

REFEREED ARTICLE

SIZE AND NON-SIZE EFFECTS ON THE PROFITABILITY
OF FARMS IN ENGLISH LESS FAVOURED AREAS

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Farms from English Less Favoured Areas (LFA) are separated into size quartiles (measured by grazing livestock units (GLU)/farm) and ranked within these size quartiles by Farm Business Income (FBI)/farm to show size and non-size effects respectively. FBI increases with farm size but some small farms are highly profitable and large farms loss making, showing size is not an insurmountable barrier to or guarantee of business profitability. There is more variability in performance amongst smaller farms, showing they have better non-scale opportunities for improving performance than larger farms. Business growth by increasing herd/flock size leads to an initial fall in profits because revenues fall faster than costs, suggesting growth trajectories need to either (i) expand GLUs quickly or (ii) increase value added per GLU. Benchmarking clubs are considered better than comparative analysis against industry standards because they reveal more process-type details and afford better insights to developing diversification activities: where diversified income streams cannot be developed the future of small upland hill farms appears bleak.

Key words:

English hill farms, business viability, diversification, comparative analysis, benchmarking clubs, unique business signatures.

Introduction

In England some 2.2 million ha of land is classified as Less Favoured Areas (LFA), 1.8 million of which is in agricultural production (this is approximately 17% of the total agricultural land in England (DEFRA 2008f). About 70% of LFA land is classified as Seriously Disadvantaged Area (SDA), the remainder as Disadvantaged Area (DA) (DEFRA 2008c)¹. As it is generally recognised that these large upland areas are nationally and internationally important for biodiversity, are of significant landscape, archaeological, recreational, heritage, and natural resource value, and contribute to cultural diversity, the economics of upland farming has important implications for the economic, social and environmental sustainability in these areas (Midmore and Moore-Colyer 2005; IEEP/LUC/GHK 2004). Without some form of agricultural activity these areas may lose this valuable biodiversity and upland landscape which society values, but farming these areas is difficult because generally poor climate, soil and terrain reduce productivity, and many farm businesses are located at some distance from large urban markets (IEEP/LUC/GHK 2004). In view of this, national governments and the European Union have implemented successive policies to support LFA farms (Wathern *et al.* 1986; DEFRA 2008e) - support that is justified on the basis of the supply of public goods and maintenance of social and cultural capital in the uplands (Midmore *et al.* 2001; IEEP/LUC/GHK

1. The majority of common land in England is located in the Uplands, there are 1,400 designated common land sites, representing some 305,000ha of land (DEFRA 2008f).

2004; Midmore and Moore-Colyer 2005; Harvey 1994).²

For example, in the UK the Hill Livestock Compensatory Allowance was introduced in 1975 as a coupled, headage based scheme, which was replaced by the Hill Farming Allowance (HFA) in 2001 (DEFRA 2006). But farm incomes within LFAs have been on a consistent decline since 2003/04. In that year, Farm Business Income (FBI)³ was £17,500/farm but by 2006/07 it had fallen 32% to £10,786/farm. Provisional FBI estimates for 2007/08 are £5,900/farm (DEFRA 2008a: their table 2.5). These findings are supported by farm survey data for hill farm livestock enterprises. Analysis by the English Beef and Lamb Executive (EBLEX) estimates average net margin per cow (excluding non-cash costs) for LFA suckler herds in 2005/06 was minus £170.09, and minus £70.69 for the top third herds (EBLEX 2006); there was only a marginal improvement in 2006/07 to minus £151.43 and minus £67.62 respectively (EBLEX 2007). In these calculations “net margin” excludes non-cash costs such as payments for family labour, rental value for owned land and interest on working capital, so even the best farmers, on average, fail to make a reasonable living. Following such a decline in profitability it will be a struggle for many farmers to identify further income raising or cost saving measures (Franks 2006).

Profitability is a key factor underpinning and driving farm structure and structural change (Lobley and Potter 2004). Because many of the social, environmental and economic consequences are linked to farming structure (Midmore *et al.* 2001; Potter and Lobley 2004; Lobley *et al.* 2005; Burton *et al.* 2006; Buckwell 1989; Potter 1990; Midmore and Moore-Colyer 2005; Lobley and Potter 2004; IEEP/LUC/GHK 2004), analysis of farm business income is an important part of policy analysis⁴. This paper presents a relatively simple but highly effective method for identifying opportunities for, and barriers to profitability and business growth which are related to farm size. The following section introduces the data and analytical methodology used. Research findings are then presented. The discussion identifies size and non-size effects on farm profitability. This is followed by a concluding section.

2. For example; “The need for the continued presence of hill farming activities to maintain the upland environment is largely recognized and accepted by both environmentalists and farmers alike” (IEEP/LUC/GHK 2004: Executive Summary, page 3). And, “The main economic rationale for public support for hill farming is to ensure the provision of public goods that would otherwise be under provided. The continuation of hill farming, in one shape or another, appears critical to maintaining and enhancing the environmental quality of the uplands” (IEEP/LUC/GHK 2004: p 80).

3. Farm Business Income (FBI) is defined to represent the return to all unpaid manual labour and management (farmer, spouse, farmer’s family and others with an entrepreneurial interest in the farm business) and to all their capital invested in the farm business including land and farm buildings. This is now DEFRA’s preferred measure of farm income (DEFRA 2007).

4. This focus excludes any contribution to the farm household income from off-farm income, allowing the focus of this study to be on the development of agricultural business profitability. It is acknowledged that off-farm incomes can be used to support farming activities and household, and hence can be expected to influence the rate of farm restructuring (Damianos and Skuras 1996; Meert *et al.* 2005; Caraveli 2000; Bateman and Ray 1994)

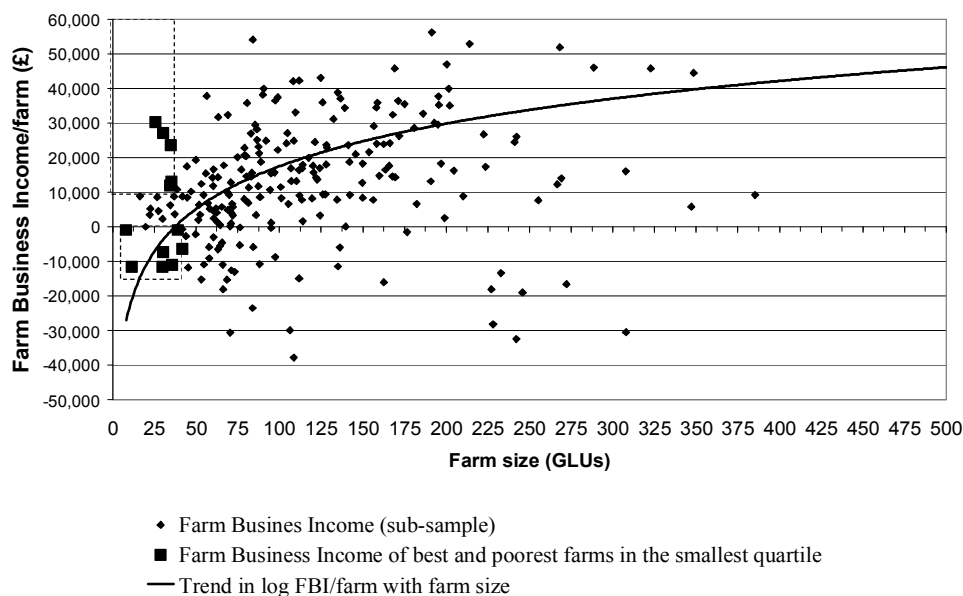
5. Size and scale are often used interchangeably in the literature, strictly speaking, a change in scale implies a proportionally equal increase in all inputs, whereas a change in size may involve an increase in only a single input.

Methodology

Data from sheep and cattle upland farms are taken from the Farm Business Survey (FBS)⁶. These livestock farms are classified as LFA farms because 50% or more of their total area is in the LFA. Of the sample, 68% of the 246 farms come from the EU North region, 21% from the EU West and the remaining 11% from the EU East. The sample framework is randomised and stratified using ten robust farm types and seven government office regions, considers part- and full-time farms only, and surveys a total of 1,850 farm businesses. Within each stratum, sampling is with uniform probability: farm size is not explicitly included in the current design (DEFRA 2008d). Farms are retained in the sample for several years with about 10% of the sample replaced each year – largely through natural wastage. All sampled farms have financial year-ends between 31 December and 5 April 2007.

