The Economics & Prospects For Hill Farming

Nethergill Associates

December 2019

Grip blocking

Splachnum sphaericum (pink stink dung moss)


For Nethergill
I am the
public face
of the
public payments
for the
public benefit

Goal

Balancing the needs of food, farming, nature and communities

- A foundation for people and communities to live and work
- High quality beef and lamb, for people to eat
- Landscape and nature for people to step off their world and revive
- Natural services that are essential to the well-being of society: clean water; carbon storage and biodiversity

Objective

Upland businesses that are robust & prosperous

Trends

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1. Net hill farm income (loss) after support: (£10,000) *(Harvey and Scott 2017)*
2. Environment
   - Scotland: species on average declined over recent decades & this decline has continued in the most recent decade. There has been no let-up in the net loss of nature *(State of Nature 2019, Scotland)*
   - England: farmland bird index less than half (45%) of its 1970 value *(Defra Wild Bird Populations in England, 1970 to 2017)*
3. The Paradox of Increased Productivity *(TG Benton and R Bailey)*

   As yields increase the:
   - Calories available per person on a global basis increases
   - Price decreases and availability increases
   - Amount of food wasted increases in an accelerating way
   - Prevalence of obesity per person increases
4. Decline in red meat eating *(Harris interactive survey 2018)*
   - 31% of consumers changed diet because of animal welfare concerns
   - 17% concerns around the ethics of meat, higher still in respondents 18 to 44

What We Have Found Out

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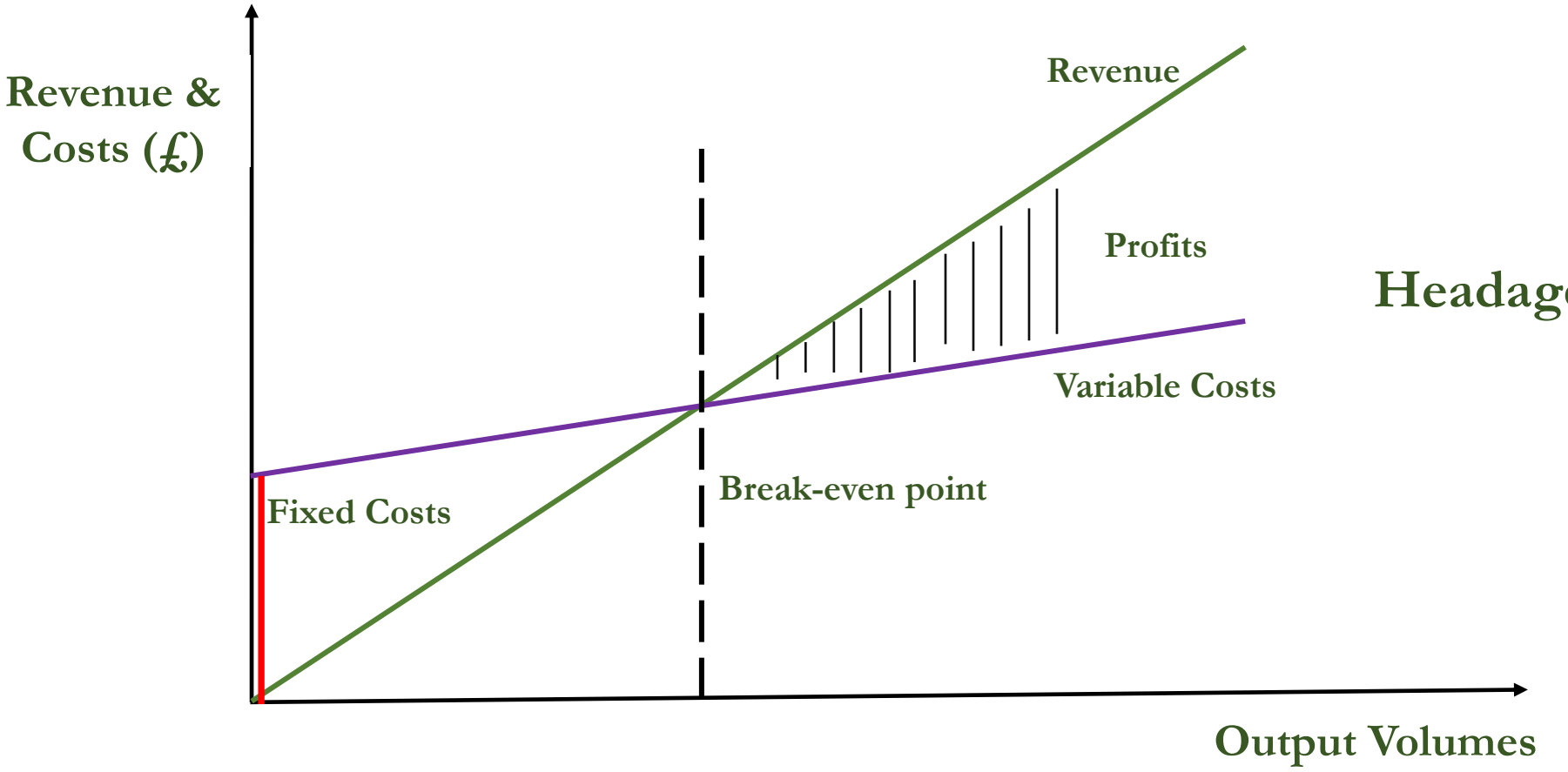
1. The economic (commercial) performance of hill farms is NOT driven by:
   - Sales of livestock (output volumes)
   - Acreage
2. Profitability, before support or other sources of additional income, is a simple function of the

   AVAILABILITY OF NATURAL GRASS
3. When the natural grass runs out, extra costs are incurred to compensate and these costs invariably reverse profitability
4. Match the stocking rate to the availability of natural grass

