133 = 57%) the pension is described as essential to the household. Among the S group for those with pensions these are somewhat less essential (26/60 = 43%). These figures underline the substantial importance of including incomes from pensions to understanding the ability of farm households to consume and to remain viable as institutional units.

- ***Surplus from activities on the farm unrelated to food production.*** Although almost half of respondents report running non-agricultural activities from their holding, only a third report this form of income (no difference between VS&S operators is apparent), of which about half (18% of the total) describe this income source as essential. This is probably explained by a combination of no income from activities such as accommodation during COVID-19 lockdowns, activities such as contracting which might be carried out without formal payment and woodland where income is mainly derived when the wood is sold as timber.

- ***Return on investments (rent on property or dividends).*** Only one third (33%) report any income from investments, with little difference between the VS and S groups. Overall, about a fifth (22%) report this income source as essential or important, although this is a substantial majority (67%) of those that have this source of income.

- ***Contracting on other farms.*** Only a small minority (19%) report contracting on other farms as a source of household income (in line with the WRO (2010) finding of 21%), though this tends to be more important or essential on S rather than VS farms. This form of contracting implies business formalities and actual payment. However, it should be noted that informal sharing of labour (and equipment) across farms is a long-established practice in Wales and has made a substantial contribution to the development of social capital in the farming community (see Agra CEAS Consulting (2018) report for the Welsh Government).

The qualitative information collected from respondents on the importance of income sources was converted by our research staff to a numeric score for households where each income source is present ("essential" = 5, "not important" = 1). Excluding households where these income streams are not present provides a different perspective (Figure 18).

Environmental scheme payments ranked highest in terms of importance amongst household where they are present as a source of income and contracting ranked second highest. This might reveal the financial motivation for involvement in these activities. Interestingly, earnings from off-farm employment and self-employment rank second lowest in importance, suggesting that off-farm jobs are not, on average, seen as among the most important sources of income in total household income. This may, though, reflect a perception that this income source is simply present in the background, especially where OGAs are taken on for reasons other than financial necessity (as the literature on pluriactivity suggests is commonplace), rather than being specifically sought to add to household income as environment scheme payments or contracting might be.

Generally, there was no statistical difference in ranking by farm economic size band. However, and perhaps counter-intuitively, VS farms are statistically more likely to attach greater importance to trading surplus than S farms where these payments exist (but 12% of VS farms do not report this income source, see above), while the reverse is true for surplus from activities on the farm unrelated to food production (tourism, renewables, etc.).

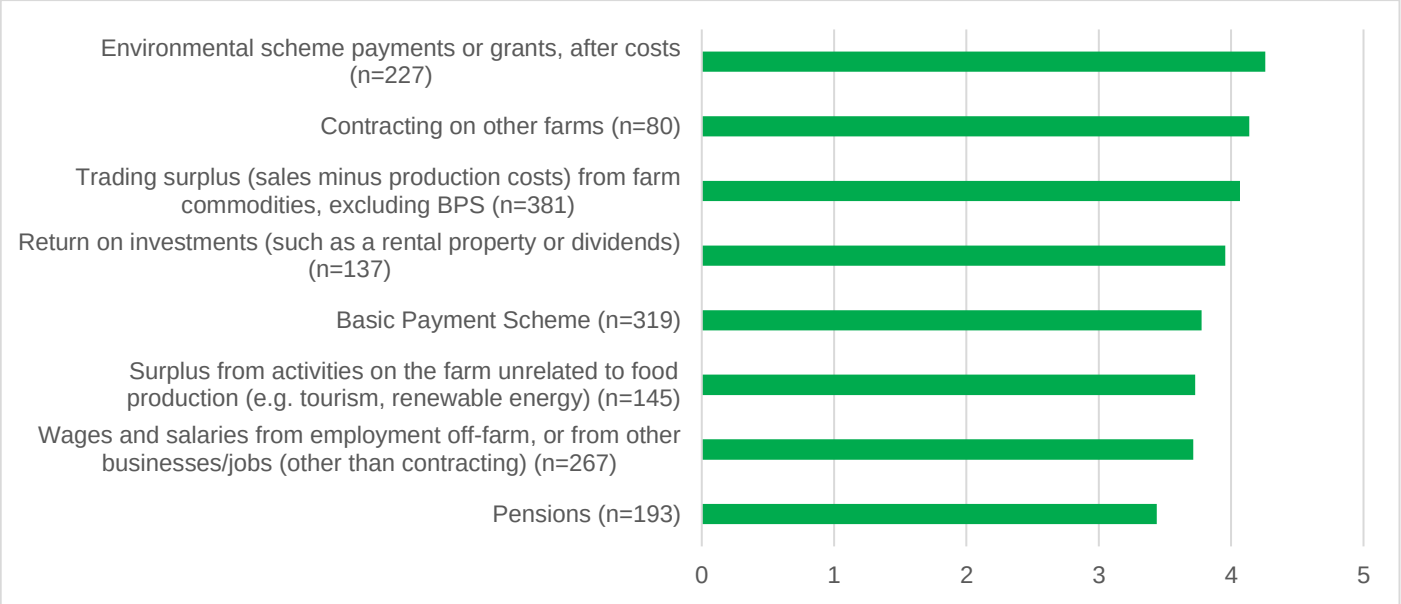


Figure 18: Ranking of importance of potential sources of income amongst those households that have them

Source: IHS Markit.

6.6 Succession

From the literature review it was evident that in Wales succession within the family has a huge influence upon decision making about the farm as a business (WRO, 2011). Succession was also a key issue in the discussions about conservation work on the farm, and presented as the main reason to ensure the future viability of the land. The WRO survey of farm households (WRO, 2010), which covered farms of all sizes, found that 60% of its sample had a likely successor to the farm, and 47% had family succession plans. The survey attached to the Welsh segmentation study found a somewhat more nuanced response (Lee-Woolf, *et al.* 2014); over half of respondents indicated that they had a firm plan in place to pass their holding on to someone else and nearly three-quarters agreed that it is important that their holding continues to be managed within their family, though there were signs that some farmers may have found it difficult to identify a suitable person to whom to pass their farm among the next generation. Cross-tabulations showed that the issue of succession did not tend to be as relevant to respondents representing 'very small – spare time' holdings, a finding that was echoed by the qualitative research findings. The authors commented that this probably reflects the lower role of inheritance as a way in which the holding was acquired.

The results from our 2021 survey of the operators of VS&S farms resonate with many of these findings and add some further dimensions. Respondents were asked whether they had thought about what they will do with their farm when they decide to stop farming. More than half (57%) have considered succession. This is marginally higher among the operators of S farms (61% c.f. 55%, significant). Almost half (47%) of respondents "strongly agree" or "agree" that they have a firm plan to pass on their holding to someone else. In contrast to those who had thought about succession, there was no difference by farm economic size band.

Amongst those who had thought about succession, almost two-thirds (64%) said that a willing successor had been identified (37% of all respondents) while 13% said that one had not yet been identified (7% of all respondents). Just under a quarter (23%) said it was too early for a potential successor to express a serious intention (13% of all respondents). More than three-quarters (78%) of those with a firm plan for succession have identified a willing successor; 18% indicated that it was too early for a potential successor to express a serious intention. Operators

on VS farms were marginally more likely to have identified a successor (66% c.f. 62%, significant), while operators of S farms were marginally more likely to say that it is too early for serious intentions to have been expressed (27% c.f. 21%).

For the majority of respondents (65% of those who had thought about succession and provided an answer), the planning horizon for succession was more than ten years; a further quarter (25%) expected succession to take place 5-10 years into the future. Only 10% stated that succession would take place within five years. There were no differences by farm economic size band. As would be expected, those who had not thought about succession, but who answered this question, placed succession more than ten years into the future.

Amongst those who had thought about succession, the majority (73%) intend to pass the farm on by gift, reflecting the family nature of the farming industry at the VS and S scale at least, and 5% by sale. There were no differences by farm economic size band.

Amongst respondents who had not identified a successor, uncertainty is the chief feature in terms of what will happen to the holding (86%). The remaining respondents were fairly evenly split on what would happen to their farm between renting (letting/leasing in some form) and selling. It should be borne in mind that some farms are tenanted and in some cases "it will be let" should be understood as the tenancy coming to an end and the landlord will find a new tenant (rather than selling with vacant possession). There were no differences by farm economic size band.

Perhaps surprisingly, only just over half (55%) of respondents agreed that it is important that the holding remains in the family, rather less than was found in the earlier segmentation survey that had a broader coverage of farm sizes. This was, though, higher among S operators than VS operators (63% c.f. 51%, significant). Operators of VS farms were more likely to neither agree nor disagree (29% c.f. 22%).

6.7 Use of Welsh language

A decade ago, the 2011 Wales population census found that 43% of those employed in agriculture, which would have covered farms of all sizes, were Welsh speakers, compared with 19% for the nation as a whole. Our previous research on the social contributions made by farming found that small farms have been attributed with cultural significance as a repository of the Welsh language (Agra CEAS Consulting, 2018). The WRO (2013a) survey of rural households, which examined in some detail the use of Welsh and the proficiency of its speakers, did not analyse according the occupation of the respondent, and its survey of farm households (WRO. 2010) did not tackle the language issue (other than offering respondents the opportunity to answer in this manner). Our 2021 survey explored the use of Welsh. Slightly more than half the respondents (53%) indicated that they could speak Welsh, with Welsh language ability slightly more prevalent among S operators (57% c.f. 51%, significant). Welsh speaking is also more common amongst younger respondents (61% of those aged 40 and under, 55% of those aged 41-65 and 46% of those aged at least 66).

Of those that can speak Welsh, two-thirds (67%) say they are fluent and a further 11% that they can speak a fair amount. This means that just over a third of the total sample are fluent in Welsh (36%). Operators of S farms are more likely to be fluent in Welsh than those on VS farms (78% c.f. 60%, significant).

Almost two-thirds (65%) of Welsh speakers speak it daily; this is more usual among S operators (75% c.f. 58%). A further 29% of operators speak Welsh weekly or less often, more commonly among VS operators (34% c.f. 22%). Some 6% of operators who can speak Welsh, never do, slightly more so among VS operators (8% c.f. 3%).

Although 16% of Welsh speakers use the language everywhere, Welsh is most commonly spoken within the household (47%), more so among S than VS farm households (52% c.f. 43%, significant). Welsh is used in the

community by 24% of Welsh speakers, this time more so by operators of VS farms (29% c.f. 17%). Welsh is spoken in work/business by 8% of Welsh speakers. Based on the patterns of usage, operators of VS farms are less likely to use Welsh within the household, but do speak Welsh in the community, perhaps because this is at times necessary.

7 Engagement in the local community

Our literature review covered engagement with the local community and the social contribution that agriculture makes. A previous study for the Welsh Government (Agra CEAS Consulting, 2018) concluded that:

- Agriculture, through its farming households, does make direct contributions to various aspects of social capital and thus to the functioning of society in rural areas and the well-being of residents there. The main forms these contributions take are to: social networking; community cohesion; social capacity and resilience; and culture (including the Welsh language). In addition, the creation of jobs and incomes by agriculture will have a social dimension.
- While the focus of interest may be on what happens within the farming community (including the benefits from cooperation in tasks such as sheep gathering), there are also impacts that extend more broadly to other members of the rural population. It is felt that the tradition of mutual support between farming households flavours the way that village communities operate.
- The perception is that the part played by farming households greatly exceeds their current numerical importance. Factors contributing to this include their ownership of land and machinery capable of use for the community (in addition to within farming), their relative permanence as residents, and the position within local organisations and governance that this often leads to.
- There is some evidence that traditional roles within the rural community have changed, and generally reduced.

However, important in the present context that focuses on VS&S farms:

- No clear picture emerged of the perceived relationship between farming types or farm size and social contributions in Wales.
- It was sometimes assumed that contributions were concentrated among small family-operated farms rather than among large farm businesses, but there is doubt on this. Lee-Woolf, *et al.* (2014) found that respondents representing 'very small-spare time' holdings tended to 'strongly disagree' that talking to other farmers was an important source of information and advice, suggesting relatively poor social networking. This is supported by feedback from focus group participants who explained they were not as well integrated into traditional farming networks as they could be.
- Operating small farms on a part-time basis, with the spouse and/or the main farmer having an off-farm job, works against them having much spare time for running village organisations. Small farms that are primarily residential lifestyle choices and supported by pensions or other off-farm incomes may afford more opportunity for activities in the community, and these will be little affected by what is happening to the prosperity of farming.
- Social interaction and farmers' integration into social networks are significant factors in farmers' decisions to establish new diversified enterprises.

Our 2021 survey of VS&S farms has collected data relevant to the notions contained in this literature.

Respondents overwhelming feel themselves to be part of the farming community, either "strongly" (50%) or "moderately" (40%). The feeling is stronger among the operators of S farms than among those of VS farms (59% c.f. 45% "strongly" and 35% c.f. 40% "moderately" adding to 94% c.f. 88%, significant). This feeling is also stronger amongst Welsh speakers (55% c.f. 44% "strongly"). When converted to a numeric scale, operators of S farms are statistically more likely to see themselves as a member of the farming community than operators of VS farms.

Respondents also overwhelmingly feel their household to be part of the rural community (95% "strongly" and "moderately"). Although there is no difference by farm economic size band, operators from S farms feel slightly more strongly about this compared to those from VS farms (62% c.f. 57%). Again, Welsh speakers feel more strongly about this (65% c.f. 52% "strongly").

The large majority of VS and S farm households participate in social and farming organisations (86%). S farm households report a higher proportion being a member of "many" such organisations (38% c.f. 28%), with VS farm households tending to report relatively "few" (58% c.f. 47%); this observation was not though statistically significant. Welsh speakers report a higher level of involvement (42% c.f. 20% "many").

Another way of assessing engagement in the local farming community is to consider the importance of talking to other farmers as a source of information and advice (Figure 19). Half of respondents (50%) say that this is "very important" with a further third (33%) indicating that this is "somewhat important". Operators of S farms are more likely to consider this "very important" than operators of VS farms (58% c.f. 45%, significant). This finding is somewhat at odds with that of Lee-Woolf, *et al.* (2014) cited above. Welsh speakers are also more likely to consider this "very important" (56% c.f. 43%).

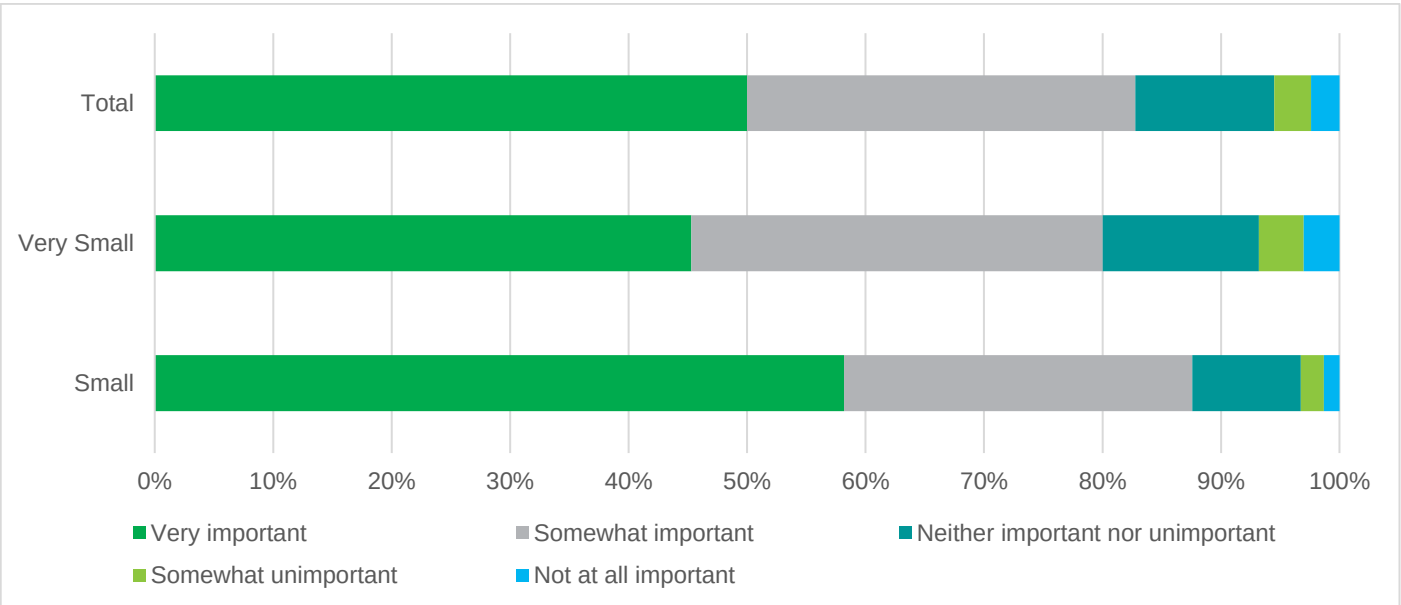


Figure 19: How important is talking to other farmers as a source of information and advice for you personally? (n=418)

Source: IHS Markit.

As part of our use of questions from the Welsh Segmentation Model, respondents were asked the extent to which they agree that collaborating with other farmers improves how they manage their farms. Almost three-quarters (72%) "strongly agree" or "agree" that it does, with less than 10% disagreeing. Operators of S farms are more likely than operators of VS farms to "strongly agree", significant. This is in line with the finding above that operators of S farms are, on average, more linked into the farming community than operators of VS farms. Those who speak Welsh are more likely to feel strongly about this (21% c.f. 14% "strongly agree"). Strength of feeling also decreases with age, with 25% of respondents 40 and under saying that they "strongly agree" compared to 16% of those over 40. Education level did not greatly influence strength of feeling on this issue.

