

Methodology for the Allocation and Apportionment of Fixed Costs by Cost Centre in the Farm Business Survey in England and Wales.

Background

A working party was set up to investigate the apportionment / allocation of costs in Section I. This working party proposed a methodology for the apportionment / allocation to FBSTG on 15 October 2008.

In response to QA recommendations, RBR had made considerable advances, via RO discussion with co-operators and through professional judgement, in terms of ensuring an enhanced coverage of allocating costs in Section I in 2007/08 than had previously been achieved.

At FBSTG concerns were raised with respect to the mechanism proposed and the philosophical principle of the cost allocation / apportionment approach proposed. The issue was referred to FBSPB.

FBSPB agreed that an enhanced mechanism for allocation of costs in Section I was required and that this should be based upon a combination of RO professional judgement and discussion with co-operators and via a mechanistic approach for other costs. It was recognised that it would be unlikely that any methodology that was proposed would achieve definitively accurate results and that any methodology introduced would be subject to review, post analysis of results.

FBSPB tasked RBR with proposing a revised mechanism for the apportionment and allocation of costs in Section I. In conjunction with Defra and FBSTG members, a draft proposal was developed, circulated and tested. The methodology to be implemented for 2008/09 is set out below.

First the methodology centres upon RO allocation / apportionment for labour (direct and overhead) across Section I activities. This relies upon ROs discussing labour usage with the co-operator and allocating the direct labour to the enterprise with an added element for overhead labour.

Second, machinery costs within Section I continue to be allocated by ROs where these are known (as currently), with a mechanistic approach for the allocation of "overhead" machinery costs.

Thirdly, the methodology details a mechanism for direct allocation of known General Farming Costs within Section I by ROs (as currently undertaken), *plus* a mechanistic approach to the allocation of "overhead" general farming costs across Agriculture, Diversification, Agri-Environment Schemes, and the Single Payment Scheme, based upon output levels, with a 'dampened down' cost apportionment to Rental Income, Agri-Environment Schemes and the Single Payment Scheme cost centres, reflecting their lower resource use of these costs.

Fourth, the methodology sets out an approach which relies upon a straightforward mechanism, based upon Gross Margins, for the allocation of land and property costs (including rent/rental value) across Agriculture, Agri-Environment (AE) Schemes and the Single Payment Scheme (SPS) (all of which are users of land, generally simultaneously) whilst land and property costs to other diversified activities will draw upon ROs applying the rental allocation to income bearing assets approach currently in use within the FBS. Other property costs to all diversified activities will use the Gross Margin mechanism.

Fifth, the methodology details that occupier expenses be allocated on the same basis as land and property costs.

Sixth, whilst excluded from NFI, interest received and charged is required in calculations for FBI measures. The methodology details that the apportionment of interest as currently calculated should be included in the individual farm returns post data completion, utilising imputed Section J costs and revenues.

Seven, it is recommended that a footnote accompanies the presentation of cost and FBI data across the four cost centres to ensure that stakeholders are aware of the methodology used to apportion costs.

Methodology

The following recommendations for allocation and apportionment of costs in Section I are proposed below.

1) Labour Costs and hours

For Section I activities, ROs should allocate **direct labour costs** and add an element of **overhead labour costs** for each activity (including SPS and AE) in Section I. **Labour hours** for Section I activities should be allocated in Section B, which then feeds into Section I. This labour allocation should include an overhead allocation for labour hours.

With respect to guidance to ROs in determining an “overhead” amount, ROs should seek to determine in discussion with the farmer what proportion of their time they spend on overheads, either specific to an enterprise or more generally across their farm business. Where a proportion of labour is allocated as overheads for the Farm Business overall (e.g. 10%) this would then be split pro-rata (on the basis of labour hours) across all enterprises, including Section I activities. In the absence of farmer knowledge about an appropriate overheads figure, the RO should typically allocate 12-20% of total direct labour hours as overheads (Wilson, 2009). For an example Section I enterprise using 100 hours direct labour hours, 12-20 hours as overheads would also be added. Where direct labour hours are incurred, ROs should allocate an overhead amount of labour to the activity as noted above; for pragmatic purposes, where no direct labour is incurred (e.g. wayleave payments or other non-labour requiring revenue streams) there would be no requirement to specify an overhead labour element.