Glossary

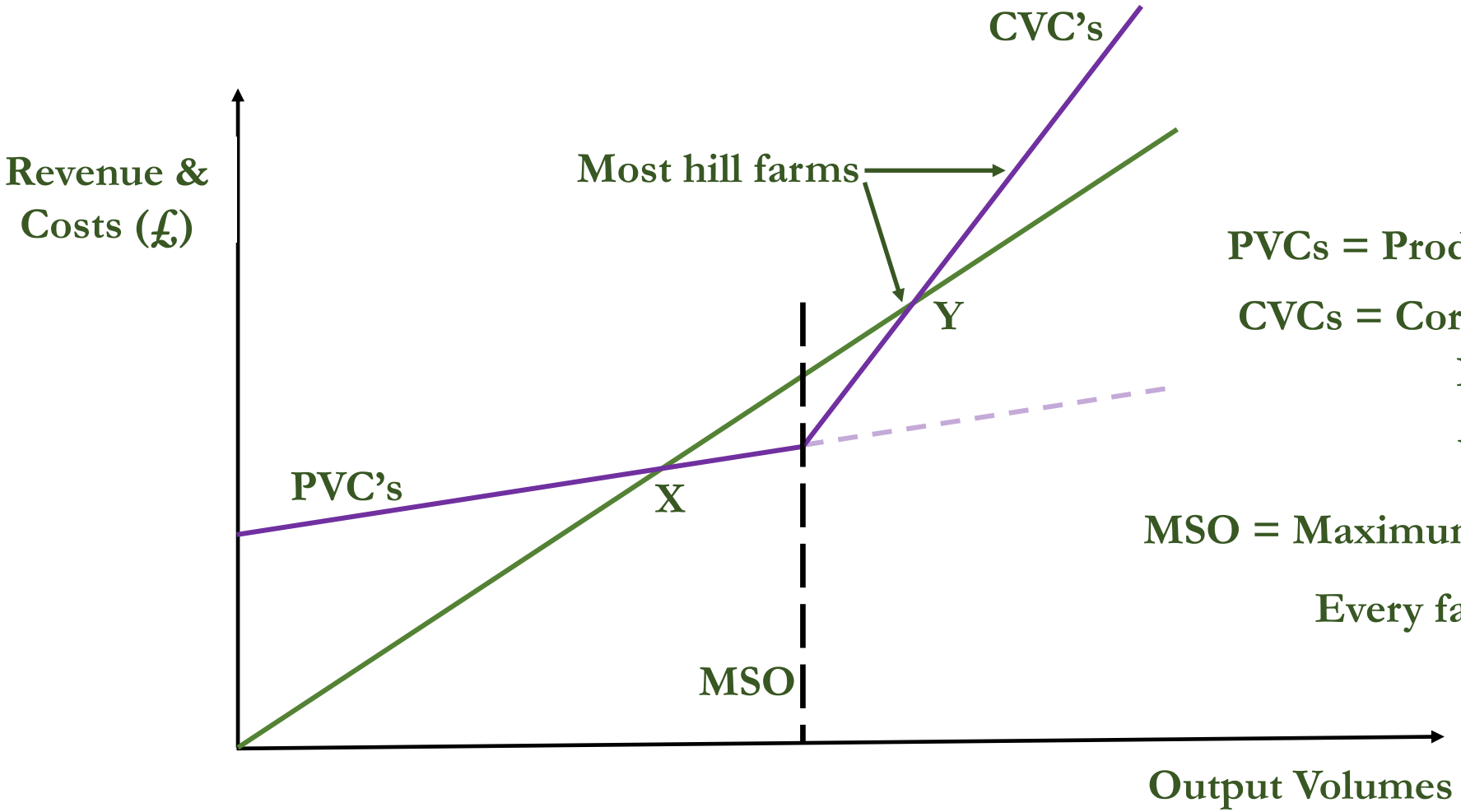
Term		Explanation
Break-even point		The point at which all fixed costs are recovered
Break-back point		The volume at which profitability is reversed
Fixed costs (FC)		Unavoidable costs: (rent, utilities, bank interest & charges)
Productivity		The gain over and above what is put into the business (effort & cost)
Sustainable output		What can be done before corrective variable costs cut in (linked to optimum stocking rates)
Variable costs (VC)	Productive (PVC)	Valuable activities: measured per animal (e.g. home grown concentrates, contract labour,)
	Corrective (CVC)	Unwanted activities: measured per animal (e.g. livestock feed, fertiliser, vet & med)

Traditional Theory does not work for hill farms



Headage Payments

The Hill Farm Model



PVCs = Productive Variable Costs

CVCs = Corrective Variable Costs

X = Break-even point

Y = Break-back point

MSO = Maximum Sustainable Output

Every farm has its' own MSO

Summary of MSO

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Hill farming variable costs do not behave in ways that are common

- *Productive variable costs* (PVCs)
  - Variable costs are incurred up to the point where the natural grass runs out
  - Labour, home-grown concentrates, bedding, machinery costs (contract, fuel & oil) etc.
- *Corrective variable costs* (CVCs)
  - Additional variable costs are incurred after the grass runs out
  - These costs are corrective in the sense that it corrects for deficiencies in latitude, elevation, and precipitation
  - Purchased concentrates, vet & med, fertiliser, sprays etc
- *Maximum sustainable output* (MSO)
  - The point at which CVCs are incurred
  - The same as the point at which the grass runs out
  - The MSO coincides, too, with the point of maximum profitability

MSO Observations

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- Although counter-intuitive, by moving to MSO
  - Stocking rates are matched to the naturally available grass
  - Environment improves
  - Access to public payments for public goods improves
  - Unit costs are never better
- The future for hill farming is to conceive strategies that will increase the MSO
- Unless land-based organisations (e.g. Caingorms NPA) can prove their policies result in an increase in the viability of farming & the re-capitalisation of the environment the policy must be questionable

The Pattern Of Farming In Nidderdale

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Examination of 28 farms in Nidderdale

- Not a homogeneous group and comprised three types:
  - **Small Farms**
    - Less than £50,000 farming revenues before support payments
    - There were 14 in this group
    - Average size: £29,166
  - **Standard Farms**:
    - Farming revenues of £50,000 to £150,000 before support payments
    - There were 10 in this group
    - Average size: £102,583
  - **Industrial Farms**: with farming revenues in excess of £150,000 without support payments
    - There were 4 in this group
    - Average size: £411,534