The data have been raised to represent the total population by assigning each farm a weighting factor based on the ratio of sampled farms to those in the underlying population (as reflected in the June Agricultural Census) within each stratum. Further details of the methodology and sample are reported in Franks *et al.* (2008), where 29 tables present data analysed by EU region, farm type, size (ranked by Standard Labour Units) and performance quartile (Farm Business Income (FBI)/farm). The data reported here are presented differently; farms are separated into size quartiles by GLU/farm and ranked within the quartiles into four sub-groups by FBI/farm. This arrangement allows variations between quartiles to be attributed to size and variations within quartiles to non-size factors, such as management, enterprise mix etc.

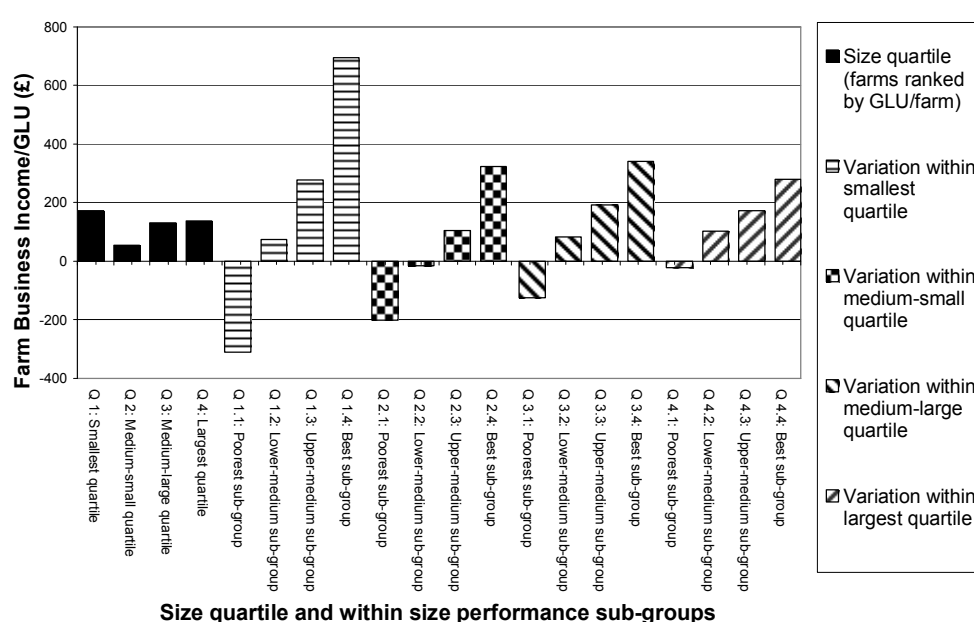
Figure 1. Trend and distribution of Farm Business Income, indicating the position of best and poorest performers in the smallest and largest quartile.



Research findings

The trend line in Figure 1 indicates the variation in FBI with farm size. FBI increases with farm size but at a decreasing rate, there is a wide dispersion about the trend line, and farms of all sizes report negative FBIs. That some small farms outperform larger ones suggests that size *per se* is no absolute barrier to profitability. On average, FBI/farm becomes positive at just over 40 GLUs, but as FBI makes no allowance for unpaid family labour and managerial input, an average farm needs to be considerably larger than this to

Figure 3. Variation in Farm Business Income per GLU between size quartiles and ranked by FBI/farm within size quartiles.

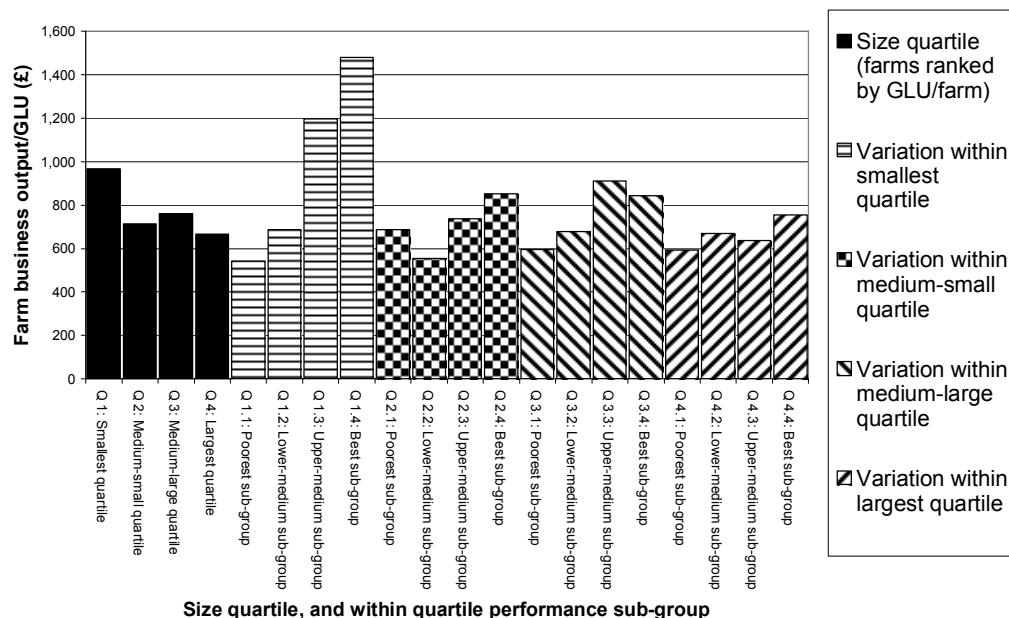


generate a reasonable living. The two groups of observations highlighted are the best and worst performing farms in the smallest quartile; an issue returned to later.

Figures 2 and 3 are presented to clearly illustrate the method used to categorise farms. Figure 2 shows that GLU/farm varies widely between size quartiles (Q1 (smallest), Q2, Q3 and Q4 (largest))⁷. Although this size effect is a direct artefact of the data generation. However, it also shows a similar GLU/farm between sub-groups within the same size quartile, showing that any within quartiles size effect has been largely eliminated. It draws attention to two items of particular importance: (i) there appears to be little difference in size measured as GLU/farm between the best performing sub-group and the quartile average farm in Q1, Q2 and Q3, but in Q4 the best farms are somewhat larger than their quartile average, and (ii) that the largest farms have, on average, four times as many GLUs as the smallest.

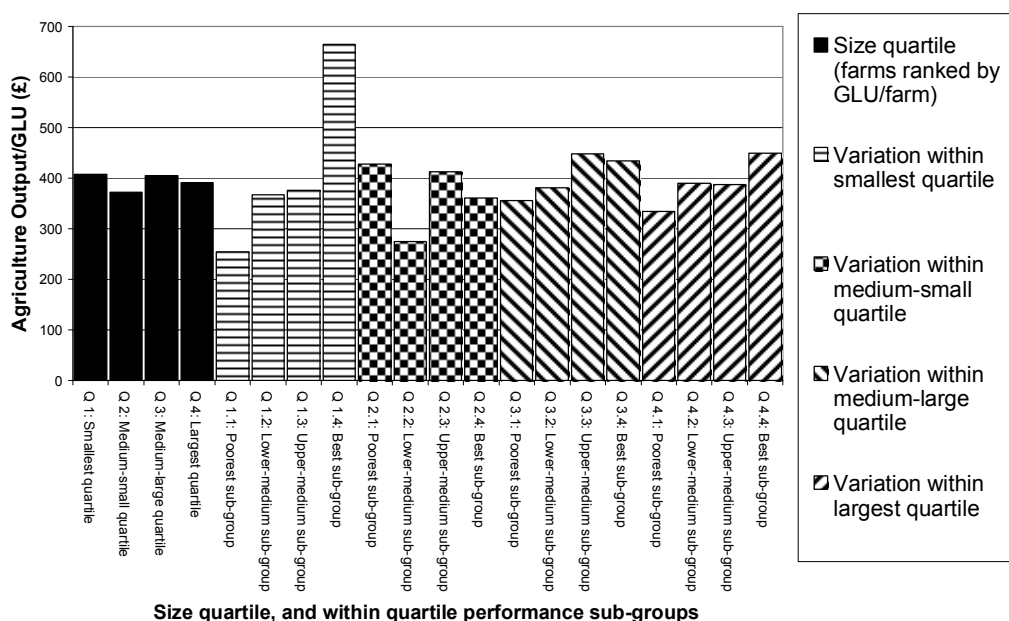
Figure 3 shows the variation in FBI/farm within and between size quartiles. The only discernable size effect (variation between size quartiles) is

Figure 4. Variation in Farm Business Output per GLU between size quartiles and ranked by FBI/farm within size quartiles.



the poor performance of the second smallest quartile, but there are clearly defined non-size effects (variation between sub-groups within the same size quartile). This is again a direct artefact of the way the data are arranged. Farms

Figure 5. Variation in the output from agriculture/GLU between size quartiles and, ranked by FBI/farm, within size quartiles.