A similar question (also part of the Welsh Segmentation Model) asked the extent to which respondents agree that they make time to socialise with other farmers. More than a fifth (22%) "strongly agree" that they do, while a

further 48% “agree” that they do. Again, operators of S farms are more likely than operators of VS farms to agree (75% c.f. 67% “strongly agree” and “agree”, significant).

Taking all this evidence together suggests that engagement in the farming and wider community is generally high, but that operators of S farms feel this more strongly, and are more engaged in the local community, than operators of VS farms. Those who speak Welsh generally have an enhanced feeling of engagement.

8 Decision making and learning

8.1 The decision-making process

Our literature review noted the importance that several researchers had attached to increasing evidence on the process by which decisions are reached in family-run farm businesses. In particular, the Welsh Rural Observatory has published a study specifically on farmer decision making, with a focus on their uptake of agri-environmental schemes (WRU, 2011). Evidence in multiple studies suggested that the concept of the principal decision-maker, commonly assumed in empirical studies in agriculture, is too simplistic, and that other family members are also involved in the decision-making process (formally or informally), particularly on large farms. However, Lee-Woolf, *et al.*, (2014), in a study in Wales found that, while for the sector as a whole nearly three-quarters of respondents made most decisions relating to their holding in conjunction with others, respondents representing 'very small – spare time' holdings tended not to draw upon the knowledge and opinion of other family members.

To throw further light on this issue, respondents to our survey of VS&S farms were asked a series of questions about how decisions are made on their holding (Figure 20). These also cater for a range of types of decision for which the processes may differ. We have brigaded these decisions into three main groups, as responses suggest that there is much in common in terms of how decisions are taken within each group. These groups are: those relating to the operation of the farm; those concerning investment in off-farm businesses and; those relating to off-farm jobs. The key points to note are that:

- ***Decisions relating to the operation of the farm*** include (i) big economic decisions that affect the way the holding is run if economic conditions get tough (e.g. control of costs, husbandry of animals, use of chemicals); (ii) existential decisions that affect the holding's ability to exist if economic conditions get tough (e.g. selling or buying of land, diversification, shedding labour); and, (iii) decisions concerning entry to agri-environment schemes and options taken up. In all cases respondents to our 2021 survey of VS&S farms in Wales found these tend to be taken by the main decision maker (33% to 38%) or the main decision maker with their spouse/partner (31% to 34%); despite asking to interview the main decision maker, it would appear that this is sometimes the spouse/partner of the interviewee, so in effect a single decision maker is a slightly more frequent occurrence than joint decision making with a spouse/partner. Other members of the household are much less involved.

- ***Decisions on investments in off-farm businesses*** appear to tend to be made jointly slightly more often and slightly less often by the main decision maker, but a closer examination shows that this is in fact not the case if decisions made by the spouse/partner and individuals themselves are aggregated together. However, it is possible that the individuals making these decisions are other household members, say a son/daughter starting a contracting business.

- ***Decisions concerning off-farm employment or self-employment*** by household members are usually taken by the main decision maker (21%), jointly with a spouse/partner (32%) or by another individual (23%).

- ***Differences by farm economic size band*** are usually small, but there is a clear pattern in that decisions tend to be more usually taken jointly with a spouse/partner on VS holdings than they are on S holdings; this applies in all cases, but is least obvious with respect to decisions about off-farm employment or self-employment. Other family members are also slightly more likely to be involved in decision relating to the operation of the farm on S holdings; this might be a function of scale in that the involvement of other family members is simply more usual on these relatively larger holdings.

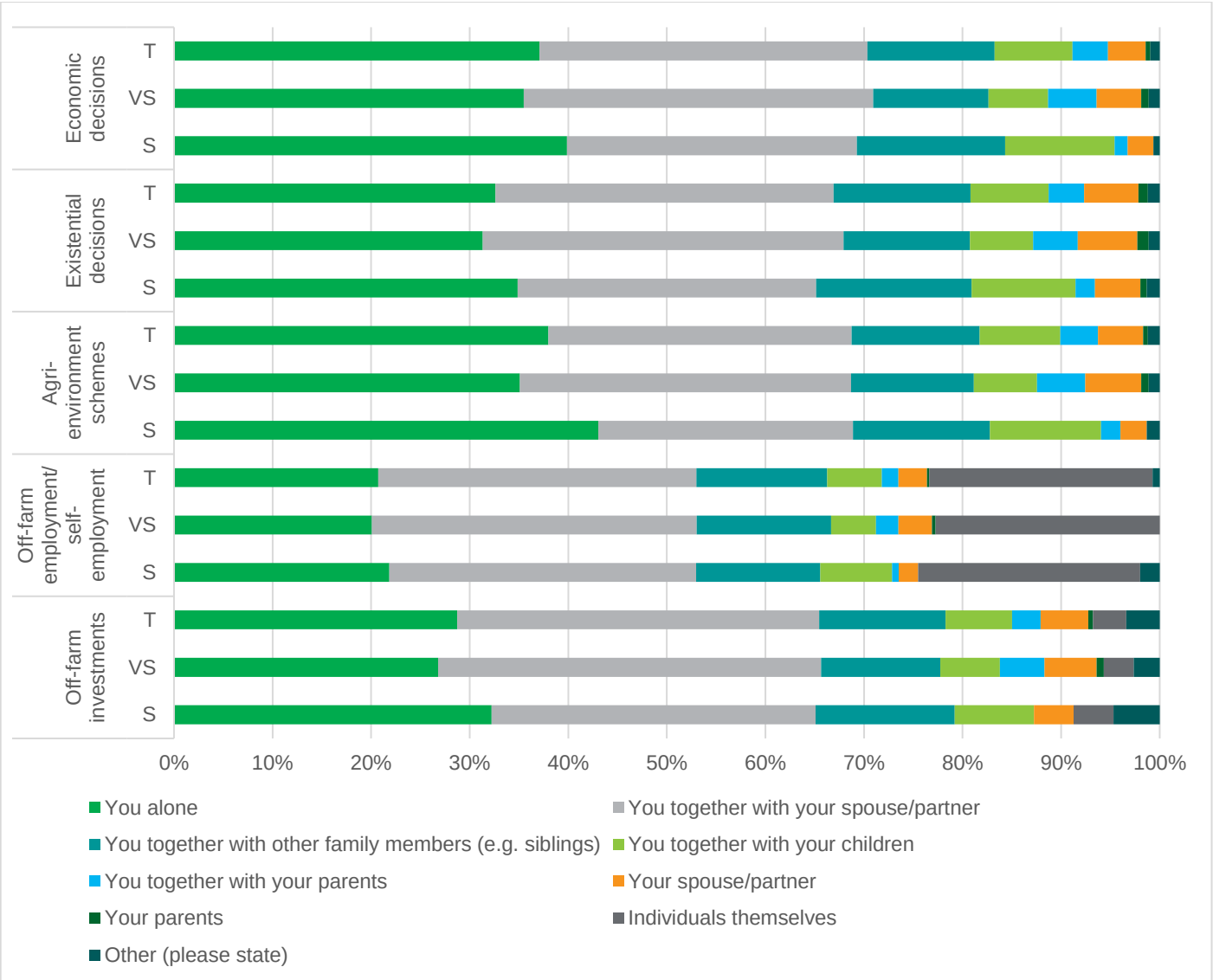


Figure 20: Who makes decisions? (n=419)

Source: IHS Markit.

The implication is that, in order to influence decisions on farm-related issues or off-farm investments, policymakers should focus on both the farmer and spouse, as targeting only the former could miss a substantial opportunity. However, and perhaps not surprisingly, when decision on off-farm employment or self-employment are concerned, these are determined by the household more broadly, reflecting it will be often the spouse or other family member who will in practice work off-farm.

8.2 Learning and skills

As part of our incorporating elements of the Welsh Segmentation Model, questions were asked in our 2021 survey of the operators of VS&S farms in Wales to what extent respondents are always actively looking to learn new skills and knowledge that can be applied to their holding. Just over a third (35%) of respondents "strongly agree"

that they are always actively looking to learn new skills while 49% "agree". Operators of VS farms are marginally more likely to "strongly agree", although this observation was not statistically significant.

Younger farmers were more likely to agree that they are always actively looking to learn new skills and knowledge that they can apply to their holding than older farmers (Figure 21).

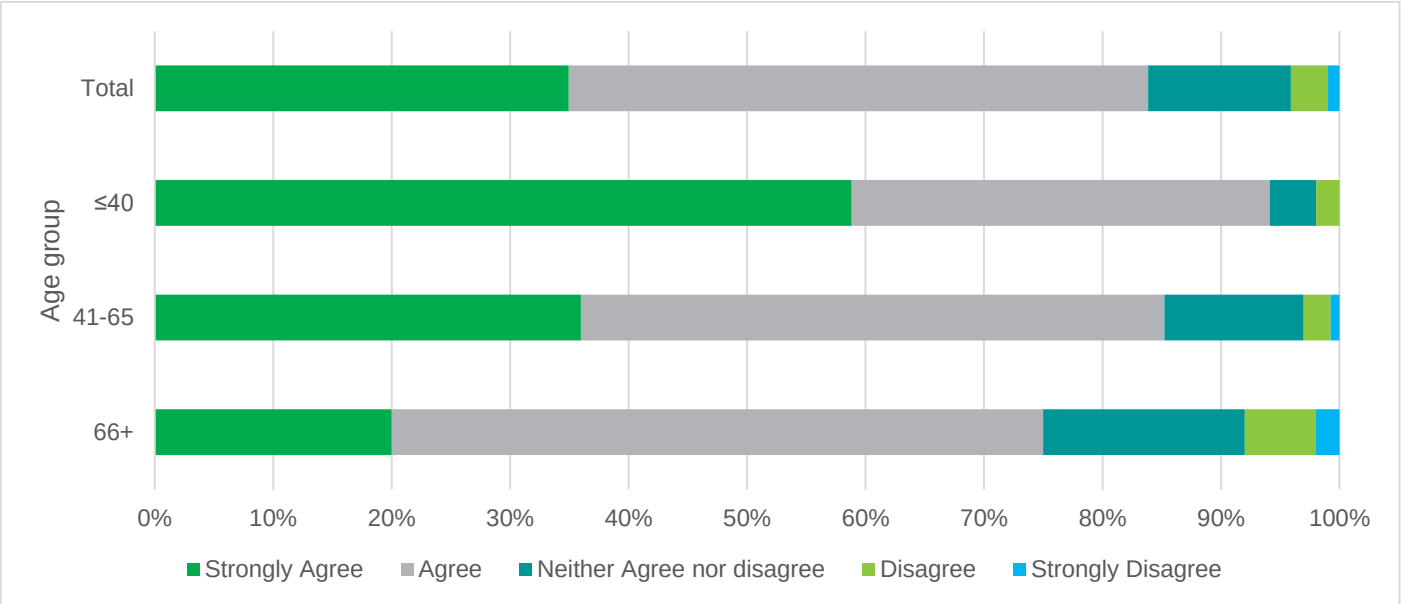


Figure 21: To what extent do you agree or disagree with the following statements: - I am always actively looking to learn new skills and knowledge that I can apply to my holding? (n=415)

Source: IHS Markit.

Respondents were also asked to what extent they are happy to take advice about managing the natural environment on their holding; again, the majority either "strongly agree" (27%) or "agree" (47%), with operators of VS farms again marginally more likely to "strongly agree", significant. The same pattern was evident with respect to age, albeit less pronounced.

Respondents are open to new technology with two-thirds (66%) "strongly agreeing" or "agreeing" that they are keen to adopt and apply new technology on their holding as it becomes available. There was no difference in this regard by farm economic size band. The pattern with respect to age was similar to that shown in Figure 21.

Respondents were asked how interested they are in accessing information or advice about farming on the internet. While the majority (63%) of respondents say they are interested to some degree, this is a marginally more frequent response from operators of VS farms (65% c.f. 60%). Some 15% of respondents indicate that they are not interested in accessing information or advice on the internet, a finding more frequently encountered among the operators of S farms (19% c.f. 12%, not statistically significant). As might be expected, interest in accessing information on the internet decreased with age.

In summary, operators of VS and S farms say that they are always actively learning, are happy to take advice about managing the natural environment, are open to new technology and to accessing information and advice on the internet. However, operators of VS farms are marginally more likely than operators of S farms to feel strongly about these issues. Younger farmers are more interested in learning and receiving advice than older farmers.

9 Reasons for farming

Before examining stated reasons for farming, it is useful to consider the extent to which respondents view their farm as a business and the perceived importance of the environment.

9.1 The farm as a business

Our review of literature on VS&S farms found, especially in the constituent countries of the UK, a complex mix of attitudes, intentions and reality when it comes to seeing the farm as a commercial business. Creators of typologies may deem particular units to be non-commercial in the sense that they do not, or could never because of factors such as small size, be capable of generating a surplus that could provide the livelihood of the households that operate them. On the other hand, operators often declare that they aim to operate their farms in a business-like manner, which implies obeying the norms of commerce by considering marginal relationships and aiming for a surplus over costs, even if in reality this is rarely achieved. Studies in the UK have found a marked resistance among some farmers to the notion that their farming is a 'hobby', though this label is often applied by investigations that focus on the small end of the farm size spectrum for circumstances where the main source of living is off-farm income and the farms seem to be primarily a place of residence that provides a lifestyle. The complexity of the mix is well articulated in a recent study of non-commercial farms in Scotland (Sutherland *et al*, 2019).

In our 2021 survey of the operators of VS&S farms in Wales, almost three-quarters of total respondents see their farm primarily as a business (73%); this equates to 81% of the total Standard Output contributed by respondents. This is much more likely among operators of S farms than those on VS farms (83% c.f. 67%, significant). However, when asked to what extent they agreed that their holding is more of a business than a lifestyle choice, approximately a third agreed, a third disagreed and a third neither agreed or disagreed (Figure 22). Again, operators of S farms were more likely to agree that their farm is more of a business than a lifestyle choice.

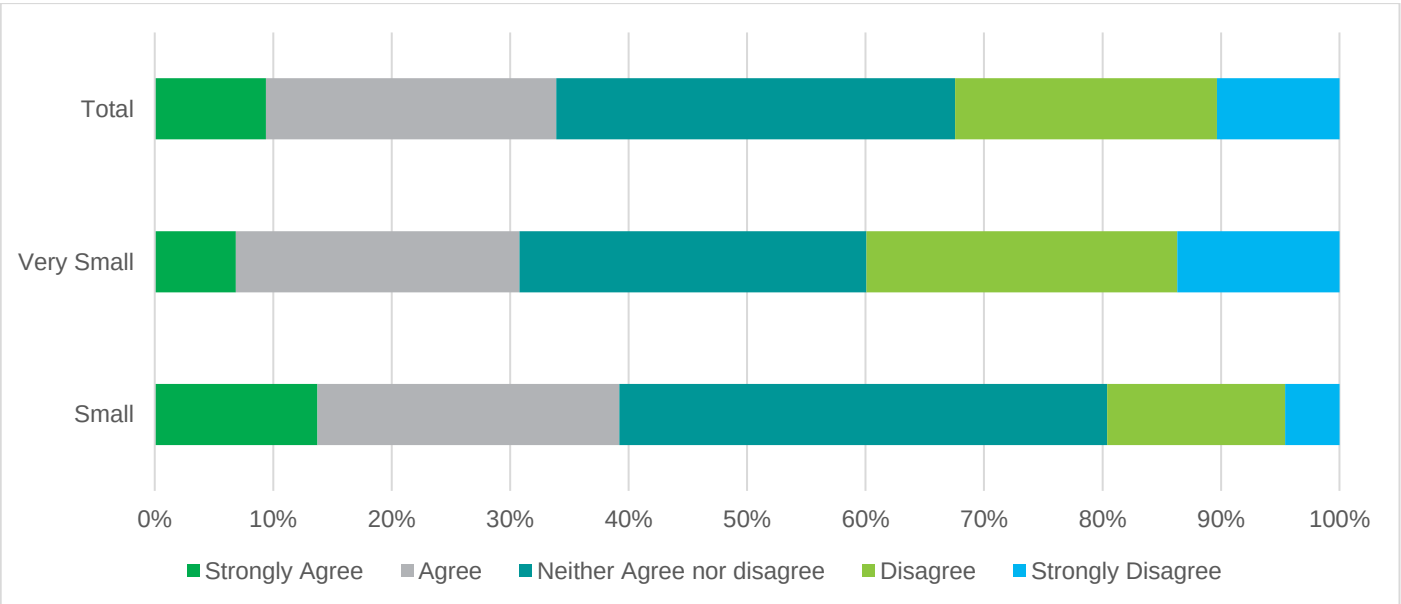


Figure 22: To what extent do you agree or disagree with the following statements: - I consider my [farm/smallholding/hobby farm] to be more of a business than a lifestyle choice? (n=416)

Source: IHS Markit.

Bringing these two questions together to assess coherence shows that 44% of respondents who see their farm primarily as a business also agree that it is more of a business than a lifestyle choice. In keeping with this, two-thirds (67%) of respondents who do not see their farm as a business disagreed that it is more of a business than a lifestyle choice. As Figure 23 shows, a substantial minority of respondents appear to see their farm as both a business and a lifestyle choice, irrespective of whether they also see the farm as primarily a business.

Operators of VS farms are more likely than those of S farms to disagree that their holding is more of a business than a lifestyle choice, having said that they see their farm primarily as a business than operators of S farms (22% c.f. 16%), although this is not statistically significant.