Composite Farms

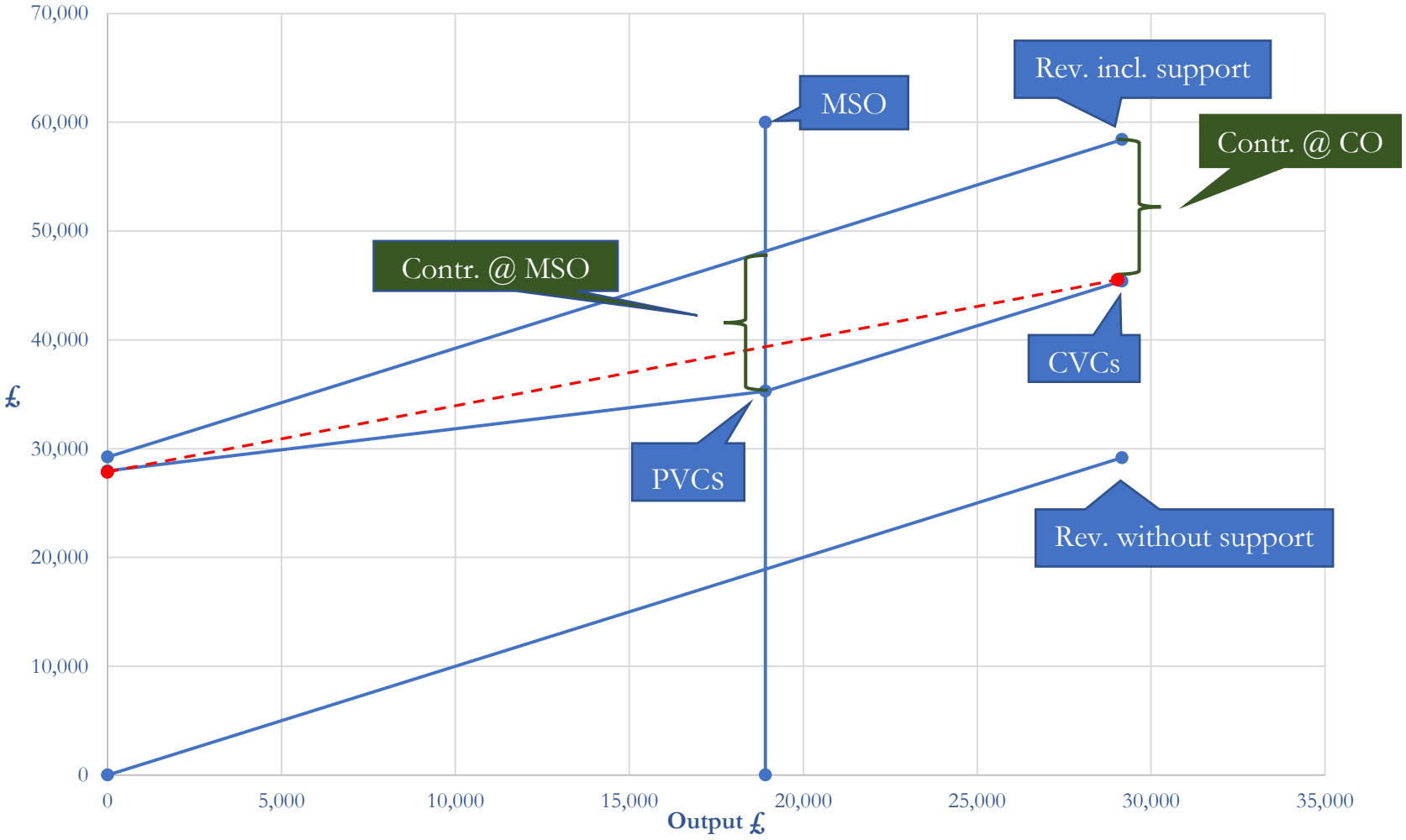
- A composite farm has been identified for each of the three types

Composite farm performance	Small Farms < £50K	Standard Farms £50k to £150k	Industrial Farms > £150k
Average	£	£	£
Farm Revenues	29,166	102,538	411,534
Productive variable costs (PVCs)	7,328	20,447	65,260
Corrective variable costs (CVCs)	10,121	44,956	170,555
Total variable costs	17,449	65,503	235,815
First level contribution	**11,717**	**37,235**	**175,719**
Fixed costs	27,957	59,730	174,738
Second level contribution	**(16,311)**	**(22,545)**	**981**

Composite Farms

Composite farm performance	Small Farms < £50K	Standard Farms £50k to £150k	Industrial Farms > £150k
Average	**£**	**£**	**£**
Farm Revenues	29,166	102,538	411,534
Second level contribution	**(16,311)**	**(22,545)**	**981**
Misc. Income (Spouses income, FTC, diversification)	33,639	31,432	61,766
Third level contribution	17,328	8,887	62,747
Support	29,236	44,434	103,401
Fourth level contribution (BPS, ELS, HLS, others)	46,564	53,321	166,148
MSO Revenues	**19,715**	**75,393**	**308,843**

Nidd Small Farms: Business Performance



Nidd Small Farms: Business Performance

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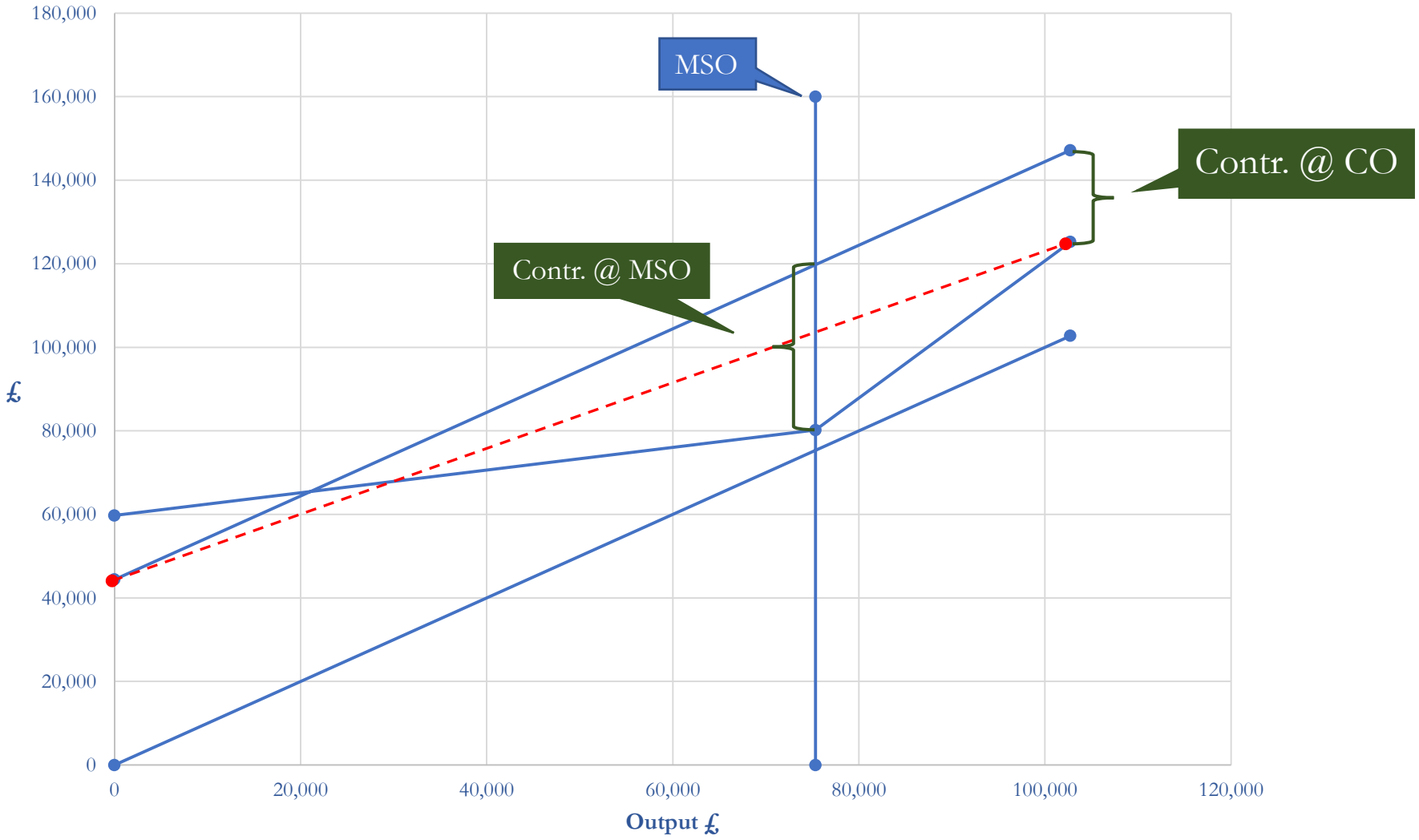
- Working beyond MSO level
  - Downsizing towards this point will produce better profitabilities & less cash risk
  - The potential gains from this tactic could be considerable (being equal to the full CVCs expense at its' maximum - 10k).
- The composite small farm makes a loss of £16,311
  - Downsizing to its' MSO (£19,715) offers the scope to save up to 10,121 on CVCs.
  - This alone is not sufficient to cover its' losses, however, but it does offer a considerable improvement.