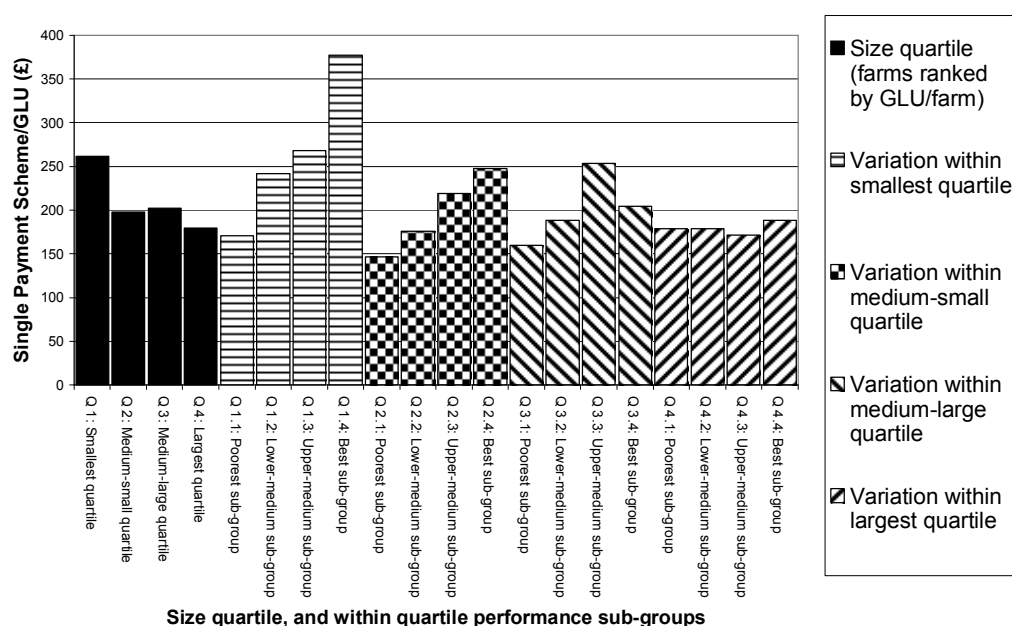


in the smallest size quartile (Q1) recorded the highest and lowest FBI/GLU. The poorest performing farms in each quartile all reported negative incomes, though as size increases the losses reduce, as does the gap between worst and best performers. Figure 3 shows that smaller farms can out-perform larger farms in terms of FBI/GLU.

Figure 4 shows the variation in Farm Business Output/GLU (FBO/GLU) between and within size categories. FBO/GLU falls with size quartile showing a clear but diminishing size effect; the smallest farms reported nearly £1,000/GLU, about 35% more than farms in the largest size quartile. There are clear non-size effects which reduce with size quartile: the best smallest farms report the largest FBO/GLU and the poorest smallest farms the worst, but within size quartile variation decreases with size quartile (data values for these and other income and cost streams are presented in the Appendix, Tables A and B).

FBO comprises four principle revenue streams; output from agriculture, Single Payment Scheme (SPS), diversification income and agri-environment payments. The size and non-size effects on these income streams are shown in Figures 5 to 8 and 10. Figure 5 shows no economies of size in 'output from

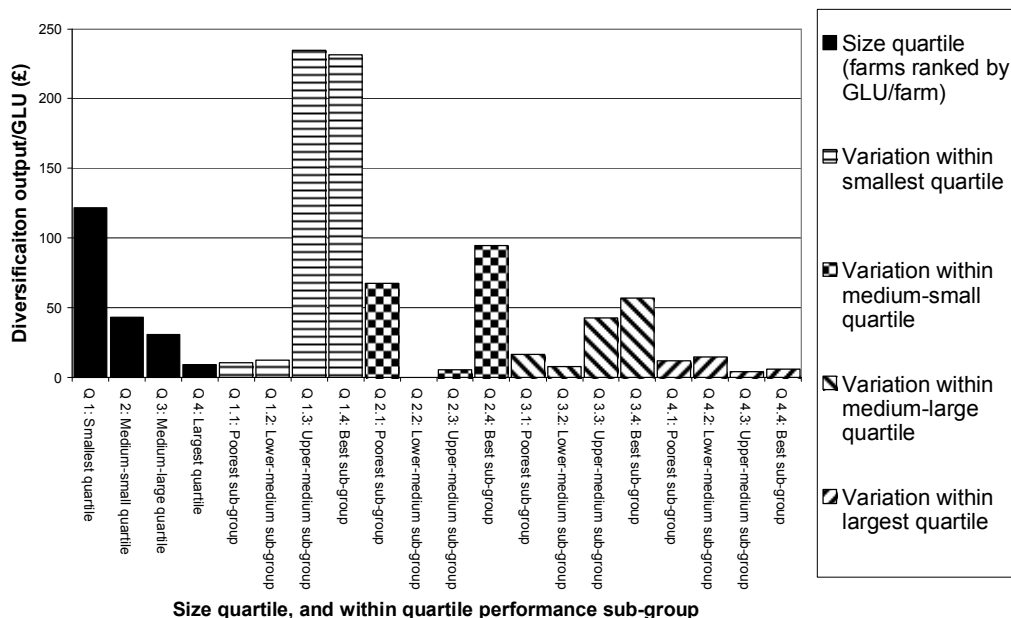
Figure 6. Variation in Single Payment Scheme per GLU between size quartiles and, ranked by FBI/farm, within size quartiles.



agriculture', but pronounced non-size effects which (again) weaken as size increases only to become a little more prominent among farms in the largest quartile. Again, the largest variation occurs in the smallest size quartile; the best outperform - and the worst underperform - all other sub-groups. The non-size effect is similar to, if a little less pronounced, than for FBO/GLU (Figure

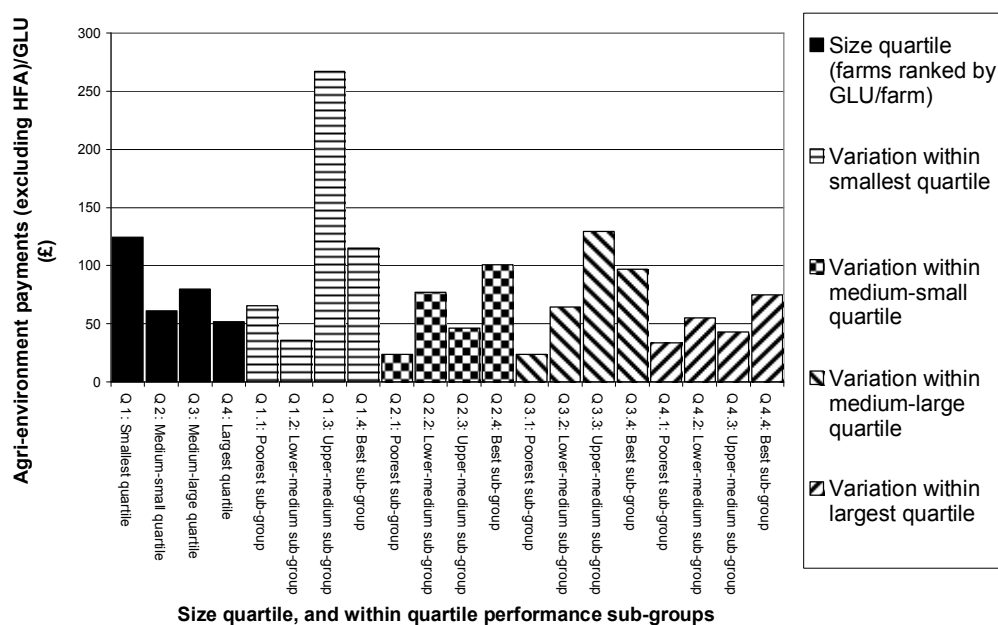
8. The moorland line was established in 1992 and updated in 2007. Land within the moorland line is mainly SDA but it does include some DA.