2) Machinery Costs

Machinery Cost Allocation / apportionment. ROs should allocate direct machinery cost to activities within Section I, *where known*, following the current methodological approach. In addition, an “**overhead Machinery Cost**” will be allocated (for each of the following costs - Contract, Machinery Rental, Machinery equipment valuation etc, repairs and small tools, vehicle fuels and oils, car mileage expenses) on the basis outlined below, taking into account the output of the activity, with AE, SPS, and Rental Income allocation ‘dampened down’ to reflect their lower requirement of these activities for overhead machinery costs.

Overhead machinery costs to all other activities will be allocated on the basis of their full output. The proportion of total machinery costs defined as “overhead” will draw upon previous research.

The following activities will be excluded from the apportionment of **overhead** machinery costs and the value of their output will be excluded from the apportionment methodology within Section I: [Imputed farmhouse and imputed farm cottage rental income {320, 321, 340}, capital credits {940}, appropriate share of machinery grants {276}, appropriate share of glasshouse grants {277}, permanent crop establishment grants {274}, disaster aid {272}, FMD Distress donations {990}, Co-op trading bonuses {930}, Miscellaneous insurance receipts {950}]. The apportionment of machinery general farming costs to other Section I activities will be as set as below.

Total of the following Machinery Costs for the Farm Business (Contract, Machinery Rental, Machinery equipment valuation etc, repairs and small tools, vehicle fuels and oils, car mileage expenses) (Z_m). Take the cost already allocated to the Section I activity (Y_m). $Z_m - Y_m = V_m =$ Total machinery cost net of direct costs allocated in Section I (e.g “Machinery Rental to Agriculture and overheads for Section I”). Assume that the overhead element of this is 11.3% (based upon report by Abigail Tiffin). Calculate the overhead machinery cost (e.g. Machinery Rental) to the business, after direct allocation to Section I, as $0.113 * V_m = X_m$.

Obtain total output for Agriculture (OutputAg), Entry Level Scheme (OutputELS), Other agri-environmental schemes (OutputOAE), SPS (OutputSPS), Rental Income (OutputRental), Other section I Output (excluding those listed above) (OutputOtherSection I) and calculate the following

OutputAg = **G**

OutputELS * 0.1 = **H**

OutputOAE * 0.25 = **I**

OutputSPS * 0.1 = **K**

OutputRental * 0.1 = **L**

OutputOtherSection I = **M**

G + H + I + K + L + M = J

Overhead machinery cost (X_m) is then allocated to each activity by

$$\text{Overhead machinery cost to Agriculture} = X_m * \frac{G}{J}$$

$$\text{Overhead machinery cost to ELS} = X_m * \frac{H}{J}$$

$$\text{Overhead machinery cost to OAE} = X_m * \frac{I}{J}$$

$$\text{Overhead machinery cost to SPS} = X_m * \frac{K}{J}$$

$$\text{Overhead machinery cost to Rental} = X_m * \frac{L}{J}$$

$$\text{Overhead machinery cost to Other Section I activities} = X * \frac{M}{J}$$

The cost allocated within Section I is then the direct machinery cost allocation **plus** the overhead machinery cost from the above formulaic approach. Note that this approach will allocate an overhead machinery cost for each type of cost where there is a positive output for the activity in Section I, for the listed machinery cost categories (assuming that the individual machinery cost for the business is greater than the cost already allocated to Section I, as will occur in most cases; where the machinery cost for the business is all allocated by the RO directly to activities in Section I, there will not be an “overhead” element to allocate via the mechanistic approach).

Note that the machinery cost allocated to Agriculture will be the total machinery cost for the farm business minus the sum of machinery costs directly allocated in Section I and the overhead machinery costs apportioned to Section I.