Nidd Standard Farms: Business Performance

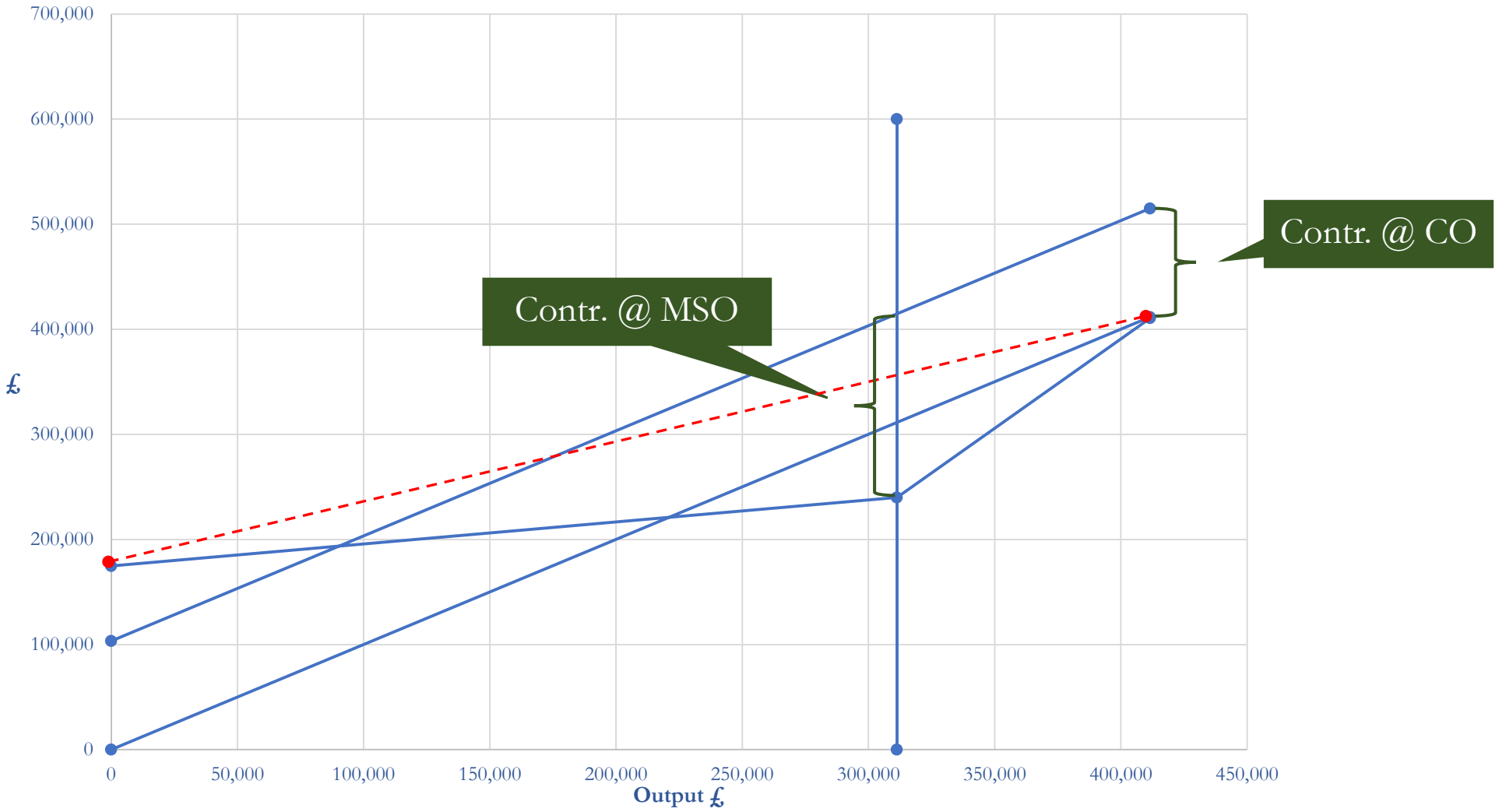


Nidd Standard Farms: Business Performance

NETHERGILL FARM

- Working beyond MSO level
  - Downsizing towards this point will produce better profitabilities.
  - The potential gains from this tactic could be considerable (being equal to the full CVCs expense at its' maximum - -£45k).
- The composite standard farm makes a loss of £22,545
  - Downsizing to its' MSO offers the scope to save up to £44,956 on CVCs.
  - Achieving this would nearly eliminate overall losses.