Figure 7. Variation in the value of Diversified Output per GLU between size quartiles and, ranked by FBI/farm, within size quartiles



4). The other three components of FBO are analysed in turn below, but it is worth stating that Agriculture Output is the largest component of FBO and therefore good performance in this income earning dimension appears to be an

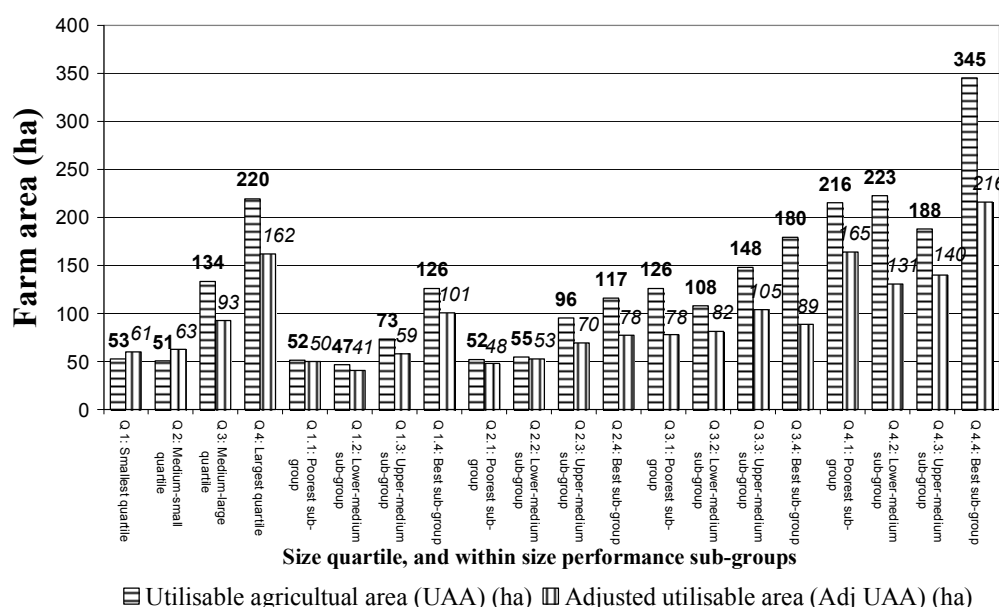
Figure 8. Variation in Agri-environment Payments (excluding Hill Farm Allowance) per GLU between size quartiles and, ranked by FBI/farm, within size quartiles



important discriminator of business success.

Figure 6 shows diminishing size effects in SFP/GLU, with the smallest farms having the largest SFP/GLU. It also shows clear non-size effects, which (again) weaken with size. In three size quartiles the best performing farms report the highest SFP/GLU (Q1.4, Q2.4 and Q4.4). The size and weakening non-size effects can be explained by the structure of the English SFP scheme. A dynamic hybrid system is in place; payments are based on a weighted average of the farm's historic payments and regional average payments based on the type of land farmed: the weights for the historic proportion of the payment decline in steps to zero in 2012. There are three land-type categories each attracting a different payment rate. The first €5,000 of these payments is exempt from EU (but not National) modulation. Therefore, higher payments/

Figure 9. Variation in farm area between size quartiles and, ranked by FBI/farm, within size quartiles



farm probably reflect a favourable combination of higher historic entitlements, a larger farm area, more farmland in higher paying land-classes (LFA non-moorland rather than moorland)⁸, and the relative importance of the size exemption.

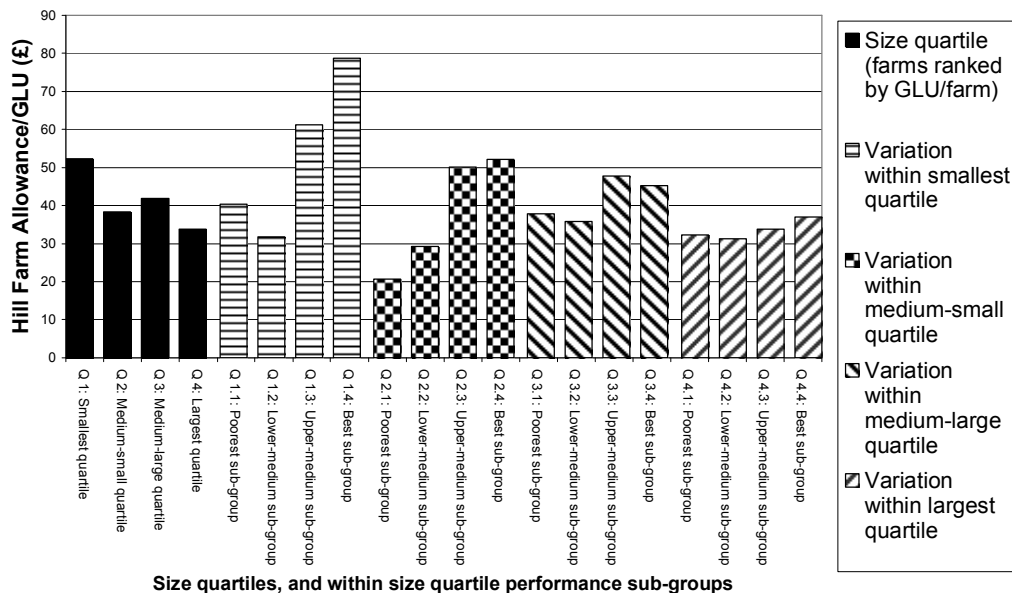
Figure 7 shows the importance of diversified output; where it is important, it makes a very significant contribution. There are clear diminishing size effects and evidence of non-size effects especially among the best performers of the three smaller size quartiles (Q1.4, Q2.4 and Q3.4).

Figure 8 shows the importance to farm incomes of 'agri-environment

9. HFA payments can be enhanced by 10% or 20% by meeting one or two of three additional husbandry criteria. Further details can be found in DEFRA (2006). The data set analysed here does not contain details of which farmers benefited from these enhancements.

payments (excluding HFA)'. There are clear size effects, these payments are more important to smaller farmers. Like other revenue streams, the non-size effects of agri-environment payments weaken as size increases (though to a lesser extent than for other income streams). There are some interesting issues here, which probably reflect a combination of land area farmed, and the opportunity to participate in, and the decision to enrol into an agri-environment programme. Figure 9 shows the average utilisable agricultural area and adjusted utilisable area for each size quartile and performance sub-group. Within each size quartile farms have similar GLU/farm (Figure 2), though land area clearly is more variable: agri-environment payments are likely to be more closely related to land area than GLU and the best

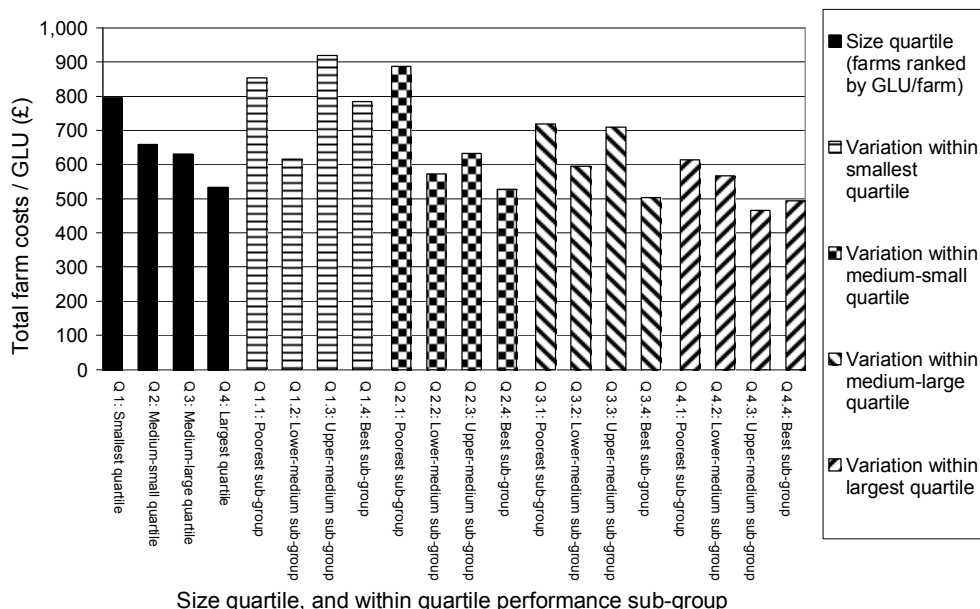
Figure 10. Variation in Hill Farm Allowance (HFA) per GLU between size quartiles, ranked by FBI/farm, within size quartiles.



performing sub-groups farm larger areas of farmland; larger farms have been observed to be more likely to enrol in agri-environmental schemes (Wilson 1997; Wilson *et al.* 2006; Seibert *et al.* 2006; Brotherton 1991).