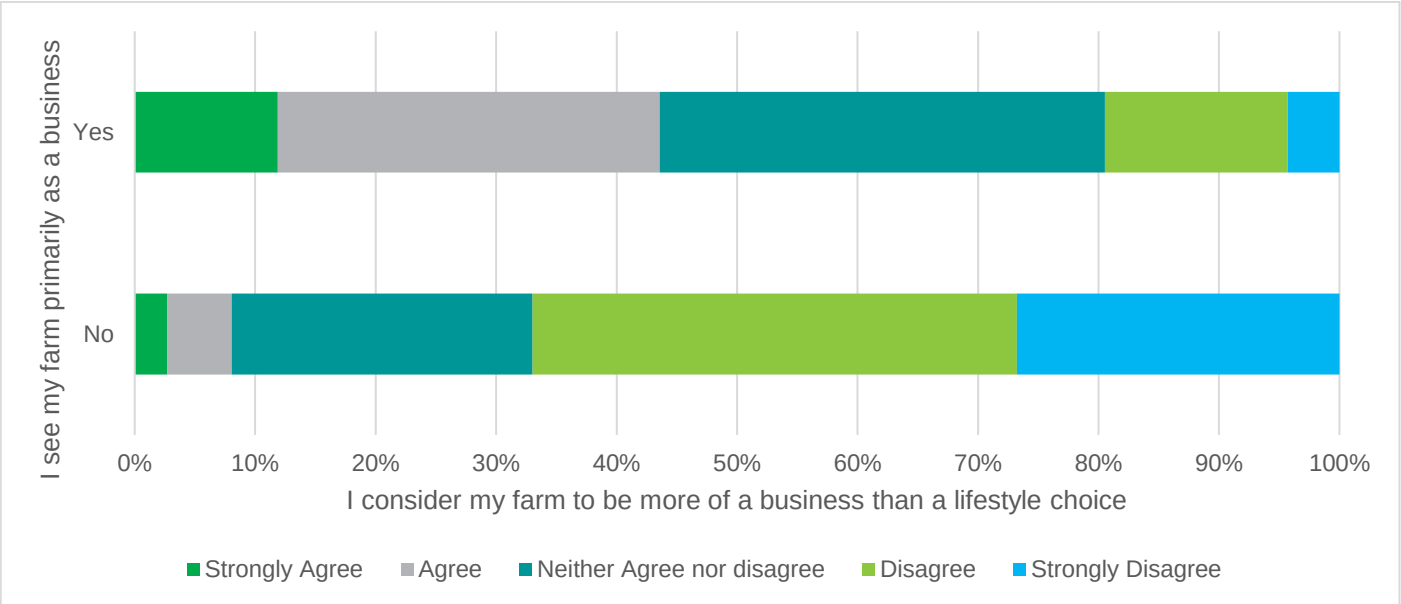


Figure 23: I see my farm primarily as a business versus To what extent do you agree or disagree with the following statements: - I consider my [farm/smallholding/hobby farm] to be more of a business than a lifestyle choice? (n=415)

Source: IHS Markit.

One of the Welsh Segmentation Model questions (which we incorporated into our 2021 survey) asks to what extent farmers agree or disagree that achieving a good quality of life is more important to them than maximising income from the holding. More than three-quarters (77%) either "strongly agree" or "agree" with this statement while only 3% either "disagree" or "strongly disagree". This confirms the finding above that while the farm may be seen as a business, a majority of farmers in the S and VS economic size groups appear not to prioritise income over quality of life. Operators of VS farms are more likely to "strongly agree" than operators of S farms (37% c.f. 29%, significant).

While those who see their farm primarily as a business are less likely to agree that achieving a good quality of life is more important than maximising income from the holding (73% c.f. 88%), the main point is that even amongst this group, nearly three-quarters believe that lifestyle is more important than income maximisation.

This analysis of business and lifestyle motivations is very important because it sets a baseline from which to understand the context of respondents' other answers. This is in line with the literature, which suggests that the orientation is towards a business-like approach and the intention to make a surplus, even if this is not maximised or even turned into reality. VS&S farm occupiers are not willing to declare their farming as a hobby, even if that might be a more objective assessment. However, they are, on probing, willing to admit that lifestyle choice is

important, more so than maximising their income from the holding, even where the farm is considered to be primarily a business.

9.2 The importance of the environment

Our literature review found that, although the common perception is that the occupiers of small farms were more inclined to farm in a manner that is environmentally friendly, empirical evidence showed a more complex pattern, reflecting *inter alia* landscape type. More than three-quarters of respondents (79%) to our 2021 survey of the occupiers of VS&S Welsh farms consider that embracing environmental conservation is extremely or very important to the future of their farming household, and this is slightly more the case in VS farms (80% c.f. 75%), although this is not statistically significant (Figure 24). Only a very small proportion consider environmental conservatism to be not at all important, slightly more so on S farms.

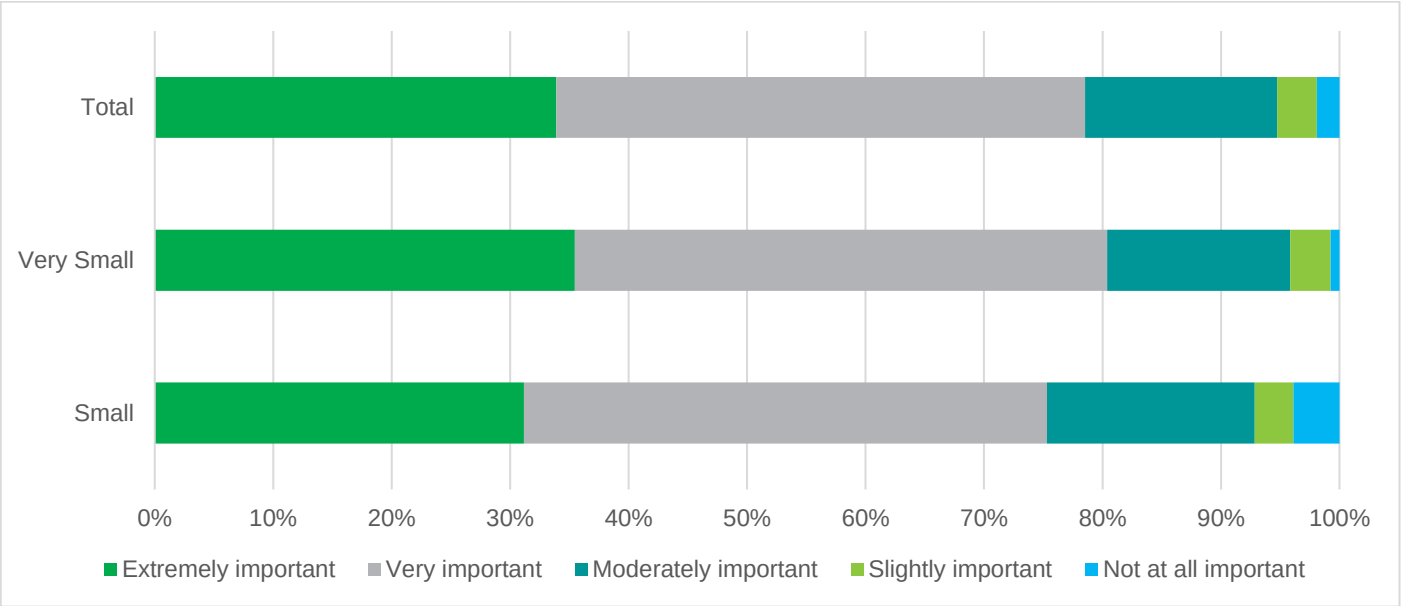


Figure 24: How important do you think embracing environmental conservation is to the future of your farming household? (n=419)

Source: IHS Markit.

Our 2021 survey adopted a question on the environment taken from the Welsh Segmentation Model; respondents were asked to what extent they agree that all holdings should strive to be as environmentally sustainable as possible. Two-fifths (40%) of our respondents "strongly agree" while 48% "agree"; only 2% "disagree". The strength of feeling on this issue is slightly stronger among operators of VS farms than those on S farms.

9.3 Typology of reasons for farming

Our literature review explained that Gasson (1973) found four basic types of farmer orientation, with associated values and goals. Individual farmers have different blends of these orientations. Later authors developed this typology and we added some additional refinements before asking respondents a series of questions about their reasons for being in farming (which may not be the same as those that shaped their entry into farming, often many years ago, and often not really choices, such as being born into a farming family). The questions asked (see below) allowed us to understand the absolute and relative importance of the following different, but sometimes overlapping and mutually reinforcing, groups of motivating factors:

- ***Instrumental*** – making a satisfactory income; safeguarding the income for the future; expanding the business; providing congenial working conditions.
- ***Social*** – gaining recognition and prestige; belonging to the farming community; continuing the family tradition; working with other members of the family; maintaining good relationships with workers.
- ***Expressive*** – feeling pride of ownership; gaining self-respect for doing a worthwhile job; exercising special abilities and aptitudes; the chance to be creative and original; meeting a challenge, achieving an objective, personal growth of character.
- ***Intrinsic*** – enjoyment of work tasks; preference for a healthy outdoor farming life; purposeful activity, value in hard work; independence – freedom from supervision and to organise time; control in a variety of situations.

Our literature reviews explains that Gasson (1973), using a sample of farms in England that spanned all sizes, found that, overall, the intrinsic and expressive motivations were dominant – the enjoyment of the very process of farming and of the associated independence, and the challenge it presents. Instrumental and social motivations were of a lower order of importance. Of relevance in the present context, small scale farmers placed particular emphasis on intrinsic aspects, such as the independence they enjoyed, whereas larger farmers, although still basically intrinsically motivated, attached relatively more importance to the commercial aspects of farming. However, the pattern was not simple. Some social values were rated more highly by small farmers, such as working close to home and family. Small farmers above certain income levels appeared to be interested in maximising satisfaction rather than money income, though there may have been an element of circularity in their thinking; the low rating of high incomes by small farmers may have been a reflection of their inability to generate much income from farming because of size limitations, leading to them disparaging such levels.

Intrinsic factors in farming

Intrinsic factors are broken down by specific question in Figure 25. The first point to note is that all these motivational factors score highly compared to those in the social, expressive and instrumental groupings. The most frequently cited intrinsic reason for the decision to farm is a preference for a healthy outdoor life which was cited as "very important" by more than three-quarters (77%) of respondents. Operators of VS farms are slightly more likely to cite this factor as "very important" than operators of S farms (78% c.f. 74%), although this was not statistically significant. Enjoyment of the work tasks of farming is cited as a "very important" motivational factor by 72% of respondents, with no difference by farm economic size band. Independence and being in control of the situation is cited as a "very important" motivational factor by two-third (66%) of respondents, with operators of S farms more likely to consider this factor "very important" than operators of S farms (70% c.f. 64%), although this was not statistically significant. Finally, just over half of respondents say that the enjoyment of activities that conserve or improve the environment is a "very important" motivating factor; this was cited slightly more frequently by operators of VS farms (58% c.f. 50%), although this was not statistically significant. While none of these intrinsic motivational factors are widely considered to be unimportant, it is noticeable that operators of S farms are twice as likely as those of VS farms to consider the enjoyment of the work tasks of farming "unimportant", although this was not statistically significant.

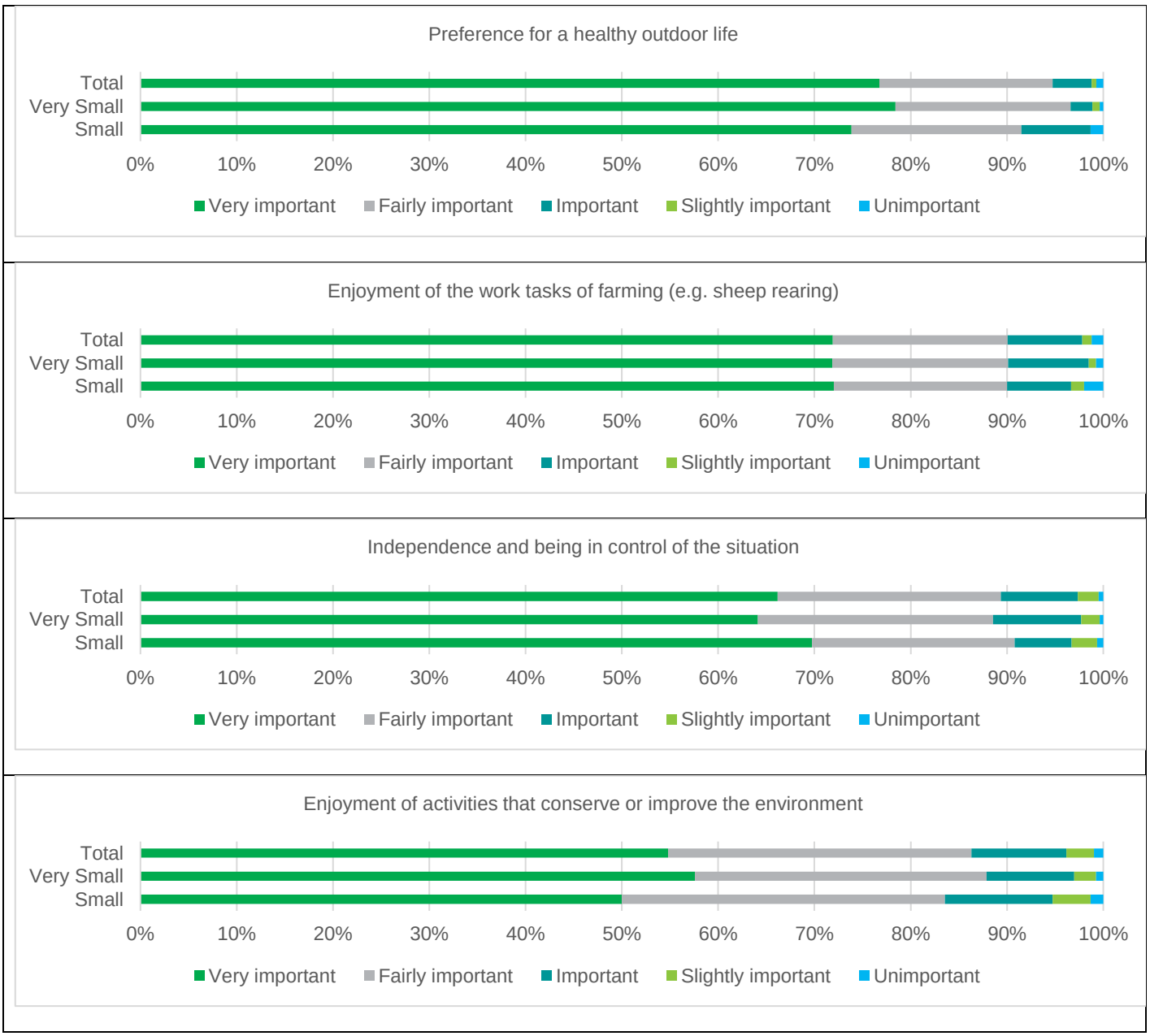


Figure 25: Importance of intrinsic factors in the reason to farm (n=419)

Source: IHS Markit.

The information collected on the importance of the different intrinsic motivational factors given by respondents was converted by the research team to a numeric score ("very important" = 5, "unimportant" = 1). This confirms the order of these factors in terms of relative importance. None of the differences by farm economic size band were statistically significant.

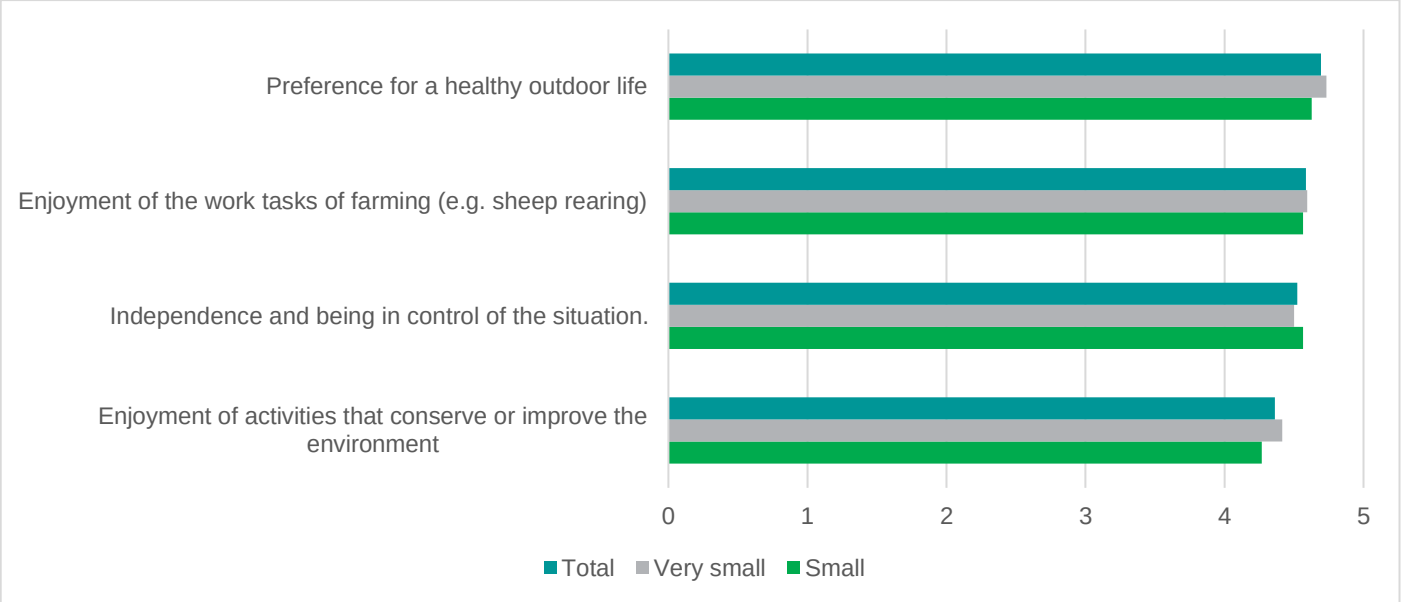


Figure 26: Scoring of specific intrinsic factors in the reasons to farm (n=419)

Source: IHS Markit.