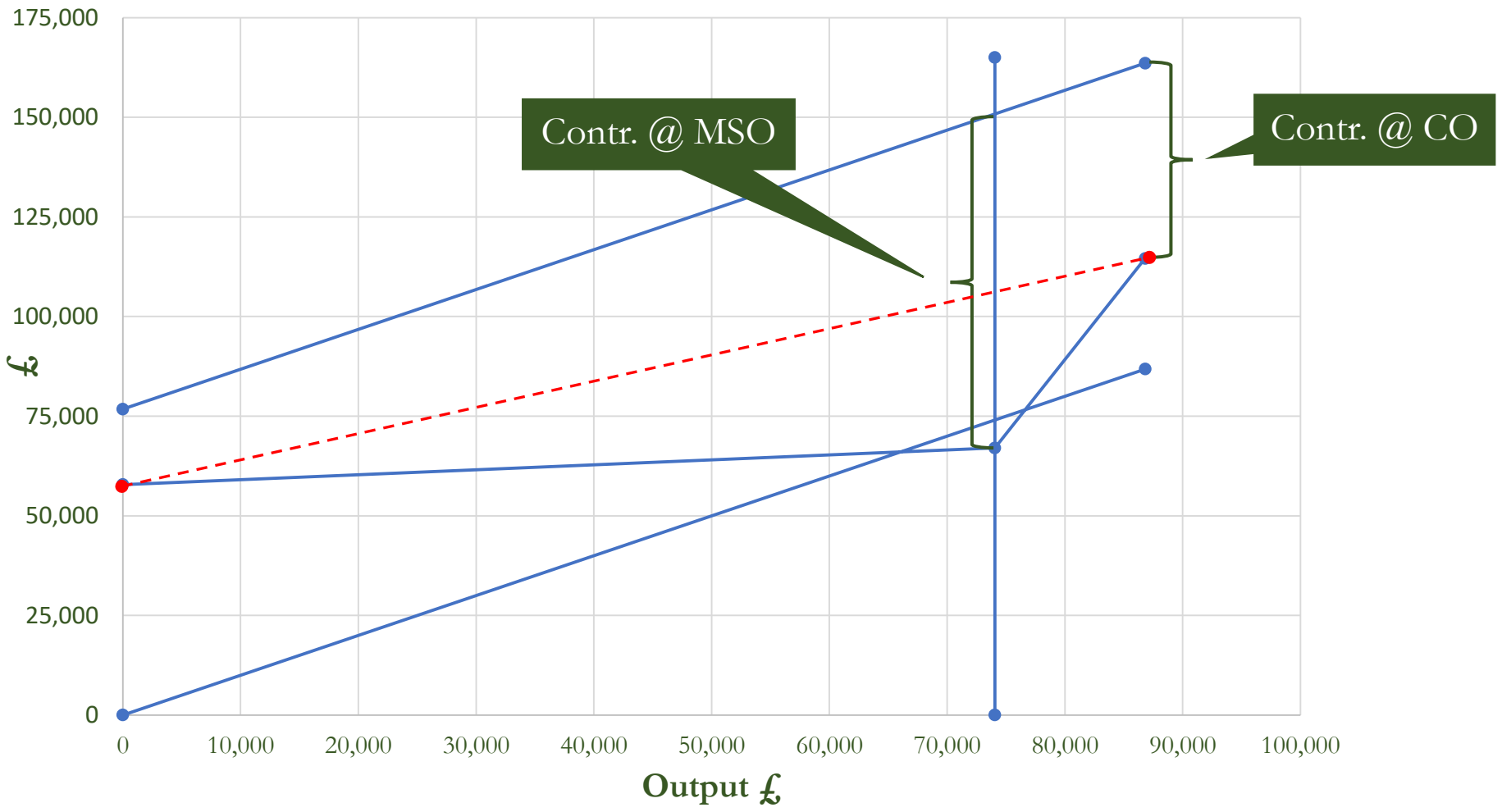
Nidd Industrial Farms: Business Performance



Nidd Industrial Farms: Business Performance

- Working beyond MSO level
  - Downsizing towards this point will produce better profitabilities
  - The potential gains from this tactic could be considerable (being equal to the full CVCs expense at its' maximum - £180k).
- The composite industrial farm just makes a profit of £981.
  - However, with only four farms in this group, this result is influenced by the losses incurred by one of the number.
  - The potential gains of downsizing to MSO levels are still quite prodigious for this group.

Case Study: Hill farm, sheep & beef



General Conclusions On Leverage

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Price

- Commercial production (i.e. fully profitable) on the Nidderdale hill farms would require a price increase of over **60%** on average
  - This is not a realistic proposition in a marketplace that is over-supplied and where prices are set by the least-cost-producer.

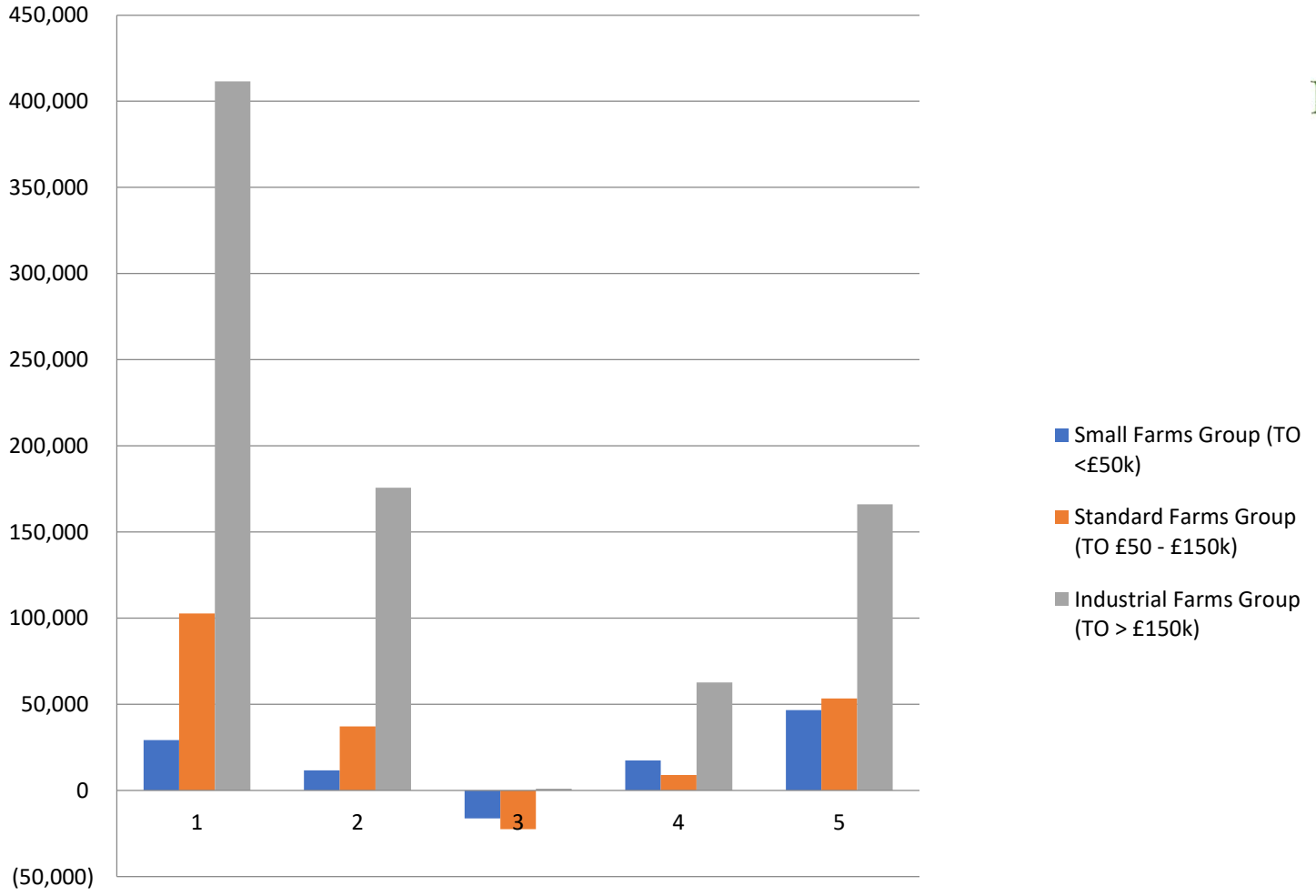
Volume

- Commercial production would also require a volume increase (on the traditional but questionable theory of the firm) of over **3x**
  - This would take farms past the points of maximum sustainable output and would destroy any profits achieved along the way