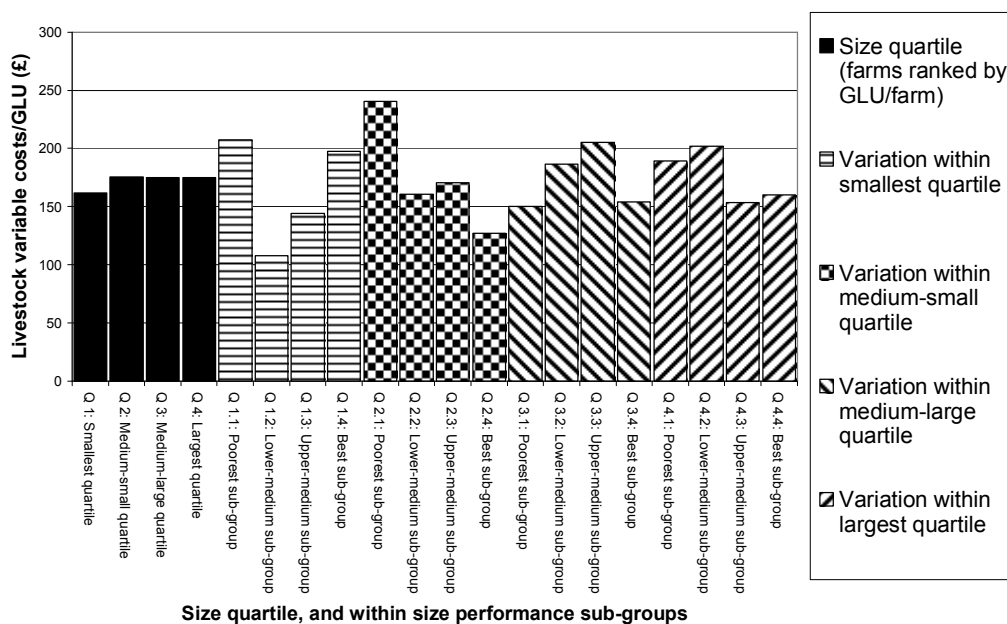
The HFA/GLU payments are shown in Figure 10. Once again, there are size and non-size effects, both of which (again) reduce with size. These observations can largely be explained by the structure of the HFA payments and land farmed (Figure 9). HFA payments are based on farmed area, are capped and digressive, and offer additional payments for compliance with specified (additional) grazing and cropping requirements. The standard rates per farm in 2006 were £30.82, £16.66 and £11.66 per ha for the first 350 ha of SDA, DA and Common Land/Moorland respectively (DEFRA 2006). On land more than 350 but less than 700 ha, payment rates are halved and land over 700 ha attracts no payment⁹. Given farms within each size category have

Figure 11. Variation in Total Costs per GLU between size quartiles and, ranked by FBI/farm, within size quartiles.



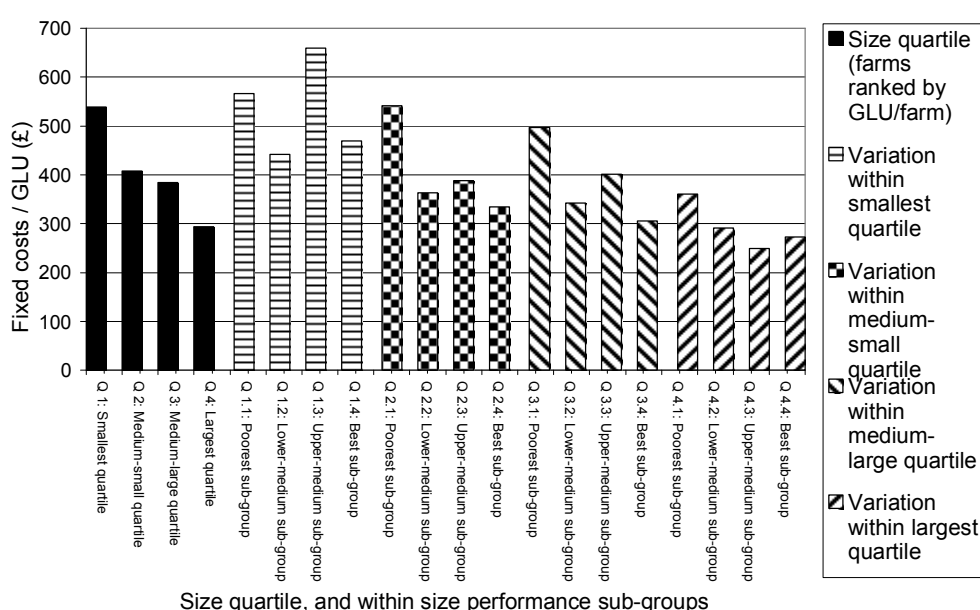
similar GLU (Figure 2), farms with smaller areas of farm land (Figure 9) will therefore receive a higher payment/GLU than farms with larger areas, at least up to 350ha because the half rate capping structure brings proportionally less

Figure 12. Variation in Livestock Variable Costs per GLU between size quartiles and, ranked by FBI/farm, within size quartiles.



benefit to larger farms (such an arrangement is clearly a disincentive to expand through land acquisition). But the average farm size by land area for any size category was below 350 ha (Figure 9). As a result of this payment scheme, better performing smaller farms gain most as they farm larger areas of farm land than poorer performing small farms (Figure 9). But as quartile size increases the percentage difference in farmed area between better and poorer performing sub-groups within the same quartile falls, resulting in diminishing

Figure 13. Variation in Farm Business Fixed Costs per GLU between size quartiles and, ranked by FBI/farm, within size quartiles.

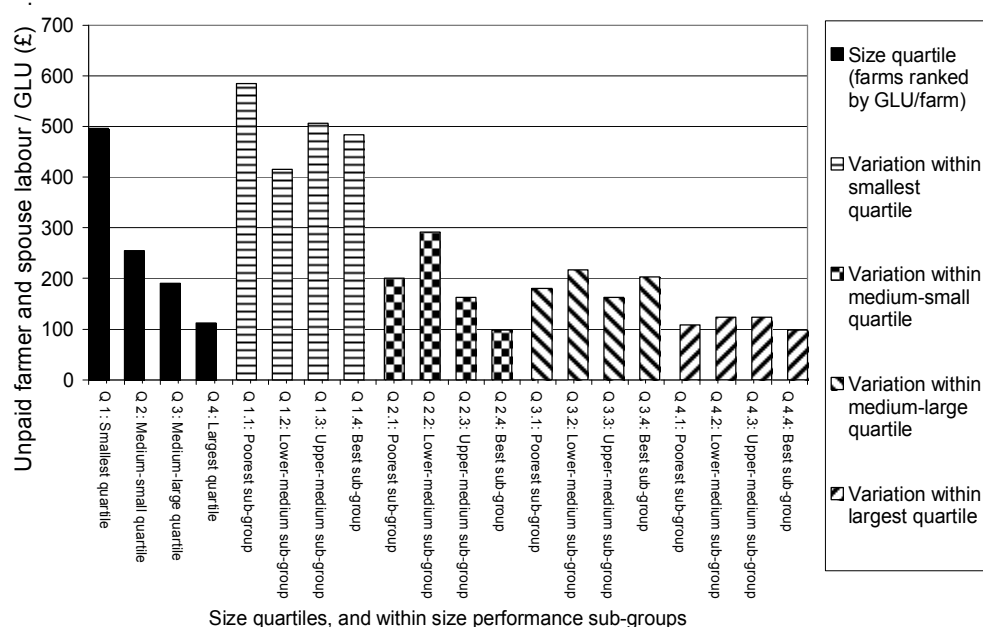


benefits with farm size quartile.