Social factors in farming

Social factors are broken down by specific question in Figure 27. Two-fifths (42%) of respondents say that it is "very important" to belong to the farming community; this is much more important to operators of S farms than to those of VS farms (50% c.f. 38%, significant). There is no real difference between the groups with respect to belonging to the wider rural community; 41% of respondents cite this as "very important". This appears to suggest that while both groups see themselves as embedded in the rural community, operators of S farms are more likely to see themselves as belonging to the farming community, or at least to consider it important that they belong to this community. While 38% of respondents say it is "very important" to carry on a family tradition, this is far more important to operators of S farms than to operators of VS farms (48% c.f. 32%, significant). This difference between the groups is also apparent with respect to the importance of working with other family members; this is "very important" as a motivational factor for a third (33%) all respondents, but for 39% of operators of S farms compared to 29% of operators of VS farms (significant). Only 17% of respondents say it is "very important" to gain recognition and prestige as a farmer (22% of operators of S farms c.f. 14% of operators of VS farms, not statistically significant). The majority (64%, n=70) of those for whom gaining recognition and prestige as a farmer is "very important" also say it is very important to belong to the farming community. This is far more likely to be the case for operators of S farms than for operators of VS farms (76%, n=33 c.f. 54%, n=37, significant). As might be expected, the majority of respondents (57%, n=154) who think it "very important" to carry on a family tradition also say that it is "very important" to work with other members of the family, irrespective of farm economic size.

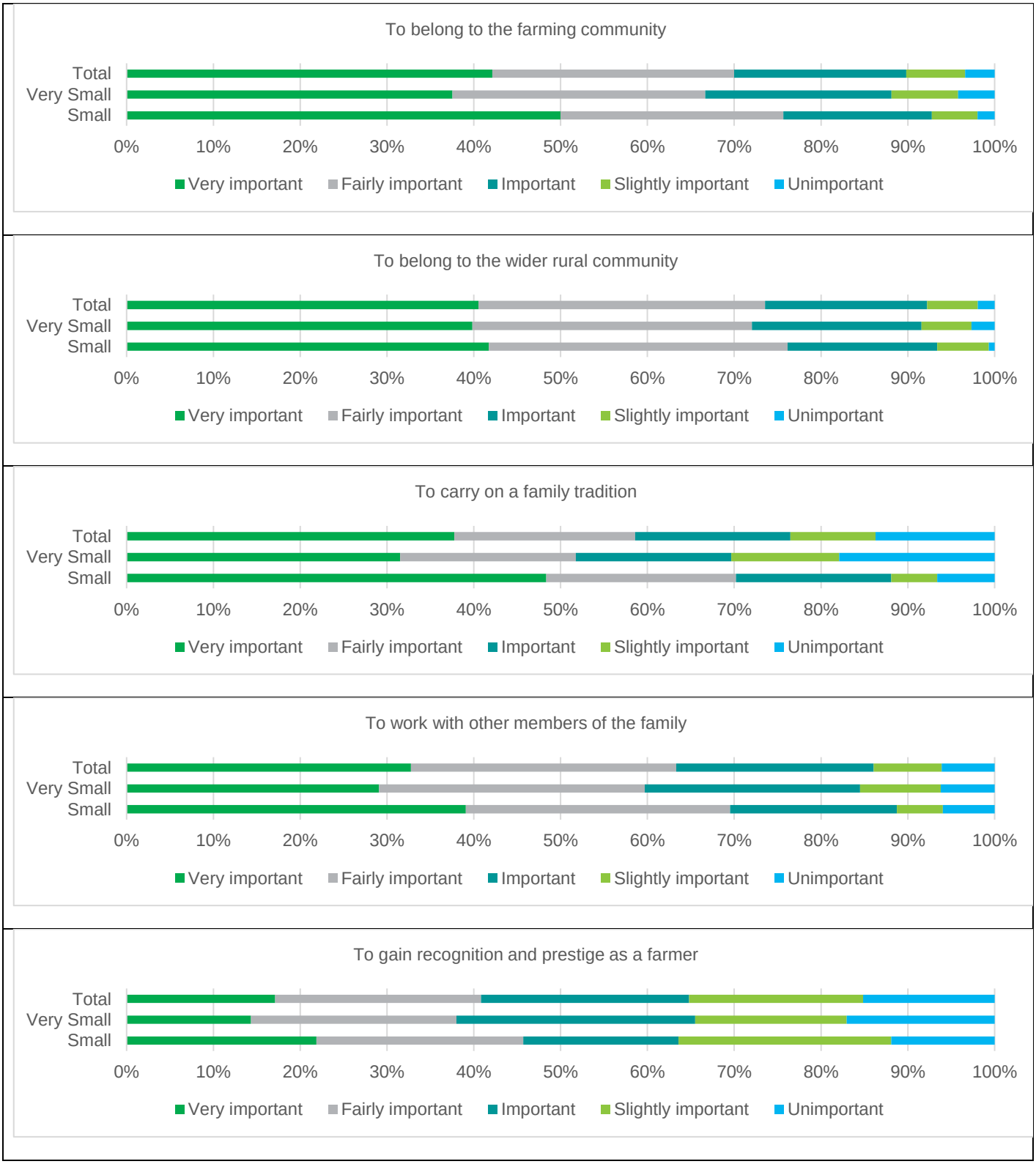


Figure 27: Importance of social factors in the reason to farm (n=419)

Source: IHS Markit.

When converted to a numeric score, belonging to the wider rural community appears to be more important than belonging to the farming community, where opinion is more polarised (Figure 28). It is statistically significant that operators of S farms are more likely to say that they are motivated by belonging to the farming community than operators of VS farms. It is also statistically significant that operators of S farms are more likely than operators of VS farms to say that they are motivated by the desire to carry on a family tradition and to work with other family members.

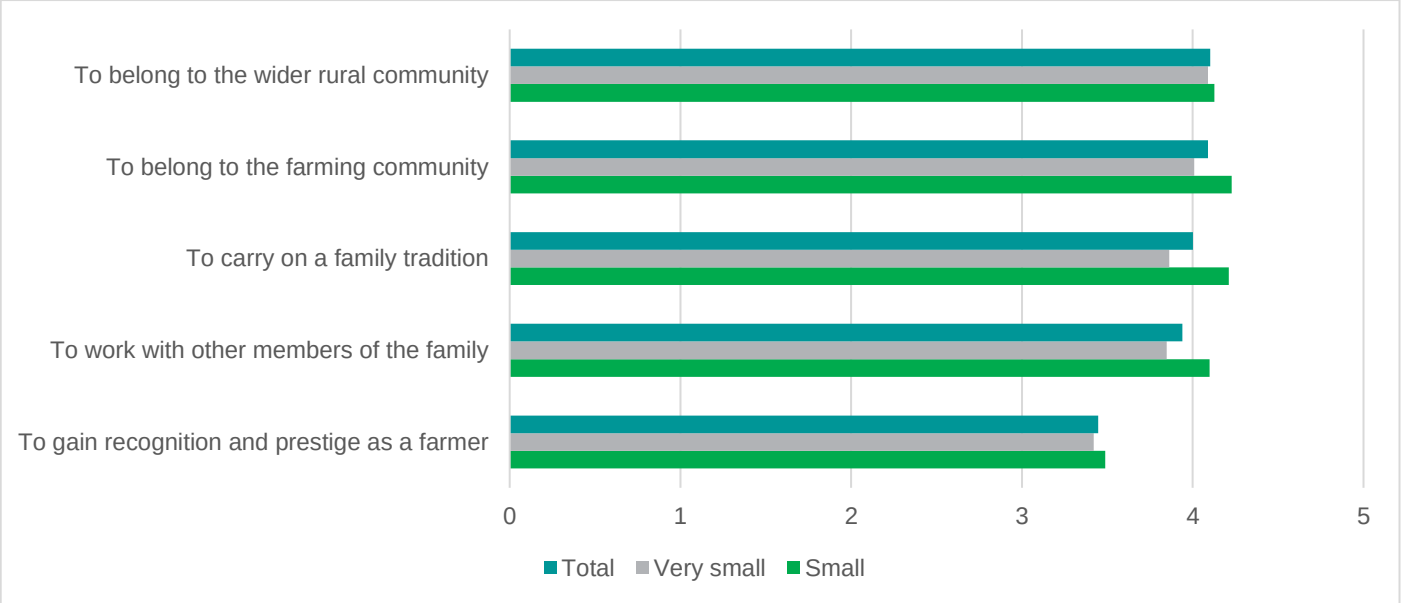


Figure 28: Scoring of specific social factors in the reasons to farm (n=419)

Source: IHS Markit.

Expressive factors in farming

Expressive factors are broken down by specific question in Figure 29. The expressive motivation most frequently cited as being "very important" is feeling pride in managing the environment (46%); only one respondent said that this is "unimportant". The other expressive motivational factors are generally less frequently mentioned as being "very important", but are typically more frequently mentioned as being "very important" or "fairly important" by operators of S farms rather than operators of VS farms. It is particularly noteworthy that operators of S farms are more likely than operators of VS farms to say that gaining self-respect for doing a worthwhile job is "very important" (42% c.f. 32%, significant); the difference between the two groups is exacerbated if "very important" and "fairly important" are considered together (83% c.f. 67%).

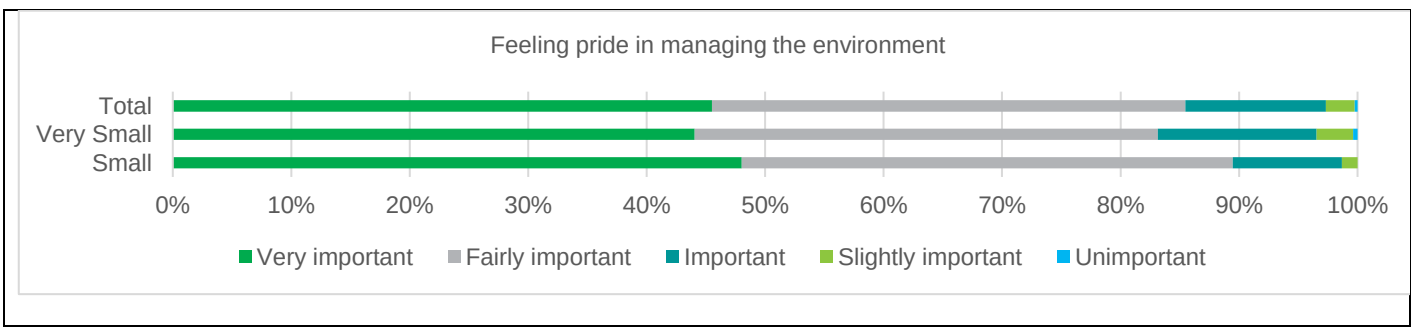


Figure 29: Importance of expressive factors in the reason to farm (n=419)

Source: IHS Markit.

The only statistically significant difference between the two groups when converted to a numeric score is that operators of S farms are more likely to be motivated by gaining self-respect for doing a worthwhile job (Figure 30).

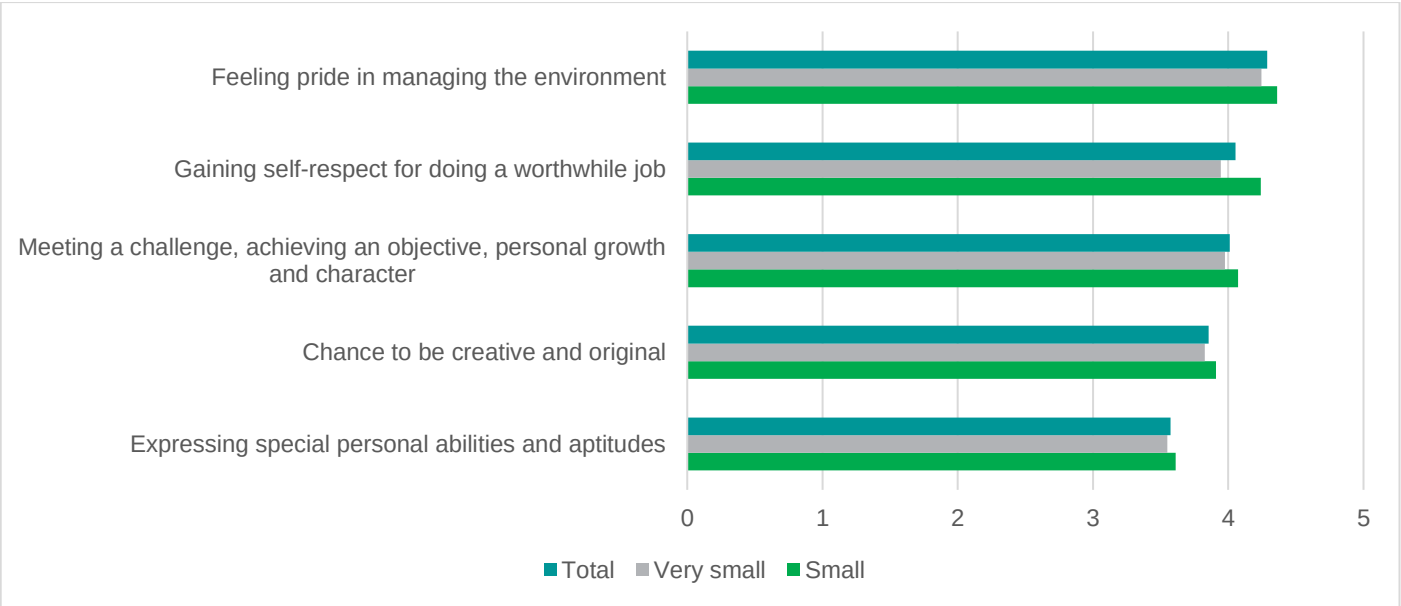


Figure 30: Scoring of specific expressive factors in the reasons to farm (n=419)

Source: IHS Markit.

Instrumental factors in farming

Instrumental factors are broken down by specific question in Figure 31. Although farming as a way of generating an income for living is said to be "very important" most frequently by the sample as a whole, there is a large difference between the two farm economic size groups. Half the operators of S farms (49%) say generating an income is a "very important" motivation compared to 35% of operators of VS farms (significant). Adding "very important" and "fairly important" together generates figures of 78% and 56% for S and VS operators respectively.

Operators of S farms are also more likely than operators of VS farms to say that farming as a way of building a business is "very important" (42% c.f. 27%, significant) and that farming as a means of securing wealth and assets for the future is "very important" (37% c.f. 24%, significant).

In contrast, operators of VS farms are more likely to say that farming as a way of providing attractive housing and living conditions is a "very important" motivational factor (39% c.f. 35%), although this was not statistically significant.

Finally, only 8% of respondents say that minimising their tax burden was "very important" as a motivating factor. This is by far the smallest positive response to any of the potential motivating factors, although of course it does not stop farmers benefiting from favourable tax arrangements. It is also possible that respondents may have been reluctant to cite this as a motivational factor due to social desirability bias.

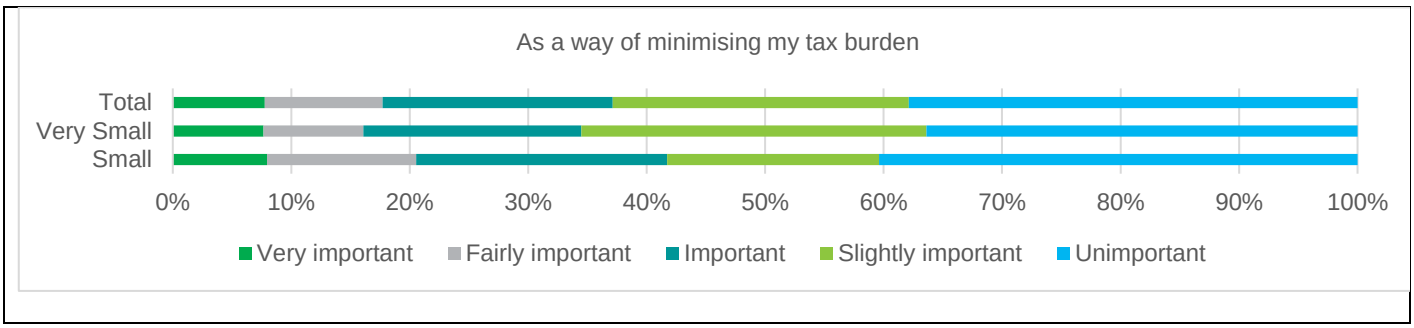


Figure 31: Importance of instrumental factors in the reason to farm (n=419)

Source: IHS Markit.

Figure 32 shows the instrumental factors converted to a numeric score. On this measure, providing attractive working conditions and attractive housing and living conditions are considered to be more important motivating factors than generating an income. In combination with Figure 31, this highlights the polarisation within responses on generating an income; while it is very important for some, it is considered "unimportant" by enough to reduce its overall score; not many respondents consider attractive working and living conditions to be "unimportant". There is, though, a clear difference by economic size group, with operators of S farms statistically significantly more likely than operators of VS farms to consider generating an income, building a business and securing wealth and assets for the future to be important motivating factors. This may well reflect a greater tendency among this group to see the farm as a multi-generational undertaking.