Nidderdale Farms Study

Composite Farm Comparisons

All farms struggle to be profitable (column 3) without support

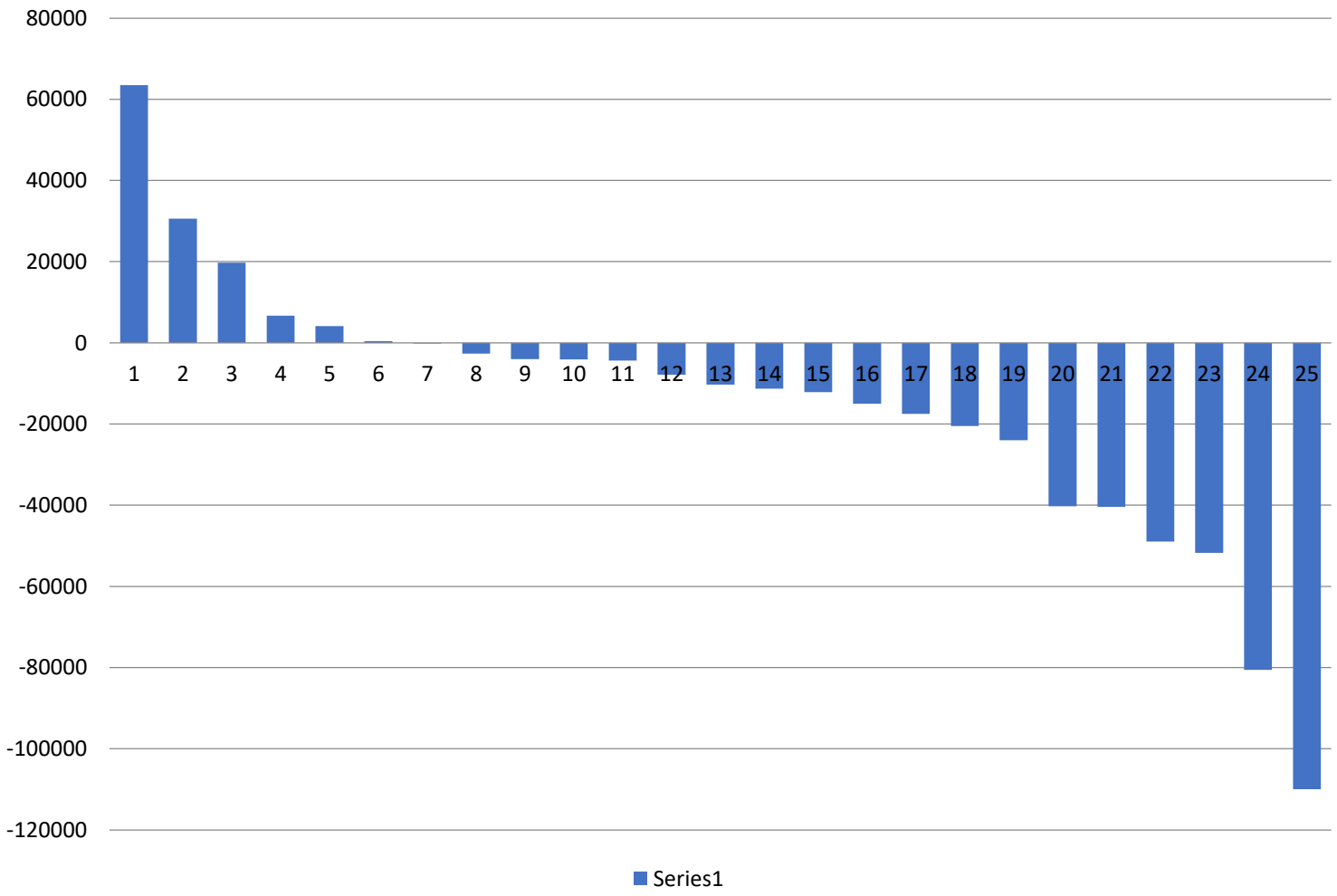


Col 1: Farm Revenue
Col 2: Contribution after Variable Costs deductions
Col 3: Contribution after Variable plus Fixed Costs deductions
Col 4: Net Contribution after adding-in Miscellaneous Farm Income
Col:5 Net Contribution after adding-in Support Payments