3) General Farming Costs

For Section I activities, **general farming costs** continue to be allocated directly by an RO **where these are known** for activities in Section I. In addition, an “**overhead General Farming Cost**” will be allocated (for each cost, e.g. electricity, professional fees) on the basis outlined below, taking into account the output of the activity, with AE, SPS, and Rental Income allocation ‘dampened down’ to reflect their lower requirement of these activities for general farming costs.

General farming costs to other activities will be allocated on the basis of their full output. The following activities will be excluded from the apportionment of **overhead** general farming costs and the value of their output will be excluded from the apportionment methodology within Section I: [Imputed farmhouse and imputed farm cottage rental income {320, 321, 340}, capital credits {940}, appropriate share of machinery grants {276}, appropriate share of glasshouse grants {277}, permanent crop establishment grants {274}, disaster aid {272}, FMD Distress donations {990}, Co-op trading bonuses {930}, Miscellaneous insurance receipts {950}]. The apportionment of overhead general farming costs to other Section I activities will be as set as below.

Total of each general farming costs (GFC) for the Farm Business (e.g. Electricity) (**Z_g**). Take the Electricity already allocated to the Section I activity

(Y_g). Z_g-Y_g = X_g = Agriculture and Overhead GFC (e.g “Electricity to Agriculture and overheads for Section I”).

Obtain total output for Agriculture (OutputAg), Entry Level Scheme (OutputELS), Other agri-environmental schemes (OutputOAE), SPS (OutputSPS), Rental Income (OutputRental), Other section I Output (excluding those listed above) (OutputOtherSection I) and calculate the following

OutputAg = G

OutputELS * 0.1 = H

OutputOAE * 0.25 = I

OutputSPS * 0.1 = K

OutputRental * 0.1 = L

OutputOtherSection I = M

G + H + I + K + L + M = J

Agriculture and Overhead GFC (X_g) is then allocated to each activity by

Agriculture and Overhead GFC to Agriculture = $X_g * \frac{G}{J}$

Agriculture and Overhead GFC to ELS = $X_g * \frac{H}{J}$

Agriculture and Overhead GFC to OAE = $X_g * \frac{I}{J}$

Agriculture and Overhead GFC to SPS = $X_g * \frac{K}{J}$

Agriculture and Overhead GFC to Rental = $X_g * \frac{L}{J}$

Agriculture and Overhead GFC to Other Section I activities = $X_g * \frac{M}{J}$

The cost allocated and apportioned within Section I is then the direct cost allocation **plus** the overhead general farming cost from the above formulaic approach. Note that this approach will allocate an overhead general farming cost for each type of cost where there is a positive output for the activity in Section I, for each general farming cost category (assuming that the individual general farming cost for the business is greater than the cost already allocated to Section I, as will occur in most cases; where the general farming cost for the business is all allocated by the RO directly to activities in Section I, there will not be an “overhead” element to allocate via the mechanistic approach).

4) Land and Property Costs

For AE and SPS (and Agriculture) activities, **land and property costs** (including rent/rental value) be allocated on the basis outlined below; this aspect being based upon cost allocation that takes into account the Gross Margin (GM) derived to the farm business from each of Agriculture, AE and SPS, and allocates land and property costs on this basis.

The GM basis is proposed for Agriculture, AE and SPS, because it is at GM level that a farmer makes a decision about which, and whether, to grow crops or produce livestock products, or not undertake any Agriculture activity. As the

level of Agriculture activity falls on a farm, the allocation of land and property costs would increasingly fall on the SPS cost centre if the farm business only undertook Agriculture and SPS activities. The logical conclusion being that if a farmer ceased Agriculture production, all land and property costs would be apportioned to the SPS cost centre; if a farmer used only a small area of a farm for Agriculture and the majority under SPS without production, the majority of land and property costs would be apportioned to SPS.

In typical examples, where all land is used for Agriculture, SPS (and AE), the majority of land and property costs would be apportioned to Agriculture unless the GM derived from Agriculture was particularly low. Land and property costs that are directly allocated to / for specific AE schemes (e.g. repair and maintenance of stiles) will be deducted from the total land and property costs to be apportioned across Agriculture, SPS and AE to ensure no double counting of costs occurs. Rent/rental value to diversified activities with income bearing assets will draw upon ROs applying the rental allocation to income bearing assets approach currently in use within the FBS. For those diversified activities with no income bearing assets, no overhead rent is applied. The remaining property costs will be allocated to all diversified enterprises on the basis of gross margins.