While *a priori* it might have been thought that operators of VS farms would be more likely to look for attractive housing and living conditions, given that they might be expected to more often buy land rather than take over a family holding, there is in fact no statistical difference between the groups with respect to this motivational factor. In fact, operators of S farms who bought land ranked attractive housing and living conditions higher than operators of VS farms buying land.

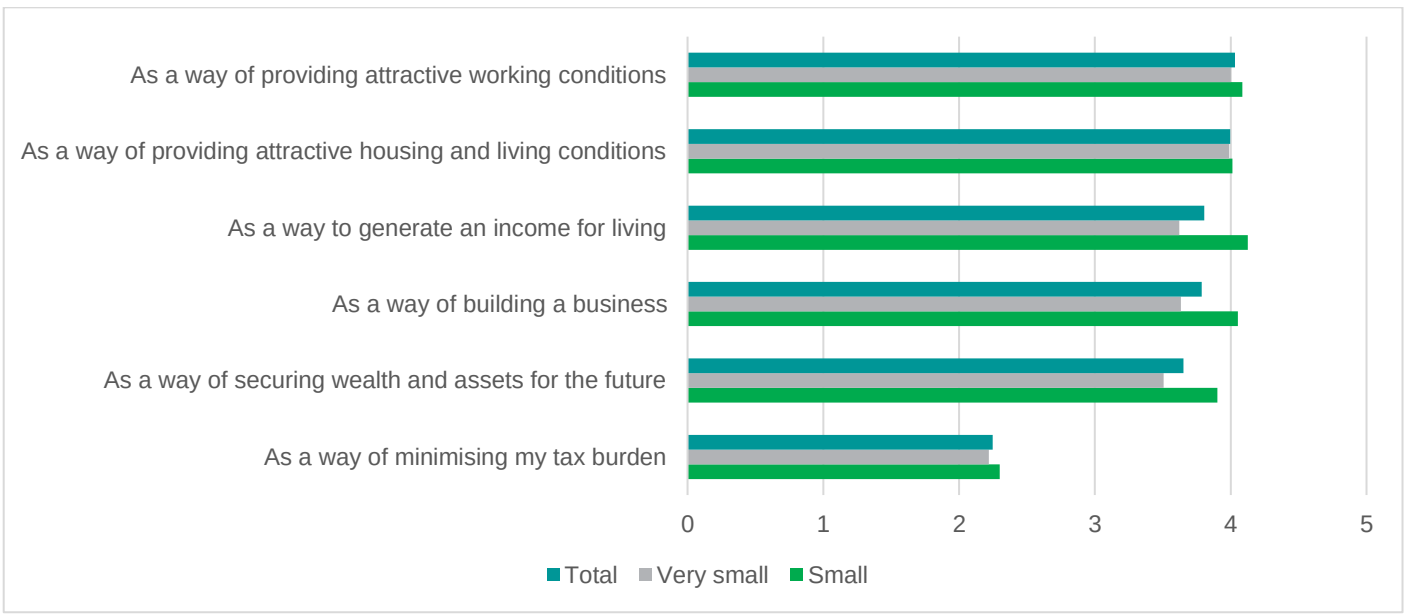


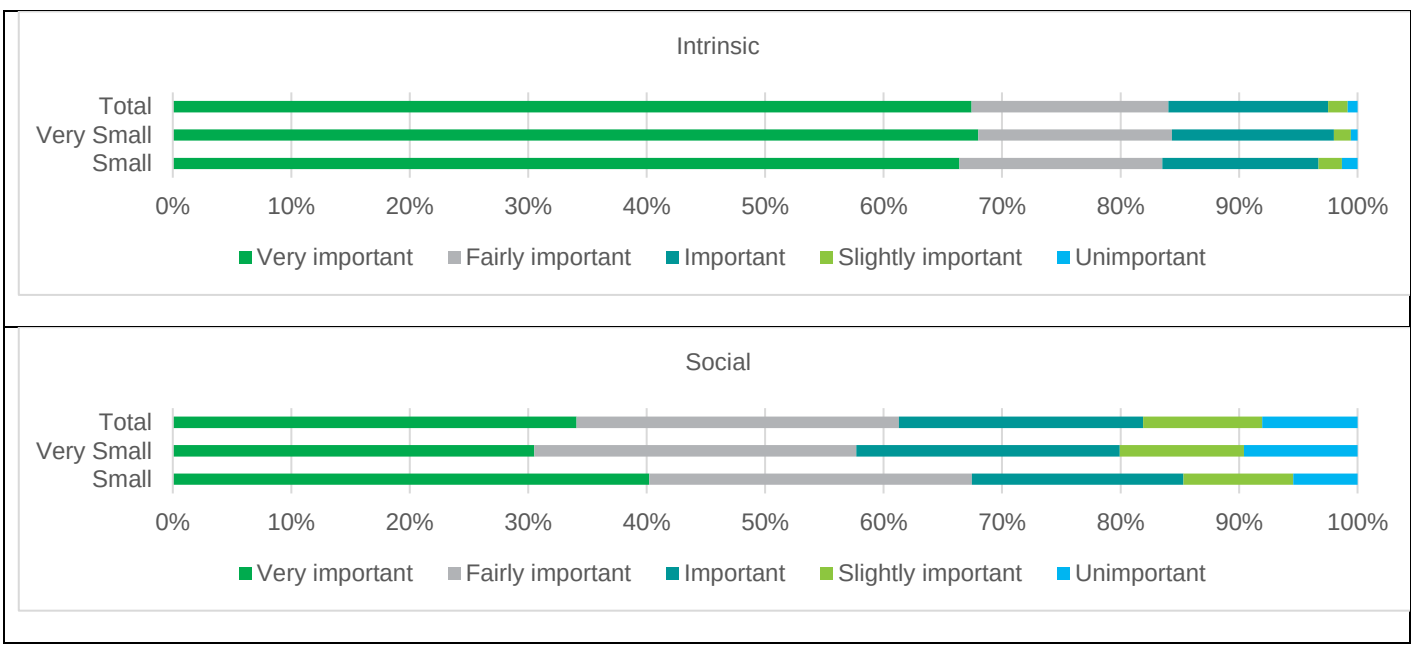
Figure 32: Scoring of specific instrumental factors in the reasons to farm (n=419)

Source: IHS Markit.

Overview of main motivational factors

Following the above account of the responses to individual question that relate to each of the four orientations listed above, these can be aggregated to produce an overview of the main groups of motivations for being in farming. This provides a handy way of comparing with earlier work. Our survey results for VS&S farms in Wales are in line with those of Gasson in terms of the general dominance of intrinsic orientations, though by only covering this part of the farm size spectrum we are unable to draw comparison with declared motivations of occupiers of larger farms.

We first examine the degrees of importance attributed to individual questions by respondents and average their responses across all questions in each group. Figure 33 shows that respondents to our 2021 survey overwhelmingly report ***intrinsic*** factors as the most important reasons for them being in farming with, on average 67% saying that these reasons are "very important". The next most frequently cited group of reasons are ***social***, where 34% of respondents claim these are "very important" in their being in farming. Operators of S farms are more likely to cite this sort of motivating factor than operators of VS farms (40% c.f. 31%), although this was not statistically significant. Some 30% of respondents claim that ***expressive*** factors are "very important" to them; this is slightly more likely for operators of S farms than for those of VS farms (33% c.f. 28%, significant). If "very important" and "fairly important" are considered together, then expressive factors as a group would be more important than social factors. This suggests that both groups are important, but that there is a greater strength of feeling about social factors for some. Finally, 30% of respondents cite ***instrumental*** reasons for farming; again, operators of S farms are more likely to cite these factors than operators of VS farms (34% c.f. 28%, significant). Instrumental reasons are the most polarised, with the largest proportions of respondents saying that these are unimportant (10%); 8% of respondents feel that social reasons are unimportant. In contrast, only 2% of respondents claim that intrinsic factors and expressive factors are unimportant.



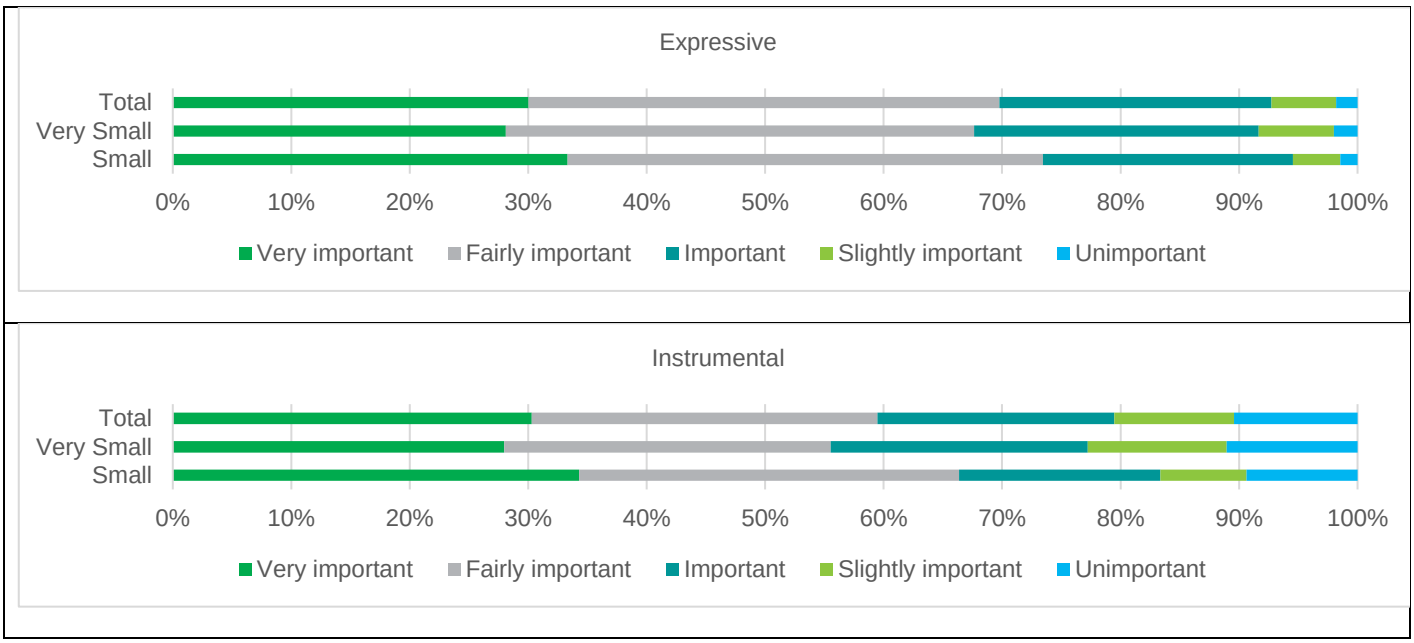


Figure 33: Brigading of motivations for choosing to farm (n=419)

Source: IHS Markit.

In a second stage, the information collected on the importance of the different factors that were used to brigade reasons for choosing to farm was converted to a numeric score for each respondent ("very important" = 5, "unimportant" = 1); our assumption is that each qualitative description is equidistant numerically. This produces the ranking of average scores shown in Figure 33, which confirms that intrinsic reasons are considered to be the most important, but expressive rather than social reasons become the second most important group as a result of the large proportion of respondents who consider these "fairly important" and the relatively high proportion of respondents that say these are "unimportant". All observations were found to be statistically significant apart from the social composite variable, for which there was uncertainty in the data.

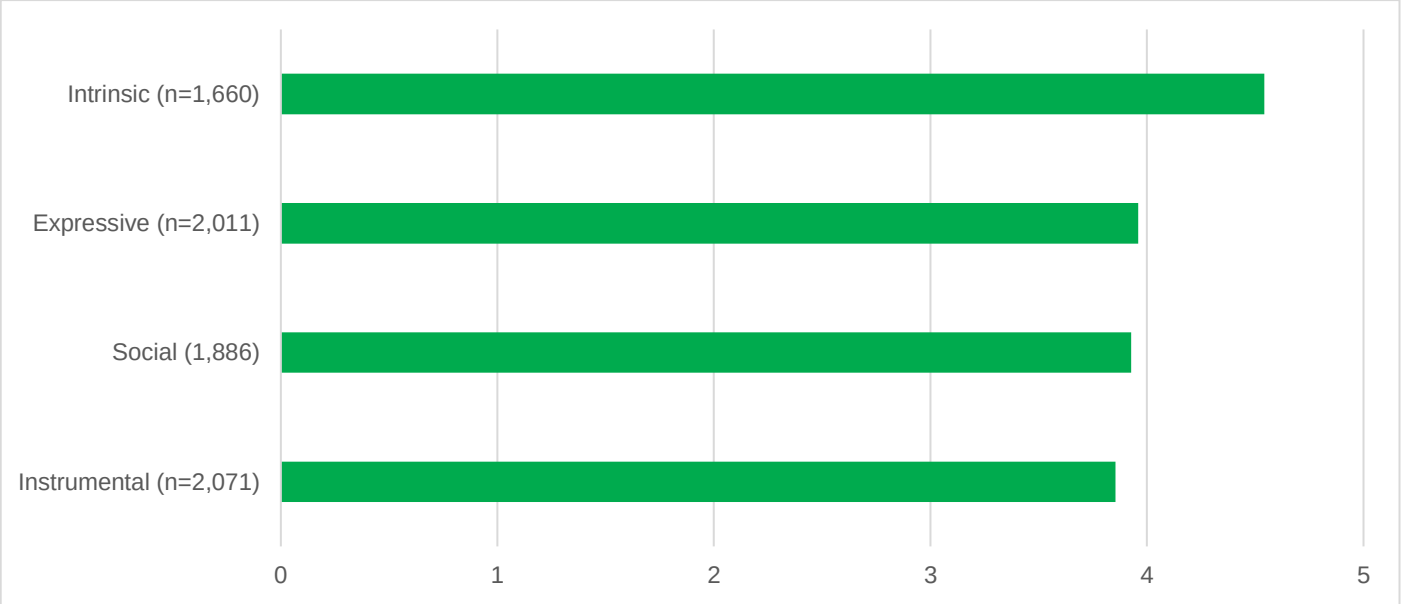


Figure 34: Ranking of importance of reasons for choosing to farm

Source: IHS Markit.

Table 1 ranks each specific motivating factor according to its numeric score ("very important" = 5, "unimportant = 1) by farm economic size group. Each group of motivating factors is colour coded as follows: Intrinsic motivations; Expressive motivations; Social motivations; and, Instrumental motivations.

Thirdly, and in a development of the methodology, an index of deviation from the total sample is also shown for each motivating factor to highlight whether the score by farm economic size is above or below the score for the sample as a whole (which is set at 1,000). This index is also shown in Table 1. This allows both a comparison of relative rank, i.e. the difference between motivating factors ***within*** farm economic size group, and a comparison ***between*** farm economic size group within each motivating factor. In this way Table 1 brings together the analysis above, but also adds an additional layer of insight.

The first general point to note is that this table highlights the fact that for most motivating factors there is little difference in score between the operators of VS and S farms. The second general point is that operators of S farms generally provide higher scores for specific motivating factors; the average score across all motivating factors is 3.90 for operators of VS farms, 4.04 for operators of S farms and 3.95 for bother groups together. This means that some caution is required when making comparisons between groups and specific motivating factors at the same time.

The intrinsic group of motivating factors are clearly the most important to operators of both VS and S farms and there is a marked difference between the importance of this group of factors and the other three groups. Taken as a whole, expressive and social motivating factors are of greater importance than instrumental factors which contribute four of the lowest six ranked factors for the sample as a whole. However, here differences between the operators of VS and S farms begin to become apparent. For example, operators of VS farms are more likely to be motivated by the enjoyment of, rather than pride in, managing the environment; these motivational factors are reversed for operators of S farms. This suggests a slightly greater focus on outward perception on the part of operators of S farms.

Operators of VS farms appear to distinguish between specific instrumental motivating factors more than operators of S farms with attractive working conditions and attractive housing and living conditions ranked more highly than the other instrumental factors for this group.

While social motivating factors which relate to belonging are ranked similarly by operators of VS&S farms, the sense of family is stronger among operators of S farms who rank carrying on a family tradition and working with other members of the family more highly than operators of VS farms.

Instrumental motivating factors tend to be ranked as more important by operators of S farms compared to operators of VS farms; this is especially the case for income generation, building a business and securing wealth and assets for the future. This may chime with the greater emphasis on carrying on the family tradition across the generations.

Operators in both groups consider gaining recognition and prestige as a farmer and minimising the tax burden to be the least important motivating factors.

Finally, the only cases where operators of VS farms score individual motivating factors more highly than operators of S farms are (in order of difference from the sample as a whole): (i) enjoyment of activities that conserve or improve the environment; (ii) preference for a healthy outdoor life; and, (iii) enjoyment of the work of farming. This highlights the specific importance of these motivational factors as a point of difference between the operators of these two farm economic size bands.