Nidderdale Farms Study

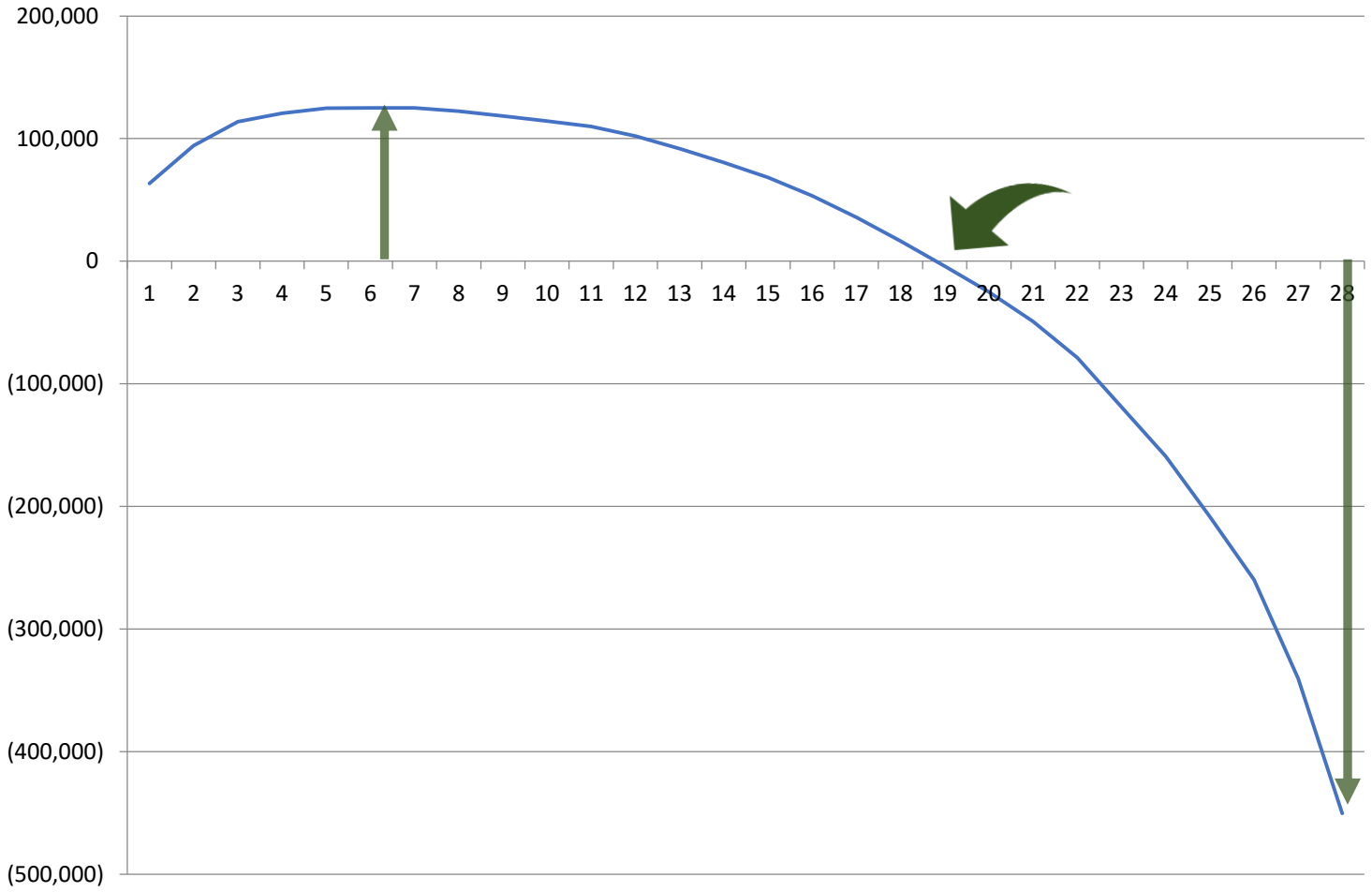
Ranked profitability's

- No 1 corresponds to the most profitable Farm in the Study
- No 25 corresponds to the least profitable



Nidderdale Farms Study
Cumulative profitability

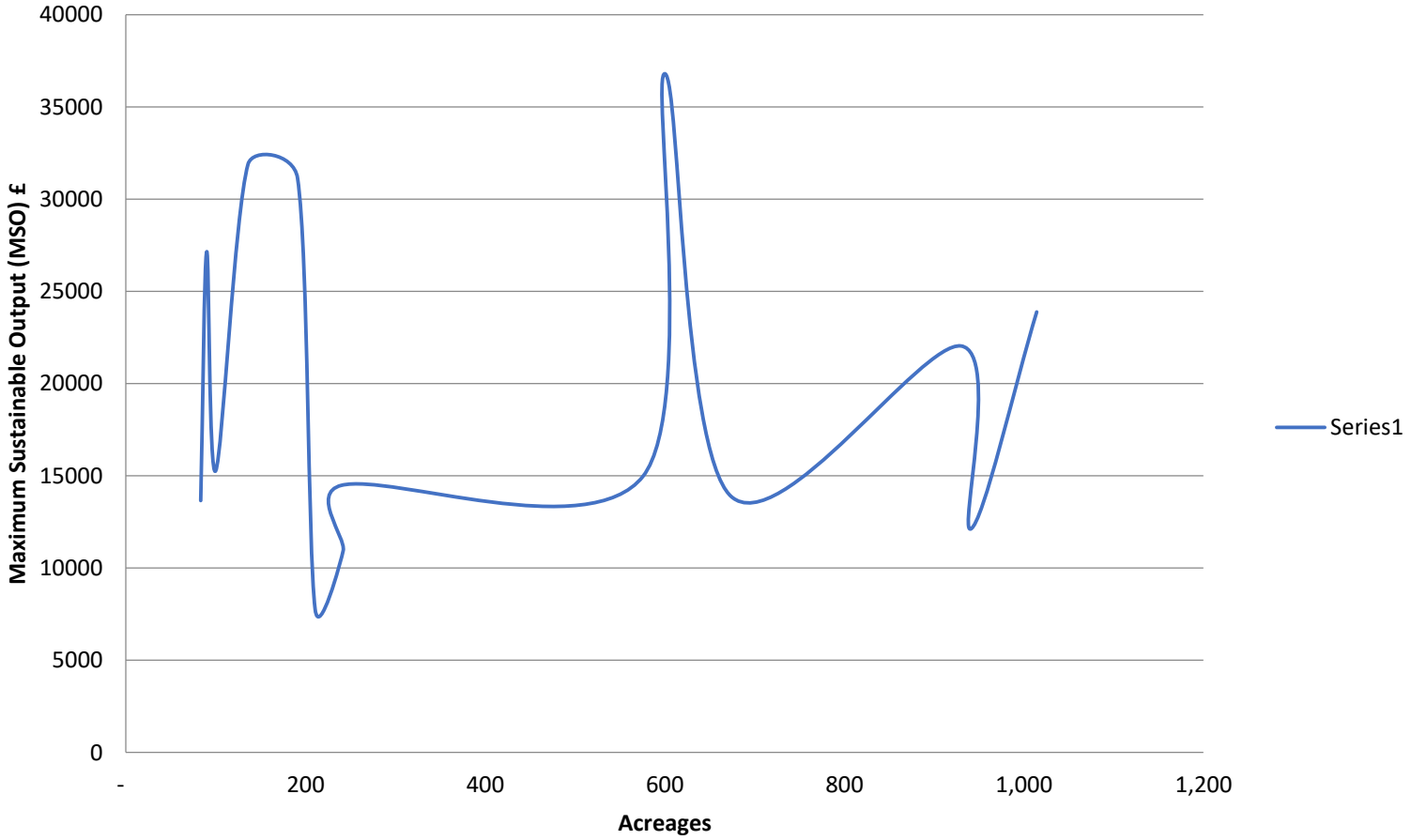
- Maximum economic contribution to the community at Nidderdale is achieved by the top 6 farms (c.£130,000)
- The benefits to the community are neutral at 19 farms
- At 25 farms the community is in massive deficit (c.-£400,000)