Figure 11 shows clear size and non-size effects of total cost per GLU. Farms in the smallest size quartile incur nearly £800/GLU, those in the largest about £530/GLU (a 33% difference). The non-size effects become more pronounced as size quartile increases; the poorest performing sub-groups always have the highest or second highest total costs/GLU in their size quartile. Farms in the best performing sub-group of the smallest quartile (Q1.4) spend the average for their quartile, but this is much more than any sub-group in the larger size quartiles (with the exception of the poorest performers in quartile 2 (Q2.1)).

Figure 12 shows livestock variable costs rather than total variable costs as these represent a substantial proportion of all variable costs, and both costs have a very similar pattern between and within size quartiles. There is little difference in average expenditure per GLU between quartiles indicating no size effects. As size increases, better performers tend to spend less per GLU than others within the same size sub-groups; this effect becomes more

Figure 14. Variation in Unpaid Farmer and Spouse Labour per GLU between size quartiles and, ranked by FBI/farm, within size quartiles.



pronounced with size.

Text books suggest economies of size are more likely to be observed in fixed than variable costs. Figure 13 confirms this, presenting evidence of pronounced cost economies of size. There are also non-size effects, with better farms within any sub-group tending to spend less on fixed costs/GLU. Within the smallest size quartile there is no clear trend but the best performers (Q1.4) spend considerably less than the poorest (Q1.1) and less than their size quartile average, but somewhat more than farms in the largest size quartile.

FBI makes no deductions for unpaid family manual labour and management. Imputed deductions (calculated by the FBS) for family manual labour and management are shown in Figure 14; there is a pronounced size and diminishing non-size effects. The £1,500 or so FBO/GLU earned by the best smallest farmers is sufficient to cover variable, fixed and imputed family labour costs, leaving about £300/GLU; however, they have only some 30 or so GLUs with which to scale-up this return to give the farm's reported profit.

Discussion

The use of traditional farm-type assets has a significant impact on the viability of smaller upland farms (Lobley and Potter 2004; Lobley *et al.* 2005), and this has consequences for the social and environmental sustainability of these regions (Midmore *et al.* 2001; Midmore and Moore-Colyer 2005). The research findings show that, on average, larger farms generate higher FBI/farm

10. Though this analysis is of the whole farm business, it is similar to conclusions reached in many analyses of individual farm enterprises (Franks *et al.* 2002; Inputs Task Force 2001)

than smaller farms, but some smaller farms outperform larger ones (Figures 1, 2 and 3). This suggests size has an important effect but does not totally dominate profitability¹⁰ and that smallness in itself is not an impenetrable barrier to achieving top ranking performance nor is large size a guarantee of profitability. The discussion shows how successful small farms use their agricultural-type resources to compete with larger ones, and assesses, within the confines of the available data, which of two farm business growth trajectories, expansion of flock/herds or developing more value added products from available farming assets, offers the most likely way of enhancing a farm's long-term viability.

Size and non-size effects and business growth.

The best sub-group of farms in the smallest size quartile (Q1.4) generate more revenue/GLU from (i) agricultural activities, (ii) Single Payment Scheme and (iii) HFA than any other sub-group, and their diversification income is matched only by other small farms in Q1.3: on the face of it a remarkable achievement. To do this they incur higher total costs than larger farms, but still spend less than the average for their size quartile. They spend about the same as larger farms on livestock variable costs/GLU but more than their size quartile average. As a result, they incur considerably higher fixed costs than almost all larger farms but spend less than similarly sized farms. It is by achieving high revenue/GLU and controlling rather than bearing hard down on variable and fixed costs where the best smaller farms show particularly expertise.

The analysis reveals four patterns in the research findings,

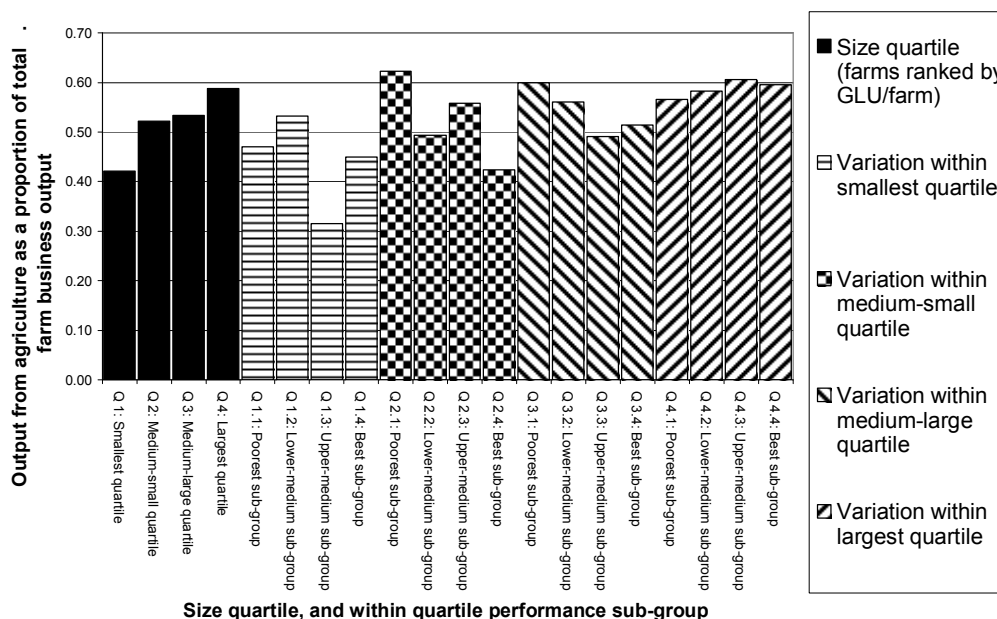
- (1) size and non-size effects in income streams, both of which diminish with size. For example Figure 4, Farm Business Output (FBO), Figure 8, 'agri-environment payments (excluding HFA)', Figure 6, SPS, Figure 7, diversification income and Figure 10, HFA;
- (2) size and non-size effects that increase with size. For example, Figure 11 and Figure 12, total and fixed costs respectively;
- (3) size effects, but no non-size effects. For example, Figure 14, unpaid farmer and spouse labour; and
- (4) no size effects but non-size effects which reduce with size. For example Figure 5, Output from Agriculture (OFA) and Figure 12, Livestock VCs.

From the perspective of smaller farms, there are two key observations. Firstly, the initial effect of increasing the size of a smaller farm is to gain in variable and fixed cost economies (total costs fall by £136/GLU) but this is more than off-set by a loss of income/GLU of £254/GLU (see Appendix Table A). Secondly, the range in sub-group performance within size quartile tends to reduce with size, this shows that there are more non-size opportunities for increasing profitability among smaller farms; (for example, there is a £410/GLU difference in Output from Agriculture between Q1.1 and Q1.4 but this is only £114/GLU between Q4.1 and Q4.4, see Appendix Table B). Both factors

reduce the attractiveness of expansion by small increases in GLU because doing so means the farm falls foul of this “adverse treadmill” whilst at the same time having fewer opportunities to add value.

Expansion by enlarging a herd/flock inevitably means more land will be

Figure 15. Variation in the proportion of output from agriculture to total farm business output between size quartiles and, ranked by FBI/farm, within size quartiles.



required, which must be released either by a reduction in the number of smaller farms or by breaking up larger estates. But the larger estates are those least likely to be split-up because they are likely to be the most profitable. This suggests that for many farms, expansion to increase business viability must be by increasing business turnover without increasing GLUs, i.e. by developing any available non-scale opportunities. To this end, income earned from diversification activities and support payments make especially important contributions: it appears that successful smaller farms have developed their diversification activities into their “unique farm signature” with which they have successfully differentiated their business.