The proposed apportionment of rent / land and property costs for Agriculture, AE and SPS is set out below:

- i) Total rent / land and property costs for the Farm Business (**A**)
- ii) Total rent / land and property costs from diversified “market” activities plus any directly allocated costs to AE (**B**)
- iii) Net rent / land property costs for Agriculture, AE and SPS to be apportioned given by $A - B = \mathbf{C}$
- iv) Sum GM for Agriculture, AE and SPS (**D**)
- v) Calculate percentage of **D** attributed to Agriculture (**Ag%**), AE (**AE%**), and SPS (**SPS%**)
- vi) Net rent / land and property cost apportioned to each activity is then given by

Rent / land and property cost to Agriculture = $\mathbf{Ag\% * C}$

Rent / land and property cost to AE = $\mathbf{AE\% * C}$

Rent / land and property cost to SPS = $\mathbf{SPS\% * C}$

Where the GM for Agriculture is negative, a zero cut off would be imposed to reflect a similar situation to whereby no agriculture activity took place (and hence no positive agricultural GM was generated). Where property costs have been directly allocated to AE, the total rent / land and property costs for AE will be the sum of the costs directly allocated, plus the apportionment ($\mathbf{AE\% * C}$) above.

5) Occupiers Expenses

Occupiers expenses (buildings works & net depreciation, insurance of farm buildings, landlord type repairs) will be applied and apportioned using the same methodology as land and property costs (tenants repairs & rates) noted above in Section 4.

6) Interest Charged and Received

Whilst excluded from NFI, interest is included within the calculation of FBI. The current apportionment of interest in the FBS as detailed in Table 9 of the GOR reports is "Interest payments have been allocated between cost centres in proportion to costs, and interest received in proportion to output". The above calculation will be incorporated in the individual farm returns post data completion by RBR at Duchy with inclusion of imputed Section J costs and revenues from Defra.

7) Presentation of data

It is recommended that the results of the cost apportionment and resulting FBS figures are reported with appropriate footnotes to provide a brief explanation of the methodology applied. It is recommended that the following text, or similar, be noted when the four cost centres' results are reported.

"The apportionment of land and property costs across the cost centres presented is based upon directly allocatable costs for diversified enterprises, with costs across agriculture, agri-environmental schemes and the single payment scheme apportioned on the basis of their respective gross margin contribution across these three cost centres. Apportionment of general farming costs and overhead machinery costs are based upon the respective output generated by each cost centre, weighted to reflect the degree to which each activity draws upon these costs."

For tabular results, a presentation of data as below would aid interpretation

Farm Business Income (FBI)	£20,000
<i>Of which, by cost apportionment</i>	
FBI Agriculture	£ 5,000
FBI Agri-environment	£ 2,000
FBI Diversification	£10,000
FBS Single Payment Scheme	£ 3,000

A further note will be required to alert users to the methodological change implemented in 2008/09, and that consequently 2008/09 cost and FBI data are not directly comparable with results from previous years.

Conclusion and Recommendation

The above methodology provides a mechanism for enhanced allocation of costs to Section I activity. Given the philosophical arguments surrounding the principle of cost apportionment / allocation within Section I, it is argued that any approach should be as transparent as possible, easily understandable by ROs in terms of its implementation, and as interpretable to farmer co-operators and stakeholders who make use of the FBS data as possible.

The above methodology be implemented for 2008/09 FBS season. A brief review of a sample of accounts will be undertaken early in the 08/09 campaign,

with a fuller review of the data returns after the 2008/09 to identify if further methodological changes are required.

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Wilson, P. (2009). Analysis of Labour Usage Data from the Farm Business Survey 2004/05 to 2007/08. Report submitted to DEFRA Farm Business Economics Division, December 2009. Available at <http://www.ruralbusinessresearch.co.uk/>

Updated 21/4/2015 regarding labour hours