Table 1: Comparison of motivations for choosing to farm by farm economic size (n=419)

VS farms (index of deviation from total sample = 1,000)		**S farms (index of deviation from total sample = 1,000)**	
Preference for a healthy outdoor life	1008	Preference for a healthy outdoor life	986
Enjoyment of the work tasks of farming (e.g. sheep rearing)	1002	Enjoyment of the work tasks of farming (e.g. sheep rearing)	996
Independence and being in control of the situation.	995	Independence and being in control of the situation.	1009
Enjoyment of activities that conserve or improve the environment	1012	Feeling pride in managing the environment	1017
Feeling pride in managing the environment	990	Enjoyment of activities that conserve or improve the environment	979
To belong to the wider rural community	997	Gaining self-respect for doing a worthwhile job	1046
To belong to the farming community	980	To belong to the farming community	1034
As a way of providing attractive working conditions	992	To carry on a family tradition	1052
As a way of providing attractive housing and living conditions	998	To belong to the wider rural community	1006
Meeting a challenge, achieving an objective, personal growth and character	991	As a way to generate an income for living	1084
Gaining self-respect for doing a worthwhile job	973	To work with other members of the family	1040
To carry on a family tradition	965	As a way of providing attractive working conditions	1014
To work with other members of the family	976	Meeting a challenge, achieving an objective, personal growth and character	1015
Chance to be creative and original	992	As a way of building a business	1070
As a way of building a business	960	As a way of providing attractive housing and living conditions	1004
As a way to generate an income for living	952	Chance to be creative and original	1014
Expressing special personal abilities and aptitudes	994	As a way of securing wealth and assets for the future	1068
As a way of securing wealth and assets for the future	960	Expressing special personal abilities and aptitudes	1011
To gain recognition and prestige as a farmer	992	To gain recognition and prestige as a farmer	1012
As a way of minimising my tax burden	987	As a way of minimising my tax burden	1023

Source: IHS Markit.

10 Responses to the UK leaving the EU

This study of VS&S farms in Wales was required to assess the effects individual motivations and decisions will have on intentions for action given the possible scenarios for trade and proposed changes to farm support mechanisms. Our literature review examined some 40 UK studies, many of which used scenarios, and several of which were specific to Wales. The period between the outcome of the 2016 Referendum on the withdrawal of the UK from the EU up to the start of 2021, when the new trading arrangements between the UK and EU began to apply, as did national agricultural policy which replaced the CAP in Wales, was one of great uncertainty for the operators of VS and S farms. Our survey, conducted early in 2021 (after the end of the withdrawal transitional period and near the start of the new trading arrangements and domestic agricultural policy) attempted to capture information both on what had been the impact of anticipated shifts in the economic and regulatory circumstances during this period of uncertainty (that is, decisions that have already been taken) and the changes that were intended now a clearer picture (though not one fully defined) was emerging (decisions that are anticipated, though with a range of likelihoods possible). A distinction was drawn between, on the one hand, the impact on the farm and farming and, on the other, the impact on the household of the farm operator. These changes can be expected to reflect the motivations of farm operators falling into these classes of economic size.

In order to better to understand the way that our information on motivation relates to responses by farmers to the UK leaving the EU, two additional forms of analysis were undertaken.

(a) Classification of operators according to their dominant motivational factors

Respondents were grouped according to their dominant motivational factors. Respondents were assigned to the group for which their individual scores were highest compared to the average for the sample as a whole. This resulted in the following breakdown: intrinsic (n=89), instrumental (n=130), social (n=121) and expressive (n=79). In many cases this disaggregation did not reveal differences in the answers to specific questions relating to changes associated with the UK leaving the EU. However, where differences between disaggregated groups were found, these have been commented on.

It is interesting to note that the average age of respondents categorised as “instrumental” is 52.9 while those categorised as “intrinsic” have an average age of 57.6 (those categorised as “expressive” and “social” have average ages of 55.7 and 55.4 respectively). This is consistent with the expectation that younger farmers will tend to be more likely to be motivated by earning an income and building a business while older farmers tend to be motivated more by the enjoyment of the tasks.

(b) Classification of operators according to intensity of motivating factors

Another disaggregation focused on whether individuals were generally more or less likely to give high scores to the (brigaded) motivating factors. One group (“enthusiasts”, n=87) was defined by giving higher than average scores within each of the four brigaded motivational factors and another by giving lower than average scores within each of these groups (“pessimists”, n=64). The majority of respondents did not fall into either camp (“neither”, n=268). There is some relationship with farm economic size, with proportionally more “pessimists” being operators of VS farms than the sample as a whole (69% c.f. 63%) and proportionally fewer being “enthusiasts” (59% c.f. 63%) in line with this groups generally lower motivational scores (see above). Again, this disaggregation did not always reveal difference in the answers to specific questions, but where insightful, these are mentioned.

10.1 Engagement in discussions about farm support mechanisms after leaving the EU

As a preliminary to questions on actual or anticipated actions, respondents were first asked whether they felt they had been adequately engaged in discussions about future farm support mechanisms when the UK has left the EU. Only a quarter felt that they had been (25%), while 57% felt that they had not been; 18% were not sure. Operators from S farms were marginally more certain in their view either way (significant).

The formulation of the question suggests a passiveness on the part of the respondent, i.e. engagement as something that happens to one. Respondents were asked whether they would be happy to be recontacted in six months to see if any of their views had changed; just under two-thirds (62.5%) were. This provides a measure of willingness to actively engage which appears higher than that suggested above.

10.2 The expected impact of leaving the EU on income from agricultural activities

A majority of respondents (57%) feel that their income from the combination of agricultural activities, basic payments and Glastir will decrease as a result of the UK leaving the EU, with this a much more common response from operators of S farms (68% c.f. 51%, significant). The timing of the survey was after the new trading and cooperation arrangements between the UK and EU had been announced and, while the details of the national agricultural policy for Wales had not been made explicit, it was clear that there would be a shift away from direct payments towards payments for public goods. This is likely to explain why operators of S farms, who are more likely than operators of VS farms to be in receipt of BPS payments and to consider this an essential income source, were more likely to expect their income from agriculture to decline. Only 9% of respondents feel that their combined income from these sources will increase.

Those primarily motivated by instrumental factors are more likely to expect their income to decrease (65%), while the intrinsic group are more likely to expect their income to remain broadly the same (40% c.f. 34%), the same proportion as operators of VS farms as would be expected given the substantial overlap between these groups. “Enthusiasts” were more likely to expect their income to increase (12%).

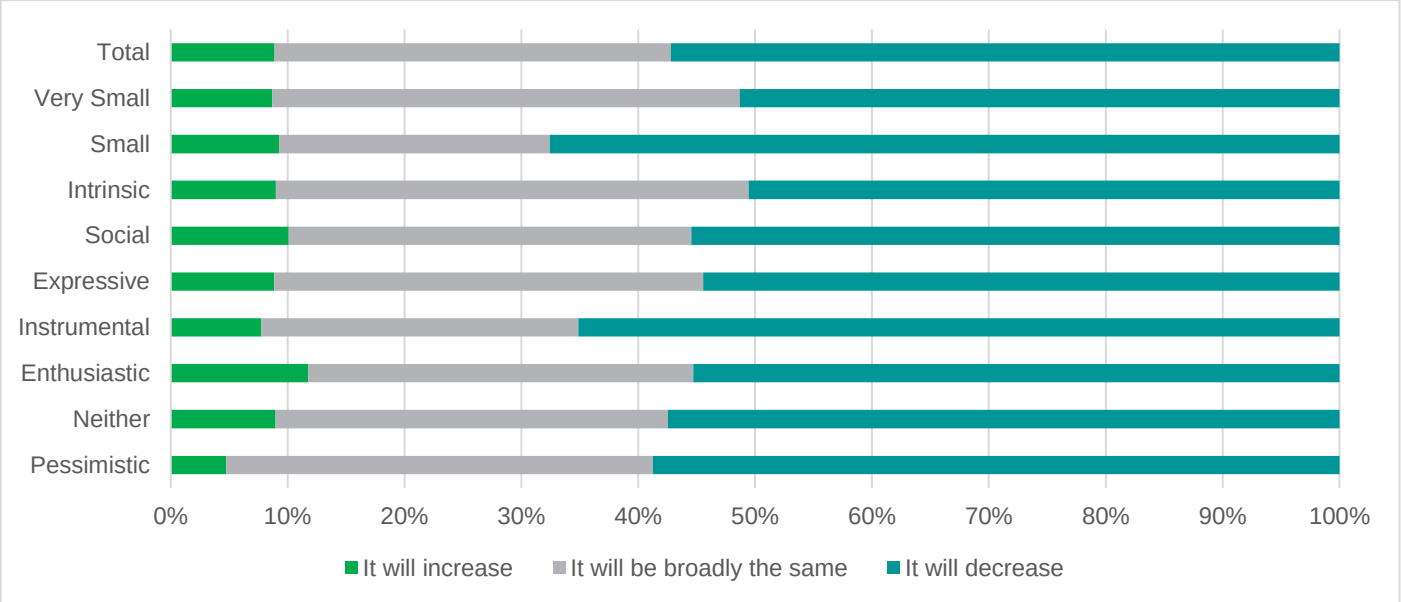


Figure 35: How do you think the UK leaving the EU will affect your total income from agricultural activities, basic payments and Glastir? (n=416)

Source: IHS Markit.

Operators of VS&S sheep farms are more likely to expect income from agriculture to decrease as a result of leaving the EU (65% c.f. 57%) while there is no difference expected by operators of beef farms; operators of beef and sheep farms have expectations between these responses, suggesting that there is an expectation of a decrease in agricultural income in the sheep sector specifically.

There is a marked difference in response to this question depending on whether or not the respondent sees their farm primarily as a business. Some 65% of this group that see it primarily as a business expect income from agriculture to decrease compared to just 35% in those that do not see it this way.

Respondents who think that embracing environmental conservation is "not at all important" to the future of their farming household are more likely to expect a decrease in income from agriculture (38% c.f. 57%), perhaps reflecting an expectation that they would not be accessing agri-environment schemes. However, this group is also marginally the most likely to expect their income from agriculture to increase (13% c.f. 9%).

10.3 Changes on the holding as a result of leaving the EU

Changes already made

Less than a third (31%) of respondents have already made a change on their holding as a result of the UK leaving the EU; slightly more operators of S farms have already made a change compared to VS farms (31% c.f. 27%, significant).

Those motivated primarily by social factors are more likely to have already made a change on their holding than those motivated by expressive factors (42% c.f. 20%), intrinsic factors (25%) and instrumental factors (32%). "Enthusiasts" are more likely to have already made a change than "pessimists" (34% c.f. 19%). These observations were, however, not statistically significant. There were no appreciable differences by farm type or whether the farm is viewed primarily as a business.

Where changes had already been made, 40% of respondents have joined an agri-environment scheme such as Glastir (Figure 36). Other changes made were much less frequently. Just under a fifth (18%) have expanded existing on-farm diversification activities while 11% have started new on-farm diversification activities. Efforts to reduce costs have been more frequent than efforts to expand production. Most of the "other" responses involved decreasing livestock numbers.

Operators of VS farms are more likely than operators of S farms to have joined an agri-environment scheme (43% c.f. 36%, not statistically significant) or to have changed enterprise mix (11% c.f. 5%); operators of S farms are more likely to have reduced the farmed area (12% c.f. 3%).

Those primarily motivated by expressive or social factors are more likely to have joined an agri-environment scheme (56% and 55%) than those motivated by instrumental or intrinsic factors (36% and 32%). Respondents from the intrinsic group are least likely to have expanded existing on-farm diversification (9% c.f. 18% for the sample as a whole). "Enthusiasts" are more likely to have joined an agri-environment scheme than "pessimists" (47% c.f. 33%) and are more likely to have expanded existing on-farm diversification activities (17% c.f. 8%).

Operators of beef and sheep farms are more likely to have joined an agri-environment scheme than either beef or sheep farmers (54% c.f. 47% and 35%). They are also more likely than either beef farmers or sheep farmers to have expanded existing on-farm diversification activities (24% c.f. 20% and 13%). Those who do not see their farm primarily as a business are far more likely than those that do to have joined an agri-environment scheme (62% c.f. 32%).

Only 16% of changes made have been affected by COVID-19. For example, new on-farm accommodation diversification activities have typically been affected by lockdown restrictions; in some cases temporarily and in others permanently. The other key impact of COVID-19 involved difficulties in selling livestock. One respondent noted that they had been unable to get on-farm advice in relation to joining Glastir.

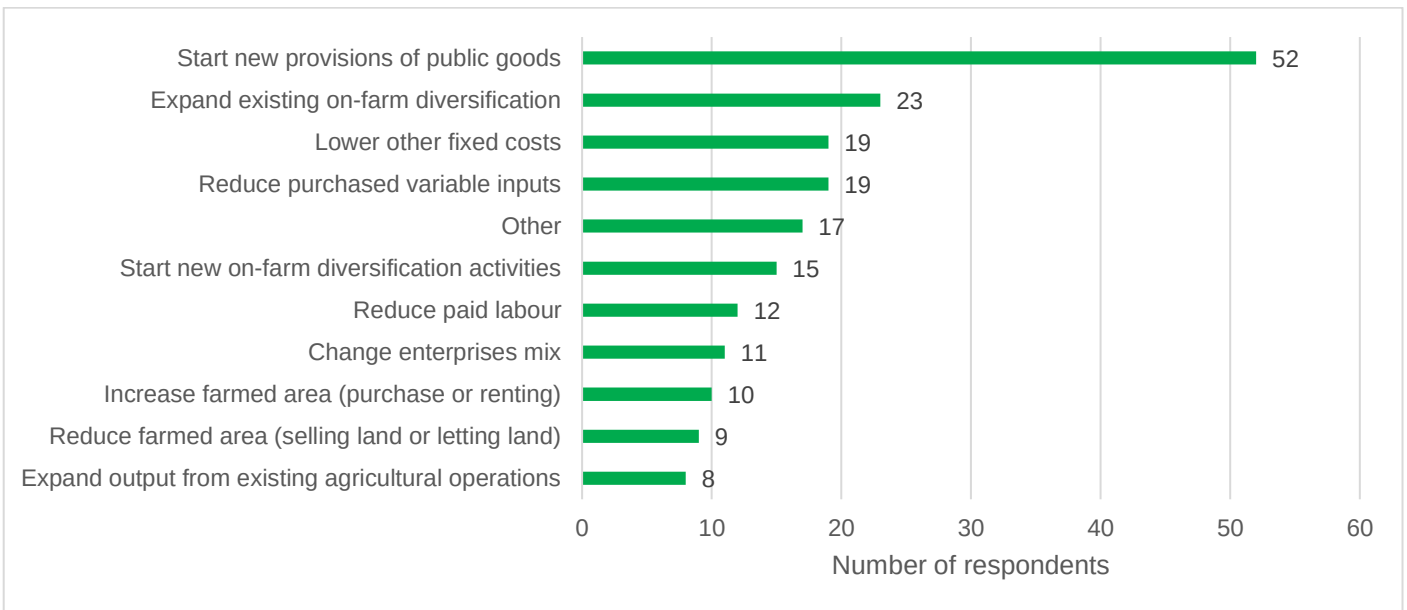


Figure 36: Have you made any changes on your holding already as a result of the UK leaving the EU? (only those who had made a change, n=131)

Source: IHS Markit.

Expected future changes

More respondents thought that they would make changes as a result of the UK leaving the EU in the next five years than had made changes already, with most expecting to make changes. Almost half (45%) thought this "extremely likely" and 12% "somewhat likely". Just under a third (31%) were undecided either way, leaving 7% thinking it "extremely unlikely" that they would make changes and 6% "somewhat unlikely". There were few differences by farm economic size band, although operators of S farms were marginally more likely to not yet have a firm view one way or the other (not statistically significant).

Figure 37 shows the types of change being considered by respondents who said they were "extremely" or "somewhat likely" to make changes. These are presented in terms of descending frequency of likelihood.

The key point to note is that starting the new provision of public goods is the only change that a majority (64%) of those expecting to make a change say they will make. The degree of certainty with which respondents hold this expectation is also noticeably greater than with respect to any other expected change. This is a predictable finding given that it has been made abundantly clear by the Welsh Government that agricultural support will shift towards the provision of public goods now that the UK has left the EU. This is consistent with the finding reported elsewhere that 79% of respondents consider that embracing environmental conservation is extremely or very important to the future of their farming household (although only 39% of respondents said that embracing environmental conservation was extremely or very important AND that they were extremely or somewhat likely to start the new provision of public goods). Operators of S farms think it more certain that they will start the new provision of public goods (30% c.f. 20%).

The only other change expected to be made by more than a third of respondents (37%) who said they would make changes was the development of new on-farm diversification activities. Operators of VS farms consider it much more likely that they will develop new on-farm diversification activities than operators of S farms.

Of the other expected changes, operators of S farms are more likely to reduce the use of purchased variable inputs such as animal feed or fertiliser than operators of VS farms (27% c.f. 21%), although this was not statistically significant. Operators of VS farms are more certain about their unlikeliness of changing their enterprise mix, though this may reflect a lesser opportunity or ability to take action; operators of S farms seem to be more open to the possibility of changing the enterprise mix. Operators of VS farms are more likely to expand their output from existing agricultural operations than operators of S farms (20% c.f. 14%), perhaps because they are currently operating less intensively and so know this is possible. Operators of S farms, on the other hand, are more likely to increase their farmed area than operators of VS farms (15% c.f. 11%). Operators of S farms appear more likely to retain the possibility of shedding paid labour, which operators of VS farms do not, perhaps because there is none to shed (see the splits between "extremely unlikely" and "somewhat unlikely"). S farm operators are also more likely to reduce the farmed area by selling or letting land (15% c.f. 6%); this is likely to be a function of tenure with S farms more likely to be renting land which is easier and less permanent to relinquish than selling land (see section 5.4). However, none of these differences by farm economic size band were statistically significant when converted to a numeric scale.

Figure 37: Do you think that you will make any changes on your holding as a result of the UK leaving the EU in the next five years? (n=226)

Source: IHS Markit.