Diversification as a survival strategy

The importance of diversified income is shown once again in Figure 15. As a farm increases in size the proportion of total revenue derived from traditional farming activities increases from 42% to about 60%. In contrast, the

11. Imports provide stiff competition to home-grown livestock products; the UK is a net importer of beef - 414,000 tonnes in 2006, 49% of UK production (Meat and Livestock Commission 2007: their Figure 1 page 5) and of sheep meat - 46,100 tonnes in 2006, 14% of UK production (Meat and Livestock Commission 2007: their Figure 5 page 22).

12. Details on household type, culture and education are not available from the available survey data.

Table 1. Comparison between best and poorest performers in smallest size quartile.

	Smallest quartile (Q1)	
	Poorest sub-group (Q1.1)	Best sub-group (Q1.4)
Farm Diversified income (£/GLU)	11	232
Farm type		
Total Cattle LU/farm	11.7	4.1
Total sheep LU/farm	17.3	26.6
Total LU/farm	29.2	31.5
Farm Size		
Total Adjusted Agricultural Area (ha)	50.3	100.8
Farm Tenure		
Area owner occupied (ha)	49.3	128.0
Area tenanted (ha)	6.5	0.0
Percentage owned (%)	88.4	100.0
Farm Indebtedness		
Total Assets/farm (£)	381,551	619,619
Total Debts/farm (£)	31,698	4,981
Total Net Worth/farm (£)	349,853	614,638
Farm Business Income/farm	-9,066	21,898

poorer performers in the three smallest size quartiles are most reliant on traditional farm activities: better performers generate a larger proportion of revenue from support payments (SFP, HFA and agri-environment) and diversification. Size can generate sufficient economics of scale to overcome the lower revenue/GLU on large farms, but over-reliance on producing basic commodities such as beef and lamb, which can be produced more cheaply and efficiently elsewhere¹¹, is clearly not an adequate basis for maintaining a viable small hill farm business. Few small upland farms can generate sufficient profit purely from traditional farming activities.

This analysis therefore confirms others showing the importance of diversification income to support the farm business (Bateman and Ray 1994; Potter and Lobley 2004; Meert *et al.* 2005). Several studies have identified barriers to diversification as farm type, farm size, tenure, indebtedness, household type, culture and education (Centre for Rural Research 2002). Table 1 presents selected data from the best (Q1.4) and poorest sub-groups (Q1.1) of smallest size quartile to investigate four of these potential barriers (Figure 1 indicates where these farms are located in the overall distribution)¹². The best performing farms have fewer sheep but similar overall GLU. Sheep need less labour to look after, and have been more profitable over the most recent years, and certainly since the introduction of the Single Payment Scheme (Franks *et al.* 2008: p 9, their Figure 4). The best performing farms also farm more land. They also own all their farm land. They own more assets and have fewer liabilities, resulting in a higher net worth. These factors may contribute to their greater ability and willingness to invest in possibly risky diversification opportunities.

Hill farms have the lowest proportion of diversified activities of any farm type (DEFRA 2008b: their table 9, page 9). This probably reflects their comparative disadvantage in resource base and location. The survey does not record the opportunities available to farmers who have not diversified (as is typical of such surveys), so it is not possible to speculate how many non-diversified farms have unused or under-used resources available to them to use to establish diversification enterprises should they wish to do so.

Improving performance of existing enterprises

The EBLEX enterprise data and this analysis highlight the wide range in enterprise performance among upland farms. This might imply scope to increase the profitability of farms by improving the worst performers, and benchmarking and demonstration farms have been suggested as an appropriate tool to help disseminate best practices to achieve this aim (Policy Commission on the Future of Farming and Food 2002)¹³. But benchmarking assumes that best practice is constant and that it can be bodily transferred from one farming context to another. This is over-simplistic because a good business is self-learning and flexible as this allows it to address needs and issues as they occur; best practice is not a particular set of techniques or methods, but the ability to do whatever is most appropriate at any given time. This makes replication difficult and transferability problematic, especially in a weather dependent, seasonal industry, characterised by location specific, heterogeneous businesses which typically face different sets of opportunities

13. Comparative analysis compares individual farm performance against industry standards, benchmarking is an activity which identifies the processes which underpin differences revealed in comparative analysis to show how things are done and which typically provides helpful (if not complete) information from which the financial outcome of adopting similar techniques/approaches can be calculated (Ronan and Cleary 2000).

14. Some of this information (but not all) would have been gathered by Defra's Special Studies of Farm Enterprise surveys but these are no longer commissioned: their loss is severely felt but they were expensive surveys to commission.

and constraints. These factors focus attention on some of the most important details of farming. However,

- The survey provides little information about these important details. For example, there is no information about breeds, autumn feeding to maximise flushing, ram and sheep ratios and feeding routines, use of scanning, managing the feeding plane as lambing approaches, shepherding routines and practices, vaccinations, grassland management, growth monitoring, marketing strategy, and replacement strategy to name but a few of the many variables that will determine outputs, values and costs of a sheep enterprise¹⁴.
- Key farm management activities include hiring and firing, lending and borrowing, buying and selling and planning and allocation; detailed information on hiring and firing, and planning and allocation is rarely reported in any farm survey.
- Time series data also adds to the value of an analysis, but ‘equivalent’ data is only available for 2005/6 (Fogerty and Robbins 2007) and although that has been analysed in a similar way to the 2006/07 report (Franks *et al.* 2008), these reports do not use an identical methodology, nor is the data reported from an identical sample of farms.
- Timeliness of data is particularly important, but both reports appeared more than a year after the surveyed farms’ financial year end.
- This analysis has ranked farms within size quartiles using FBI as the performance measure, clearly this includes diversification income. So whilst the more profitable farms may identify best business management practices, they may not be those which use best practices on traditional agricultural enterprises¹⁵.

So, for conceptual as well as operational reasons, benchmarking using this data set is unlikely to provide the necessary detailed information to inform operational changes on the farm. Rather, its value is to indicate broader strategic changes, such as the relative importance of different sources of income.

A way forward: developing a ‘unique business signature’

Rather than comparing against industry standards, farmers can form benchmarking groups to compare results and exchange information on the practical farming details often not reported in surveys of farm business performance. This can help overcome poor timeliness and help ensure farmers compare like-with-like (Franks and Haverty 2005). Such groups also reveal details of management attitudes, such as how the best farmers treat their work-life balance, which surveys rarely report. They can also help identify why such

15. Nor does it describe and comment on the proportion of the household income earned from traditional farm enterprises, the diversified use of traditional farm-type resources and off-farm income.

-and-such a practice works, why might a practice improve performance on my farm, what are the down-sides of implementing such a change – even for a good idea, can the practice be incorporated as a small scale experiment, how long will it take for the changes to become acceptable to staff and beneficial to the farming system? Such discussions help farmers to manage by judgement and method rather than by numbers and formulae; an important benefit for resource and constraint varying businesses.

Given the importance of diversification among smaller farmers in particular, it is most probable than benchmarking groups would discuss alternative uses of traditional agricultural-type assets. Such co-operation may help develop the networks that are becoming more important for some types of diversification. For example, joint marketing arrangements need a certain critical mass to ensure continuity of supplies for some markets and to fully capture available marketing economies of size. A bed and breakfast enterprise for tourists would benefit from other farmers providing distinctive local events, activities, and locally produced and prepared fare. Perhaps counter-intuitively, the success of developing a ‘unique business signature’ will increasingly depend on neighbours developing together a ‘complimentary collective business signature’ which reinforces and supports each another’s ‘unique business signature’.

Future support policies and business survival

The conclusions arrived at are based on financial performance two years after a major policy change, the introduction of the Single Payment Scheme. But farmers and markets are still reacting and adjusting to this policy change. This paper is not able to predict the distributional changes resulting from the Single Payment Scheme- which largely depend on each farm’s historic entitlements, farmed area and the area in each Regional Area Payment land-category. Moreover, there have also been changes to the HFA since April 2007 (DEFRA and Natural England 2008: paragraph 4.5, pages 33 and 34). From January 2008 land in Disadvantaged Areas is no longer entitled to receive the HFA (because such land attracts a higher Single Payment Scheme rate (DEFRA 2008e)). Additional changes to HFA payments are planned. Though HFA payments will continue to be paid until 2009, from 2010 these payments will become fully integrated into Environmental Stewardship through an Uplands Entry Level Stewardship tier – details are still awaited. It is likely these changes, alongside impacts of World Trade Organisation agreements and bans (or lifting of bans) on trade in livestock products, will alter the relative profitability of small and larger farms. Farmers need to be aware that the conclusions derived from this study may not apply once these policy changes have been introduced.