Nidderdale Farms Study

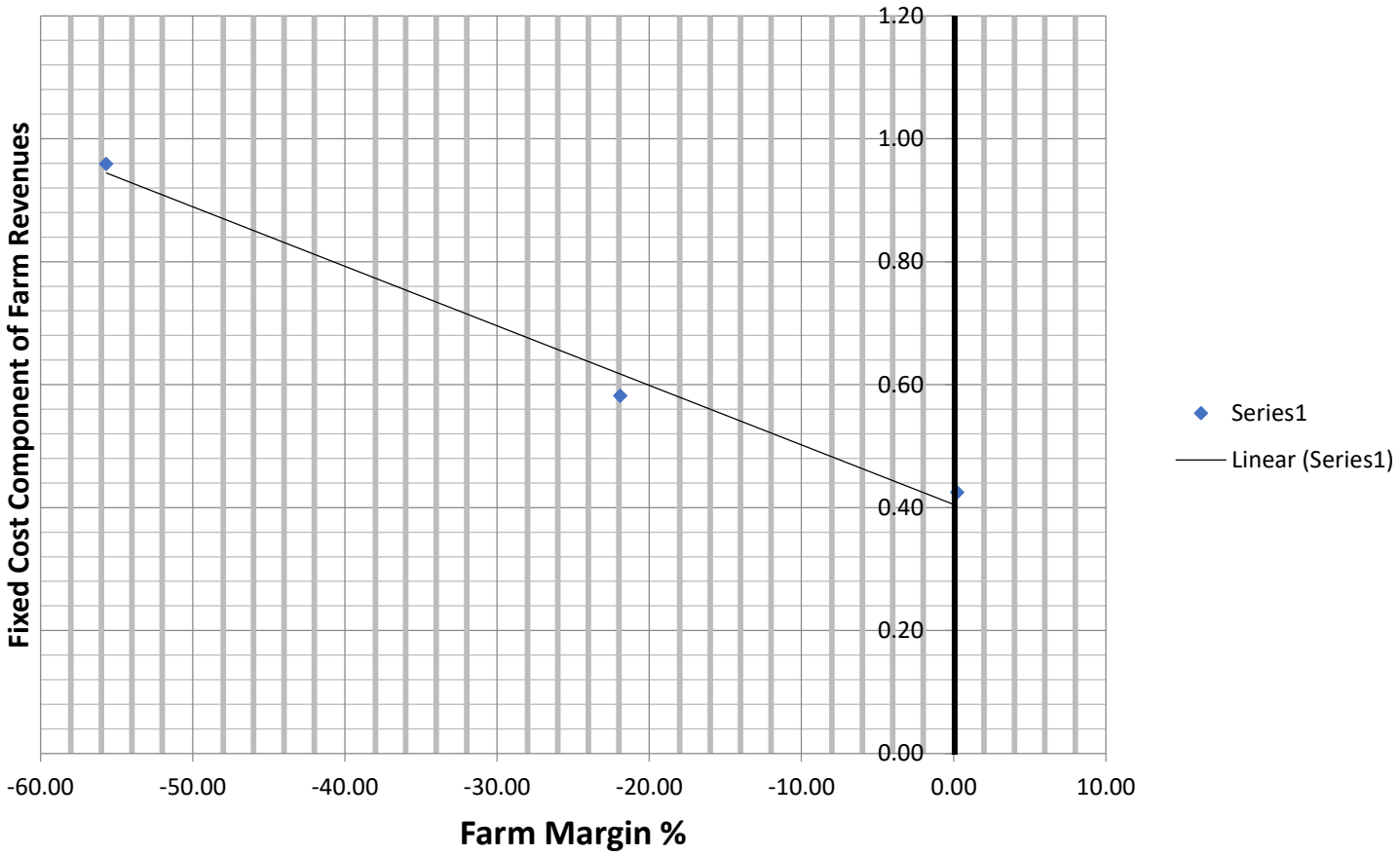
MSO and farm size

- The MSO for a farm is not related to its acreage
- The availability of grass on a hill farm is not a simple matter acreage
- This poses a real conundrum



Nidderdale Farms Study
Cumulative margins & fixed costs

- Margins improve as the burden of Fixed Costs is reduced
- Profitability is only achieved when Fixed Costs are less than 40% Farm Revenues



Observations

1. Hill farming is the endeavour by which natural resources can be used to:
   - Deliver high quality food produce
   - Satisfy market demand
   - Provide commercial gain for the farm
2. Its main obligation is to do so sustainably
   - Without de-capitalising the land asset to a point of infertility
   - Without de-capitalising the biodiversity to the point of red listing

Summary of Key Conclusions

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- All Farms struggle to be profitable without support
- No Farm is profitable when Fixed Costs exceed 40% Farm Revenues
- The Study Farms, in aggregate, place a drain of circa £400,000 on the Nidderdale Community before other income streams and support payments are taken into account
- The are no relationships between:
  - Farm Revenues and Acreages:
  - Farm Revenues and Farm Profits

Summary of Key Conclusions

NETHERGILL FARM

- The absence of any relationships signal that a wide variety of influences come into play regarding:
  - The physical aspects of a Farm (Elevation, Land Condition)
  - The Management of the Farm (Practices, Effort, Intensity)
- The Maximum Sustainable Output (MSO) bears no relationships to acreages
  - Acreage seems not to be the determinant of how much natural grass is available to a Farm
  - Other physical features (Elevation, Land Condition) would seem to be the driving factors
- The Small Farms Group have developed a greater proportion of Miscellaneous Income than the other two Groups
  - Either, out of necessity (other Family income)
  - Or, diversification (even if very limited)

Reaction & comments

Hill farmer quotes

- Unsurprised but really anxious
- I thought you knew what you were doing!
- I'm a farmer, I don't want to do anything else
- I'm a farmer, I can't do anything else
- If I don't work long hours I'm not a good farmer
- How do I move on?
- Will I be able to stay here?
- What will I do if I can't?
- If I do what you suggest, how do I hold my head up at the auction mart?
- It's not easy to get another career
- We will always be supported

The Way Forward (1)

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1. Move down to MSO levels of output
   - Progressively, but as soon and as fast as is practicable
   - Eliminate CVCs as downsizing is achieved
   - Review situation after 3 years (and possibly re-compute the MSO)
2. Tackle all fixed costs aggressively
   - Eliminate all unnecessary costs
     - That is anything not strictly necessary
     - Some of these costs will be associated with over-specified plant and under-utilised equipment
   - Contain all residual unavoidable costs (without which the business could not be physically viable)

The Way Forward (2)

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3. Develop some branding for the products
   - Team-up with, say, National Parks, AONB (& others) to develop a regional approach to a *branding structure & corporate identity structure*
   - To define specifications and standards for product confirmation
   - To define protocols for animal welfare
   - To create an image that will help to market:
     - Product differentiation
     - Standards
     - Value of the market offer
     - The essence of the region, etc
   - This will require additional investment in facilities and working capital (often considerable)

Concluding Observations

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- The audience for MSO isn't just farmers
    - Government
    - Defra
    - RPA
    - NGOs
    - Landlords
- Land lords/owners
    - Assess tenants capability to manage a business
- Tenants
    - Plan & budget

To Repeat!

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The economic and commercial prospects for Hill Farms is driven by:

1. The availability (and quality) of natural grass
2. The ability of the farmer to use this resource effectively.

Finally

NETHERGILL FARM

1. Put the management of the business first
2. By default the environment will benefit
3. Please, don't believe that by increasing production your business will be more profitable
4. Embrace budgeting, it becomes addictive!!