An analysis of those "extremely" and "somewhat likely" to make a change in the next five years by primary group of motivating factors is problematic due to small numbers, but suggests that those primarily motivated by expressive factors are more likely ("extremely" and "somewhat likely", 18%) to say that they will join an agri-environment scheme than any of the other groups ("intrinsic 14%, "social 13%, "instrumental" 11%). However, this group is also more likely to say that they are "extremely unlikely" to join an agri-environment scheme showing a polarisation in responses; this is not because this group is already in an agri-environment scheme. This same polarisation is evident within the expressive group in terms of the intention to expand existing on-farm diversification. The instrumental group is more likely ("extremely" and "somewhat likely", 16%) to say that they will start new on-farm diversification activities than other groups (expressive 9%, intrinsic and social both 0%), although this is not statistically significant.

"Enthusiasts" are more likely than "pessimists" to join an agri-environment scheme (53% "extremely" and "somewhat likely" c.f. 42%); they are also more likely to say they will start new on-farm diversification activities (29% c.f. 20%).

Those who do not see their farm primarily as a business are more likely to expect to join an agri-environment scheme than those who see their farm primarily as a business ("extremely" and "somewhat likely", 24% c.f. 6%).

10.4 Changes in the household as a result of leaving the EU

Household changes already made

The key finding is that only 11% of respondents indicated that they had made changes in their household already as a result of the UK leaving the EU; respondents were explicitly asked NOT to include any changes made in response to the COVID-19 pandemic. Operators of S farms are more likely than those of VS farms to say that they had made changes already (15% c.f. 8%, significant), as were those primarily motivated by instrumental and social factors (15% and 14%) compared to those motivated by expressive and intrinsic factors (5% and 4%). "Enthusiasts" are more likely than "pessimists" to have already made changes (18% c.f. 3%), although this was not statistically significant.

Operators of beef and sheep farms are more likely to have already made a household change compared to either sheep farmers or beef farmers (24% c.f. 9% and 5%), although this was not statistically significant. Those who see their farm primarily as a business are less likely than those that do not see it this way to have made a change to their household (8% c.f. 19%).

Of those that say they have made changes, 31% involved the farmer taking or expanding off-farm employment, 45% involved the spouse taking or expanding off-farm employment and 29% involved another household member taking or expanding off-farm employment; roughly a third of cases involved some combination of household members taking off-farm employment. In 27% of cases either the farmer, spouse or another household member took or expanded off-farm self-employment in a business they owned in whole or in part. There are also cases where combinations of household members took off-farm employment and off-farm self-employment. The only appreciable difference by farm economic size band is that household members of S farms are marginally more likely than those of VS farms to have taken or expanded their involvement in off-farm self-employment (not statistically significant).

The number of respondents which had made changes to their household already was too small to allow analysis by group of motivating factors with any confidence. It is though possible to compare "enthusiasts" against the sample as a whole (but not against "pessimists" specifically). This shows that "enthusiasts" are less likely than the sample as a whole to have taken or expanded off-farm employment (19% c.f. 31%), although this was not statistically significant; they are also less likely than the sample as a whole to report that another household

member (other than themselves or their spouse) had taken or expanded off-farm employment (25% c.f. 29%, there was no difference in the incidence of spouses taking off-farm work). However, "enthusiasts" are slightly more likely than the sample as a whole to report that someone in the household took or expanded off-farm self-employment in a business in which they have a financial interest (31% c.f. 27%).

It was not possible to make a full analysis by farm type, but sheep farmers are more likely than the sample as a whole to report that the respondent has taken or expanded off-farm employment (46% c.f. 31%), although this was not statistically significant; they are less likely than the sample as a whole to report that someone in the household took or expanded off-farm self-employment in a business in which they have a financial interest (15% c.f. 27%). Differences of geography (such as remoteness from employment or self-employment opportunities) may play a part in explaining these differences.

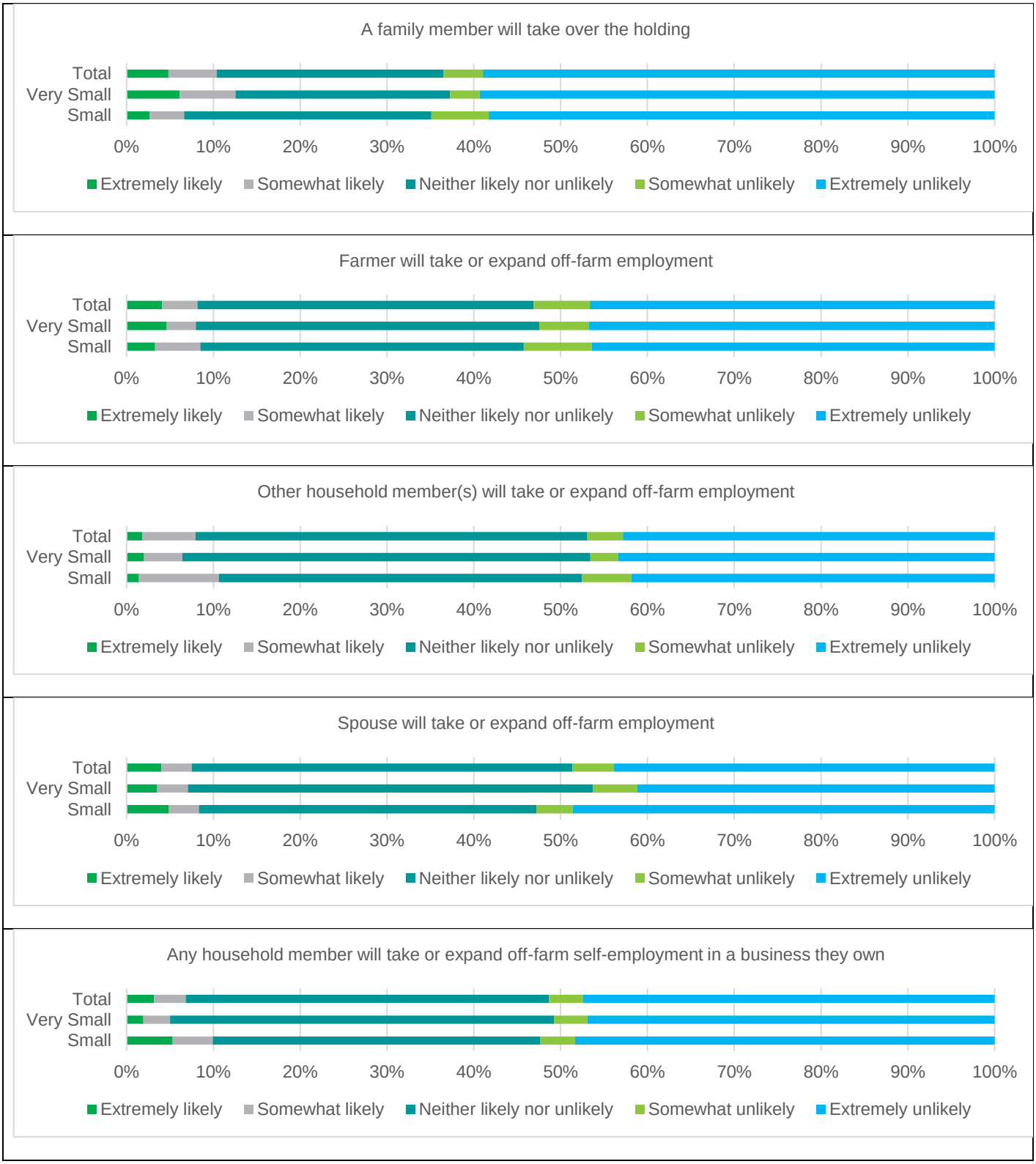
Respondents that do not see their farm primarily as a business are more likely than those that do to say that their spouse had taken or expanded off-farm employment (52% c.f. 33%); this group is also more likely to say that another household member took or expanded off-farm employment (33% c.f. 25%). In contrast, those that see their farm primarily as a business are more likely to say that a household member had taken on or expanded off-farm self-employment (33% c.f. 19%).

Expected future household changes

Looking to the future and intentions, respondents were asked to consider how likely they thought it was that changes would take place in their household over the next five years as a result of the UK leaving the EU. Note that this question is not directly comparable to the question about changes on holdings where respondents were asked if they would choose to do nothing, which allowed a focus only on those where change was intended. By way of context, the expectation of changes to the household following the UK's departure from the EU is considerably lower than the expectation of changes to the holding.

Figure 38 shows the type of possible changes, presented in terms of descending frequency of likelihood. The most likely reported expected change is that a family member will take over the holding (10% "extremely" and "somewhat" likely). This is considered marginally more likely on VS farms than on S farms (13% c.f. 7%), although this is not statistically significant. However, there are reasons to treat this finding with caution. Though the question explicitly asked respondents for expected changes to be the result of the UK leaving the EU, it is possible that this causal link was ignored or downplayed, so what was reported included what was likely to happen anyway, driven by normal processes of generation turnover and succession. Furthermore, it is hard to see a clear logic between UK exit and a change in the rate of takeover by family members. Turning to the other expected changes, eight percent of respondents indicated an expectation that the farmer would take or expand off-farm employment. The same proportion expects the spouse or another family member to take off-farm employment; operators of S farms were more likely to expect another household member to take or expand off-farm employment than operators of VS farms (11% c.f. 6%), although this was not statistically significant. Some 7% of respondents expect either the farmer, spouse or other household member to take or expand off-farm self-employment in a business they own in whole or in part; this was a more common response from operators of S farms (10% c.f. 5%). Finally, just 5% of respondents expect the household to leave farming within five years as a result of the UK leaving the EU; no operators of S farms thought that this outcome was "extremely likely".

It may be the case that those answering "neither likely nor unlikely" have not thought as deeply about possible changes than those answering in other ways.



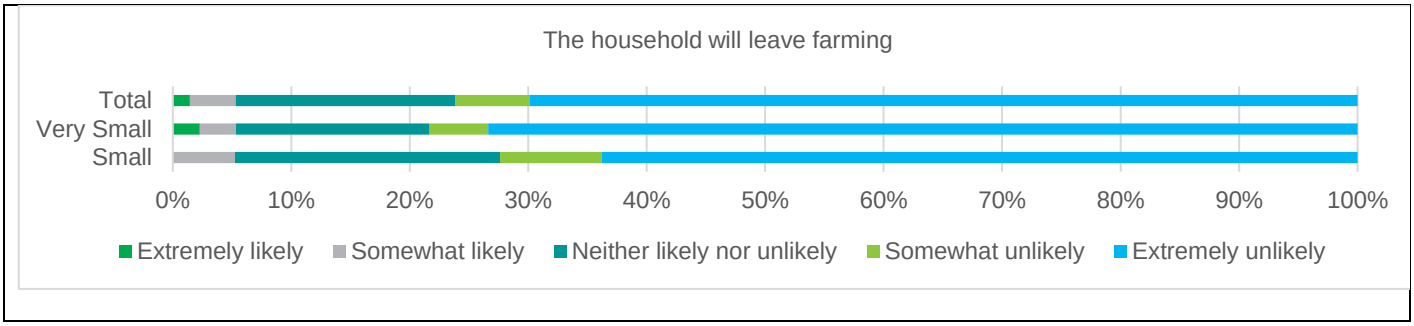


Figure 38: Do you think there will be any changes in your household as a result of the UK leaving the EU over the next five years? (n=419)

Source: IHS Markit.

Those motivated primary by social and instrumental factors are more likely to say that they expect their spouse to seek or expand off-farm employment in the next five years as a result of the UK leaving the EU than those motivated primarily by intrinsic and expressive factors (12% and 9% "extremely" and "somewhat likely" c.f. 3% and 1%), although this was not statistically significant. Those motivated primarily by instrumental factors are most likely to report that another household member would seek or expand off-farm employment (12% c.f. 7% social, 6% expressive and 2% intrinsic). The intrinsic group are most likely to say that they would leave farming (10% c.f. 6% instrumental, 4% expressive and 2% social). (Some 15% of the instrumental group say that a family member would take over the holding compared to 10% in the intrinsic group, 8% in the expressive group and 7% in the social group.)

"Enthusiasts" are more likely than "pessimists" to say that their spouse or another household member would take or expand off-farm employment (13% "extremely" and "somewhat likely" c.f. 3% and 7% c.f. 2% respectively); this group is also slightly more likely to say that a household member would take or expand off-farm self-employment in a business in which there is a financial interest (9% c.f. 6%). "Pessimists" are more likely to say that the household would leave farming (6% c.f. 1%). Finally, "enthusiasts" were far more likely than "pessimists" to expect a family member to take over the holding (21% c.f. 6%).

Operators of beef and sheep and sheep farms are more likely to say that they would take or expand off-farm employment than beef farmers (13% and 12% "extremely" and "somewhat likely" c.f. 4%), although this was not statistically significant. Operators of beef and sheep farms are more likely than those of sheep or beef farms to say that their spouse would take or expand off-farm employment (17% c.f. 7% and 5%); they are also more likely to say that other household members would take or expand off-farm employment than beef or sheep farmers (14% c.f. 7% and 6%). Beef farmers and operators of sheep holdings were more likely to say that they would leave farming than beef and sheep farmers (9% and 7% "extremely" and "somewhat likely" c.f. 3%). Finally, sheep farmers were most likely to say that a household member would take over the holding (14%) than either beef and sheep farmers (12%) or beef farmers (7%).

Differences by whether the farm is seen primarily as a business were more marginal, with those that do see the farm primarily as a business slightly more likely to expect the respondent to take or expand off-farm employment and those that do not see the farm primarily as a business slightly more likely to expect the spouse to seek off-farm employment. Those that see the farm primarily as a business are far more likely to expect a household member to take over the farm (12% "extremely" and "somewhat likely" c.f. 6%); this may reflect the ability of the farm to generate sufficient income for it to appear attractive to a successor.

10.5 Summary of responses to the UK leaving the EU

To summarise, in relation to Brexit there is evidence of responses on the holding, past or more commonly, expected in the next five years, in terms of, for example, take-up of schemes that provide incentives to create public goods and on-farm diversification. Changes to the household, including the expansion of off-farm gainful activities by farm household members, are less likely to have taken place already and are considered less likely in the next five years.

Many small differences can be seen in actions already taken in response to Brexit or anticipated in the next five years that can be linked to the primary motivation group to which the operators of the farm belong, the level of intensity of their expressed responses, and their attitude to the farm as a business. However, the patterns are complex and, while rationales for many could be constructed, some of which might be explored using the rich bank of data provided by our 2021 survey of VS&S farms in Wales, there appears to be no simple and overwhelmingly important associations between the motivational characteristics we encountered and the actual or intended responses to the new environment brought about by Brexit.

11 Welsh segmentation model

Our literature review came across multiple examples of typologies of farmer based on the analysis of responses to survey questions about their behaviour or responses to policy signals. Several were pertinent to our study of the operators of VS&S farms in Wales. For example, Shucksmith and Herriman (2002) used data collected from a sample of 300 farms in the Grampians area of Scotland over a widely spaced period to establish a typology for use in predicting divergent farm behaviour. In England, Rehman, *et al.* (2008) in the context of assessing farmers' response to CAP reform asked farmers to score a set of 19 questions on what they were trying to achieve as a farmer, covering issues that related to the farm business, lifestyle, family and personal career. Also for England, Defra's approach to segmentation (Defra/Pike, 2008) involved two surveys and analysis exercises. The first used a postal survey (n=683) in relation to attitudes and intentions towards the Single Farm Payment. Factors were extracted from 25 objectives and 28 value statements and analysed using clustering and Principal Component Analysis. A second piece of work, less linked to the particular policy change and more aimed at segmentation, used a telephone survey of 750 farmers with a selection of 17 objective and value questions which earlier research had identified as significant predictors and most influential in assigning respondents to segments.

A particularly interesting segmentation approach was applied in Scotland, with the focus on farms that were, by their own declaration, non-commercial farms (NCFs) (Sutherland, *et al.*, 2019). These will tend to be VS&S farms, though an element of non-commercial approach to farming can be found across the farm size spectrum, including some very large estates. While the analysis does not directly focus on behaviour, motives and goals, the resulting typology can be highly suggestive of what drives that behaviour. In addition to the expected age, education, status as an owner or manager, the demographic questions asked for self-identification (as full-time farmer, part-time farmer, hobby farmer, businessman, or manager) and whether the farm had been inherited or not. The questionnaire addressed a range of attitudinal statements and identity categories, profit orientation, perceived economic prospects and farming and land-based activities (e.g. commodity production, farm diversification by type of activity, access to information).

For Wales a rather different approach to segmentation has been set out by Lee-Woolf, *et al.* (2014). The aim was to develop a segmentation model of Welsh farm holdings, based on the attitudes, values and beliefs of those managing them, which would enable the government to [better] determine the impact of CAP reform on different types of farm holdings, and to target communications and policy measures more effectively. The focus on attitude and behavioural characteristics of the farmer led to segmentation (cluster analysis) based on the answers to nine questions covering the themes identified and extracted from the complete list. Several of these questions related to the way the farmer saw collaboration with other farmers and socialising with them, and other considered sources of advice and information. These questions were included in our 2021 survey of VS&S farms in Wales and enable our respondents to be categorised on the same basis as the work by Lee-Woolf, *et al.* (2014). It should be noted that Lee-Woolf, *et al.* did not present any analysis according to the size of farm. A feature of the Welsh model was that the segments identified on a statistical basis were purposely kept unlabelled in terms of the style of farming their represented, designating them as groups C,Y,M,R, and U; in contrast, for England Defra/Pike (2008) used more descriptive labels (including Custodians, Lifestyle, Pragmatists, and Modern Family Businesses) and other UK segmentation models generally use labels of this type, which makes interpretation somewhat more straightforward.