Conclusions

This paper has demonstrated a relatively straightforward but effective method for identifying opportunities and barriers to farm profitability due to farm size. The analysis has revealed characteristics of successful farms of

different size, and considered alternative expansion trajectories. It has focused attention on the use of traditional farming-type assets.

The analysis confirms the competitive advantage generally enjoyed by larger farms. But the data show a wide spread in performance: the poorest performing sub-group in each size quartile recorded a negative FBI/farm and some small farms are among the highest earners, and can be the most efficient and effective utilisers of resources. This suggests that size is beneficial but not in itself sufficient or essential to underpin a successful, profitable business and that smallness is not an absolute barrier to developing a profitable, successful business.

Larger farms farm larger land areas and benefit mainly through savings in fixed costs which outweigh poorer revenues per GLU. Successful smaller farms focus on generating high revenues whilst controlling rather than bearing down hard on costs; the importance of diversification income is clear in that better performing farms in the three smallest size quartiles are particularly dependent on income from such ventures: this is clearly a part of their business many have already developed as their 'unique business signature'. The survey does not reveal whether similar resources and opportunities are available to farmers who have not diversified: so key questions such as, 'do such farmers have similar opportunities?' and if they do, 'are they unable or unwilling to fully exploit them?' cannot be addressed. Where this source of income cannot be developed, the future of small upland farms in particular appears bleak indeed.

A principal source of revenue for English hill farmers is government support: SPS and HFA – together 30% of total revenue - and agri-environment payments. The main economic rationale for such payments is for the provision of public goods and ecosystem services that would otherwise be underprovided or destroyed. Each of these payment schemes will change over the coming years. The dynamic adjustments to the English SPS are by now well known, and will continue until 2012, with farmer's historic element gradually replaced by regional average payments. HFA payments will be substantially reformed in 2010 to become an upland level of Environmental Stewardships Entry Level. At the time of writing details of how this scheme will work have not been finalised, but the data presented here suggest that the continuation of the HFA revenue stream in some form will be critical to hill farms large and small. But this paper has not focused on the important distributional impacts of such changes – that important issue must await final scheme details and be the subject of other studies.

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Appendix: Table A. Comparing size and non-size effects: the relative importance of income and costs.

	Q1 Average	Q2 Average	Difference (Q2-Q1) £	%	Q3 Average	Difference (Q3-Q2) £	%	Q4 Average	Difference (Q4-Q3) £	%
Farm Output	1,065	778	-287	-26.9	814	38	4.6	697	-117	-14.3
Farm Business Output/GLU	967	713	-254	-26.3	760	47	6.7	666	-94	-12.4
of which										
Output from agriculture (A/GLU)	408	372	-35	-8.6	408	33	8.9	392	-14	-3.4
SFP/GLU	261	198	-63	-24.3	202	5	2.3	180	-23	-11.3
Diversified output/GLU	122	43	-78	-64.5	31	-13	-29.0	9	-22	-70.9
Agri-environment payments (ex. MFA/GLU)	124	61	-63	-51.0	80	19	30.6	52	-28	-34.9
MFA/GLU	52	38	-14	-26.9	42	4	9.3	34	-8	-19.2
Farm Business Total Costs	795	659	-136	-17.1	630	-29	-4.4	534	-96	-15.2
of which										
Farm Business Variable costs/GLU	256	251	-5	-2.3	246	-5	-1.9	240	-6	-2.4
of which										
Agriculture Livestock Costs/GLU	162	175	14	8.4	175	-1	-0.3	175	0	0.1
Farm Business Fixed Costs/GLU	539	408	-130	-24.2	384	-24	-5.9	294	-90	-23.4
Farm Business Income (net margin)	172	54	-118	-68.6	131	76	141.1	138	7	5.5
Unpaid farmer and spouse labour/GLU	498	255	-242	-48.7	191	-84	-25.2	112	-79	-41.2

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About the
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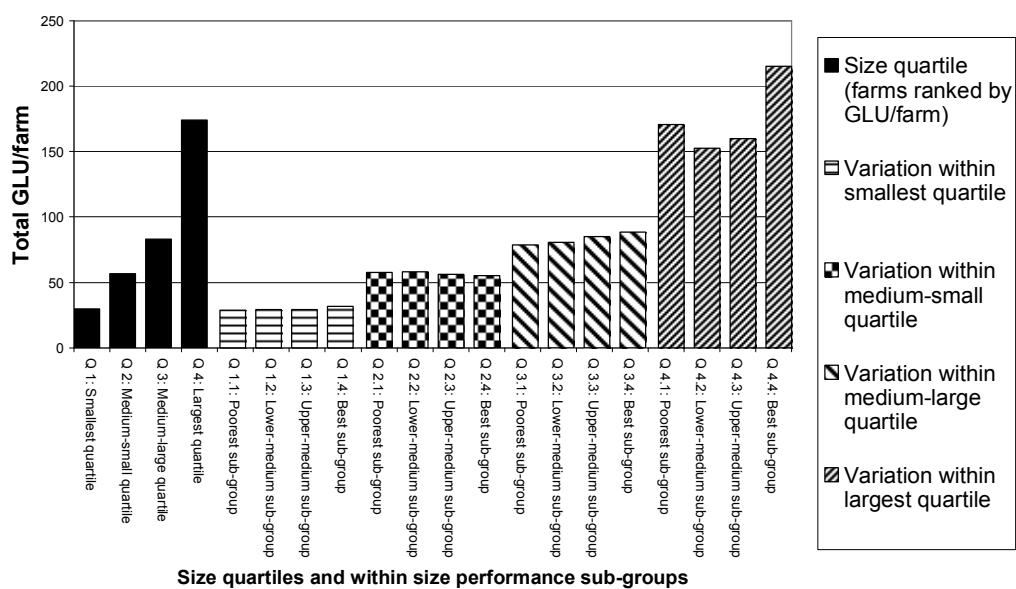
Appendix: Table B. Comparing size and non-size effects: the relative importance of income and costs.

	Q1.1	Q1.4	Q1.4-Q1.1 (%)	Q2.1	Q2.4	Q2.4-Q2.1 (%)	Q3.1	Q3.4	Q3.4-Q3.1 (%)	Q4.1	Q4.4	Q4.4-Q4.1 (%)
Farm Business Output/£LU												
of which												
Output from agriculture (B/£LU)	542	1,480	938	686	862	186	594	845	251	592	754	162
SFF/£LU	255	665	410	427	381	-86	358	435	79	335	446	114
Diversified output/£LU	171	377	206	147	249	101	160	204	44	179	188	9
Agri-environment payments (ex. HFA)/£LU	11	232	221	67	85	27	16	57	40	12	6	-6
HFA/£LU	66	115	49	24	101	77	24	97	73	34	75	41
	40	92	52	21	48	27	37	52	15	33	36	4
Farm Business Total Costs												
of which												
Farm Business Variable costs/£LU	853	785	-80	887	528	-360	719	503	-216	614	494	-121
of which												
Agri-environment costs/£LU	288	315	28	347	194	-153	223	180	-25	254	220	-33
Farm Business Fixed Costs/£LU	207	167	-10	241	127	-114	150	154	4	189	160	-29
Farm Business Income (net margin)	585	469	-86	541	334	-207	496	305	-191	380	273	-87
Unpaid farmer and spouse labour/£LU	-311	695	1,006	-201	322	523	-125	342	467	-22	279	301
	584	483	-101	201	99	-103	181	204	23	109	98	-11

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Figure 2. Variation in total GLU/farm between size quartiles and ranked by FBI/farm within size quartiles



7. Farms in the smallest quartile (Q1) were smaller than 44 GLU/farm, Q2 farms were between 44 and 69, Q3 between 69 and 107 and Q4 larger than 107 GLU/farm.