The Welsh segmentation groups are summarised as follows:

- C: Tend to be younger and tend to have had another job off farm in the last year.
- Y: Tend to mirror the overall sample in terms of their demographic characteristics.

- M: Tend to be older and tend to manage smaller sized farms, which they describe as a 'smallholding' rather than a 'farm'.
- R: Tend to represent larger sized holdings, as well as 'LFA grazing' holdings. They are unlikely to have had another job off farm in the recent past, or to hold higher education qualifications unrelated to farming.
- U: Tend to represent 'dairy' holdings and larger sized holdings. They also tend to be younger than the overall sample and they are likely to hold higher education qualifications related to farming.

Our analysis of the 2021 survey took two approaches. The first was to examine how our sample was composed in terms of the Welsh model's five segments. The second was to explore how these 'official' segments compared with the patterns seen elsewhere in our data.

Responses to the Welsh Segmentation Model set of questions were used to place respondents to our 2021 survey into segments. It was possible to assign 379 respondents (90% of the total) to segments based on completeness of responses. The correspondence between our sample and the WSM is shown in Figure 39.

Given that our sample comprised only farms in the VS&S economic size groups, it was rather surprising to find that we encountered similar proportions of farmers in segments Y, R and U to the original segmentation research, and a rather greater representation of segment C while segment M is under-represented. The lack of analysis related to farm size in the original segmentation report is particularly unfortunate. No simple explanation of why VS&S farms (operated primarily as minor sources of household income) should have a profile to segments that quite closely mirror the sector as a whole can be offered. This is likely to be partly related to the field of observation in our survey in which VS farms were slightly under-represented as a consequence of early reliance on the Farming Connect database (see section 2.3 and Figure 6). It is also possible that our survey methodology contained an inherent selection bias towards members of segment C and against members of segment M (possibly their willingness to take part), or that the original survey was itself not sufficiently balanced. Although insufficient information on the original sample is available to test this hypothesis, it is noted that other work has also encountered an under-representation of members of cluster M relative to the original segmentation work.

Generally there was little difference in membership of specific segments by farm economic size band. The main exception was segment M which contains more operators of VS farms, which is expected given the definition of this segment.

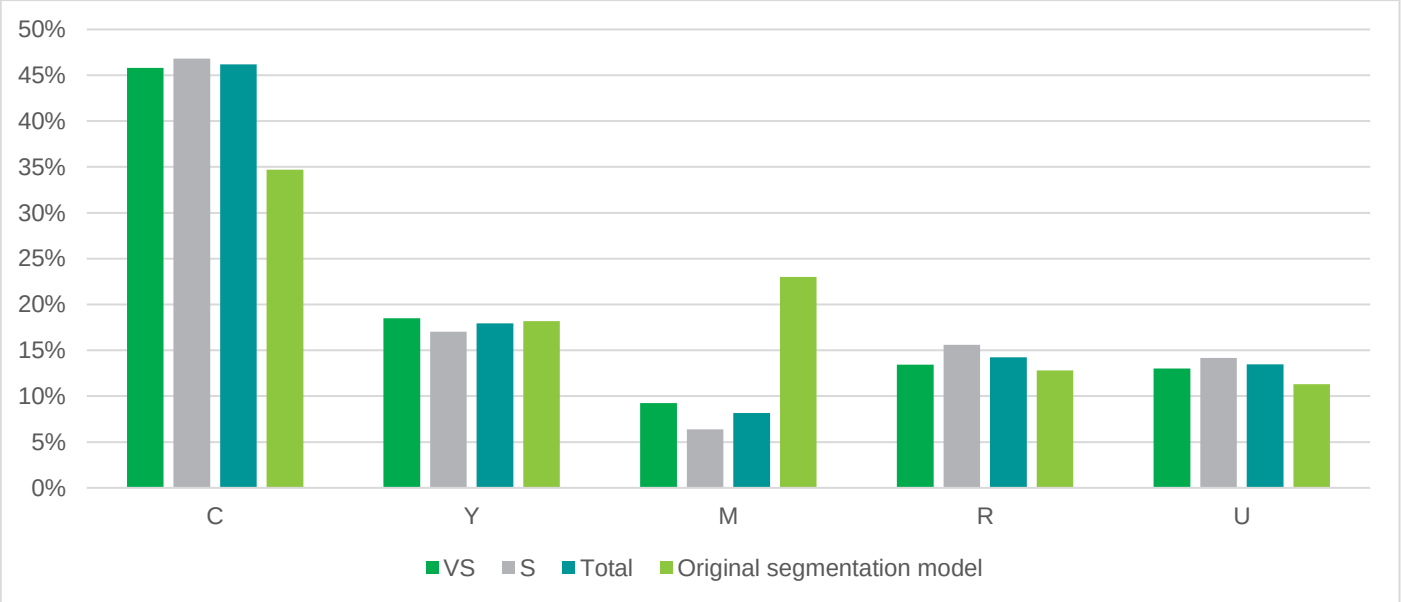


Figure 39: Correspondence between our survey and the Welsh Segmentation Model (n=379)

Source: IHS Markit.

It is generally the case that analysing our survey using the WSM segmentation did not show any appreciable differences by segment, i.e. it was rare to find cases where respondents in different WSM segments provided different answers (see separate Appendix). Where different answers were provided, these were often predictable (as expected) where questions were related to those used to derive the original segmentation. For example, members of segment U were more likely to consider their farm as primarily a business than members of segment Y, segment M are more likely to have entered an agri-environment scheme than segment R, etc. Perhaps an explanation of the relatively loose association between the WSM and the results of our 2021 survey of VS&S farms is that the WSM focused its segmentation on nine questions on the behavioural characteristics of the farmers (taken from the areas of adaptability and innovation; business and finance; networks and support; government and policy), whereas we have been much more concerned with the manifestations of behaviour as seen in evidence from the farm itself and in the workings of the farm household. This seems to be the more typical approach in UK segmentation studies, as shown in our literature review.

12 Key findings

12.1 The Very Small and Small farms

Our project focused on the occupiers of farms in Wales at the small end of the spectrum by economic size. Very Small and Small (VS&S) farms, which together account for almost 9 out of 10 of farms in Wales, are numerically important in terms of people and land and are of interest to policy makers, especially in the context of reorientating support towards the provision of public goods and away from more production-based approaches. The importance of S farms to some land use and livestock categories should also not be ignored. The majority of respondents to our survey held in early 2021 run farms in which the main enterprise is sheep and/or beef. While beef farms and sheep farms are similar in physical size (average of 51 hectares and 52 hectares respectively), beef-and-sheep farms are larger (average 83 hectares). There is a relationship between physical and economic size with larger average areas amongst S farms compared to VS farms (with the exception of dairy which is probably explained by degree of intensity).

Most respondents own, or mostly own, their farm. The most frequent route into farming their current holding was having bought the land (46%), with a further 31% taking over the family farm; 19% inherited the holding. Two-thirds of respondents have previous experience of working on the family farm (66%); this was far more common on S farms compared to VS farms. The average length of time that respondents had been running their holding was 23 years.

Half the farms in our sample (50%) are, or have been, entered into an agri-environment or conservation scheme.

12.2 Households operating VS&S farms

Most households operating VS&S farms comprise two adults (53%) with three-adult households accounting for 20% of the sample and single-adult households for a further 13%. Larger farms tend to have larger households associated with them. There was no clear difference between VS and S farms in terms of household composition.

The average age of the respondent was 57 and the second adult 54.

Almost half of respondents (44%) hold non-agricultural qualifications while 26% hold a qualification in farming-related subjects. Respondents from VS farms are twice as likely to have a degree than those from S farms (16% c.f. 8%).

Combining farming with some form of off-farm employment or self-employment is the norm (71% of VS and 64% of S farm households); only a third of households (32%) have no off-farm gainful activities of any kind. A third (31%) have one adult household member in some form of off-farm activity and just under a third (30%) have two adult household members (7% have more than two adult members) in some form of off-farm activity. Almost half (47%) of respondents run other, non-agricultural activities from their holding.

12.3 Incomes of households operating VS&S farms

Four-fifths (80%) of our respondents were able and willing to say into which band their household income fell. Very few households (5%) fall into the less than £10,000 band – this is a little higher than the single person annual state old-age pension. More than four-fifths (82%) have household incomes between £10,000 and £69,999, while 13% have household incomes in excess of £70,000. On balance it would appear that the average income of the VS group is a little lower than that of the S group, though the difference is not likely to be substantial. The more important conclusion has to be that the economic size of farm is not a reliable guide to the level of household income.

The most frequently cited source of income was trading surplus (sales minus production costs) from farming activity (91%), followed by the Basic Payment Scheme (76%), off-farm wages, salaries and self-employment earnings (64%), environmental payments (54%), pensions (46%), on-farm diversification (35%) and return on investments such as rental income (33%). For households with particular income sources, income from trading surplus and the Basic Payment Scheme tends to be considered more important compared to income from environmental schemes and pensions. Perhaps counter-intuitively, VS farms are statistically more likely to attach greater importance to trading surplus than S farms where these payments exist, while the reverse is true for surplus from activities on the farm unrelated to food production (tourism, renewables, etc.).

12.4 Succession

The results from our survey resonate with many of the findings in the literature about the importance of succession to many aspects of decision-making in farming, and add some further dimensions. More than half of respondents (57%) have considered succession, marginally higher among the operators of S farms (61% c.f. 55%). Almost half (47%) of respondents have a plan to pass on their holding to someone else. Among those who had thought about succession, the majority (73%) intend to pass the farm on by gift, reflecting the family nature of the farming industry at the VS and S scale; there were no differences by farm economic size band.

12.5 Use of Welsh language

Just over a third (36%) of our total sample are fluent in Welsh while a further 6% can speak a fair amount. Welsh speaking is slightly more prevalent among operators of S farms. This general level of Welsh speaking is in line with the 2011 population census that found it more frequently among the agricultural community than in society as a whole. Respondents who speak Welsh fluently appear also to be associated with somewhat higher levels of household income.

12.6 Engagement in the local community

Respondents overwhelmingly feel themselves to be part of the farming community with this feeling statistically stronger among the operators of S farms than among those of VS farms. Respondents also overwhelmingly feel their household to be part of the rural community; again, operators from S farms felt slightly more strongly about this compared to those from VS farms. The large majority of VS and S farm households participate in social and farming organisations.

12.7 Decision-making and learning

In looking at a range of decisions relating to running the farm (including entry into agri-environment schemes) respondents to our survey of VS&S farms in Wales found these all tend to be taken by the main decision maker (33% to 38%) or the main decision maker with their spouse/partner (31% to 34%). Decisions on investments in off-farm businesses appear to tend to be made jointly slightly more often, and decisions concerning off-farm employment or self-employment by household members are usually taken by the main decision maker (21%), jointly with a spouse/partner (32%) or by another individual (23%).

Operators of VS and S farms say, in response to a range of questions, that they are always actively learning, are happy to take advice about managing the natural environment, are open to new technology and to accessing information and advice on the internet. However, operators of VS farms are marginally more likely than operators of S farms to feel strongly about these issues.

12.8 Reasons for farming

Almost three-quarters of respondents on VS&S farms say that they see their farm primarily as a business (73%); this is much more likely among operators of S farms than those on VS farms (83% c.f. 67%). However, when asked later in the questionnaire to what extent they agreed that their holding is more of a business than a lifestyle choice, approximately a third agreed, a third disagreed and a third neither agreed or disagreed. Again, operators of S farms were more likely to agree that their farm is more of a business than a lifestyle choice. While those who see their farm primarily as a business are less likely to agree that achieving a good quality of life is more important than maximising income from the holding (73% c.f. 88%), the main point is that even amongst this group, nearly three-quarters believe that lifestyle is more important than income maximisation.

More than three-quarters of respondents (79%) consider that embracing environmental conservation is important to the future of their farming household; this is slightly more the case in VS farms (80% c.f. 75%).

Developed from the literature review, questions were asked that help us understand the absolute and relative importance of the following different, but sometimes overlapping and mutually reinforcing, groups of motivating factors:

- ***Instrumental*** (using the farm as a way of achieving something) – making a satisfactory income; safeguarding the income for the future; expanding the business; providing congenial working conditions.
- ***Social*** – gaining recognition and prestige; belonging to the farming community; continuing the family tradition; working with other members of the family; maintaining good relationships with workers.
- ***Expressive*** – feeling pride of ownership; gaining self-respect for doing a worthwhile job; exercising special abilities and aptitudes; the chance to be creative and original; meeting a challenge, achieving an objective, personal growth of character.
- ***Intrinsic*** – enjoyment of work tasks; preference for a healthy outdoor farming life; purposeful activity, value in hard work; independence – freedom from supervision and to organise time; control in a variety of situations.

Respondents to our survey overwhelmingly report ***intrinsic*** factors as the most important reasons for them being in farming. The next most frequently cited group of important reasons are ***social*** and ***expressive*** factors, with greater strength of feeling generally attached to social factors. In both cases these groups of factors are considered more important by operators of S farms than for those of VS farms. The least important reasons for farming are ***instrumental*** (although of course these reasons are very important for some); again, operators of S farms are more likely to cite these factors as important than operators of VS farms. Our results are in line with the literature, which establishes that it is unwise to assume that income maximation is the dominant aim of farmers. Instrumental reasons are also the most polarised, with the largest proportions of respondents saying that these are unimportant (10%); 8% of respondents feel that social reasons are unimportant. In contrast, only 2% of respondents claim that intrinsic factors and expressive factors are unimportant.

12.9 Responses to the UK leaving the EU

Our survey, conducted early in 2021 (after the end of the withdrawal transition period and near the start of the new trading arrangements and domestic agricultural policy) captured information on income expectations and on what had been the impact of anticipated shifts in the economic and regulatory circumstances during this period of uncertainty (that is, decisions that have already been taken) and the changes that were intended now a clearer picture (though not one fully defined) was emerging (decisions that are anticipated, though with a range of likelihoods possible). A distinction was drawn between, on the one hand, the impact on the farm and farming and,

on the other, the impact on the household of the farm operator. These changes can be expected to reflect the motivations of operators of farms falling into these classes of economic size.

Operators of VS&S sheep farms are more likely to expect income from agriculture to decrease as a result of leaving the EU (65% c.f. 57%) while there is no difference expected by operators of beef farms; operators of beef-and-sheep farms have expectations between these responses, suggesting that there is an expectation of a decrease in agricultural income in the sheep sector specifically. There is a marked difference in response to this question depending on whether the respondent sees their farm primarily as a business. Some 65% of this group expect income from agriculture to decrease compared to just 35% in those that do not see their farm primarily as a business.

In order to better understand the way that our information on motivation relates to responses by farmers to the UK leaving the EU, two additional forms of analysis have been undertaken.

(c) Classification of operators according to their dominant motivational factors

Respondents were divided into groups according to their dominant group of motivational factors, i.e. intrinsic, instrumental, social and expressive. Respondents were assigned to the group for which their individual scores were highest compared to the average for the sample as a whole.

(d) Classification of operators according to intensity of motivating factors

One group ("enthusiasts") was defined by giving higher than average scores within each of the four brigaded motivational factors and another by giving lower than average scores within each of these groups ("pessimists"). The majority of respondents did not fall into either camp ("neither").

Less than a third (31%) of respondents had already made a change on their holding as a result of the UK leaving the EU; slightly more operators of S farms had already made a change compared to VS farms (31% c.f. 27%). Those motivated primarily by social factors are more likely to have already made a change on their holding than those motivated by expressive factors (42% c.f. 20%), intrinsic factors (25%) and instrumental factors (32%). "Enthusiasts" are more likely to have already made a change than "pessimists" (34% c.f. 19%). There were no appreciable differences by farm type or whether the farm is viewed primarily as a business.

More respondents thought that they would make future changes as a result of the UK leaving the EU in the next five years than had made changes already, with most expecting to make changes. Almost half (45%) thought this "extremely likely" and 12% "somewhat likely". Just under a third (31%) were undecided either way, leaving 7% thinking it "extremely unlikely" that they would make changes and 6% "somewhat unlikely". There were few differences by farm economic size band, although operators of S farms were marginally more likely to not yet have a firm view one way or the other.

A key point to note is that starting the new provision of public goods is the only change that a majority (64%) of those expecting to make a change say they will make. The degree of certainty with which respondents hold this expectation is also noticeably greater than with respect to other expected changes. The only other change intended to be made by more than a third of respondents (37%) who said they would make changes was the development of new on-farm diversification activities. Operators of VS farms consider it much more likely that they will develop new on-farm diversification activities than operators of S farms.

In terms of changes to the farm household, the key finding is that only 11% of respondents indicated that they had made changes in their household already as a result of the UK leaving the EU; respondents were explicitly asked NOT to include any changes as a result of the COVID-19 pandemic.

Looking to the future and intentions, respondents were asked to consider how likely they thought it was that changes would take place in their household as a result of the UK leaving the EU over the next five years. The general picture is one of only modest levels of adjustment. The most likely expected change is that a family member will take over the holding (10% "extremely" and "somewhat" likely). This is considered marginally more likely on VS farms than on S farms (13% c.f. 7%). However, the extent to which this change can be attributed to the UK leaving the EU it is not entirely clear.

Many small differences can be seen in actions already taken in response to Brexit or anticipated in the next five years that can be linked to the primary motivation group to which the operators of the farm belong, the level of intensity of their expressed responses, and their attitude to the farm as a business. However, the patterns are complex and, while rationales for many could be constructed, some of which might be explored using the rich bank of data provided by our survey, there appears to be no simple and overwhelmingly important associations between the motivational characteristics we encountered and the actual or intended responses to the new environment brought about by Brexit.

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