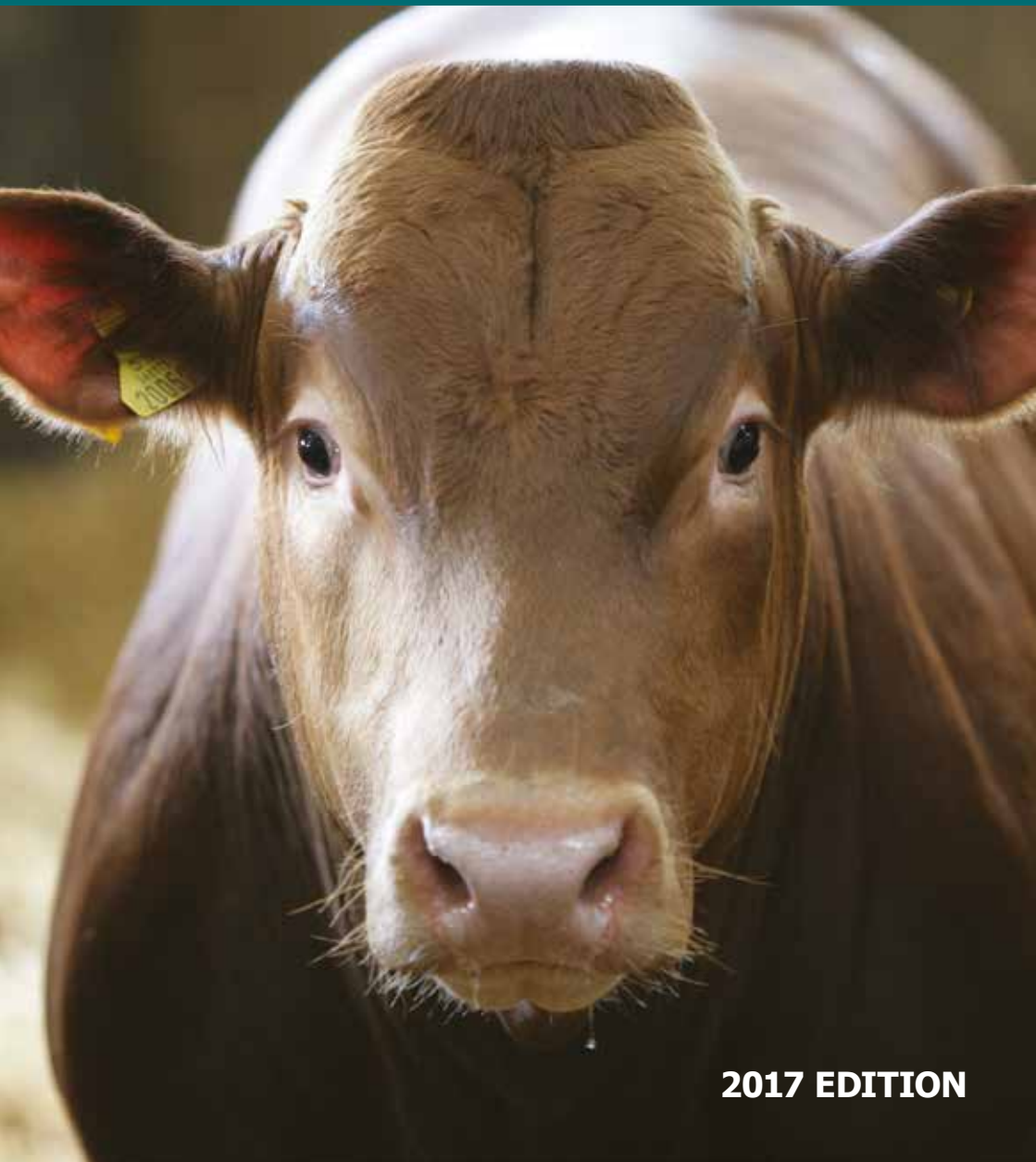
Cattle and Sheep Enterprise Profitability in Scotland



2017 EDITION

Cattle and Sheep Enterprise Profitability in Scotland

Quality Meat Scotland (QMS)

ISSN 2051-560X

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EXECUTIVE SUMMARY

- This report on enterprise profitability covers the 2016 calf and lamb crop year, a period during which prime stock prices generally failed to match the levels seen in the previous year. Store cattle and lamb prices also failed to match year earlier levels for most of the period. Revenues were, however, offset to varying degrees by lower feed, fertiliser and energy prices.
- Although the results show some improvement in margins among suckler herds they continue to illustrate the scale of the challenge of achieving a positive margin without CAP support. Thirty-six per cent of suckler herds in the survey achieved a positive net margin, which is a small fall from the 38% last year but is still higher than the 2014 and 2013 calf crop years.
- Margins among store finishers were unchanged from last year with only 30% of businesses surveyed achieving a positive margin.
- The proportion of hill ewe flocks making a positive net margin fell slightly from 14% in 2015 to 10% in 2016. Meanwhile, net profitability among upland flocks improved with 68% per cent of upland flocks recording a positive net margin, up from 60% last year. Similarly, lowground flocks also saw improved margins with 85% of lowground flocks surveyed achieving positive net margin compared to 66% for the 2015 lamb crop. For store lamb finishers, the proportion achieving a positive net margin almost halved to 38% of the sample from 71% last year. Nevertheless, businesses reporting positive net margins still struggled to deliver a fair return for labour and capital.
- The survey results continue to show significant variation in levels of financial and technical performance within the industry.
- Top producers continue to be characterised by:
  - High physical, or technical, performance
  - Strong control over costs
  - Maximising returns from the market place
- Across suckler herds, those in the top third of financial performance are characterised by high productivity and resource efficiency. All delivered more physical output per cow in the herd than the average for the group; this was driven largely through higher calf weaning rates. While not all achieved the highest per kg market prices the higher physical output delivered highest revenue per cow in the herd.
- Suckler herds in the top third of financial performance were also characterised by strict cost control. Management of the breeding herd typically manifested itself through lower cow mortality and lower herd replacement rates leading to lower herd maintenance cost. Equally, those in the top third had lower total variable costs than the average while achieving higher output. In all cases, variable costs per kg of calf reared were lower among the top third. Fixed costs were also firmly controlled; in all cases, top-third producers had lower fixed costs per kg of output, even if on occasion the fixed cost per cow was higher than the average.

- Those in the top third of sheep producers similarly achieved higher outputs through better stock performance. By rearing 7–13 more lambs per 100 ewes than the average, the top-third flocks typically sold 5 kg lwt more lamb per ewe. They also typically realised higher selling prices for all classes of lambs sold, resulting in income per ewe from lamb sales of £10 per ewe more than the average.
- The LFA hill suckler herds surveyed had an average gross margin of £318 per cow and a net margin of (-)£99, a slight improvement on the year. The top third averaged £425 per cow gross margin, an improvement over the average of £107 per cow, and a net margin of £33 per cow. Of the fifteen producers surveyed, four achieved a positive net margin.
- The LFA upland suckler herds were split into two categories, one group selling at weaning and a second group selling yearling stores. Those selling at weaning made an average gross margin of £412 per cow, but were outperformed by their counterparts selling yearlings, who achieved an average gross margin of £452 per cow. However, after taking account of fixed costs the tables were turned and those selling at weaning had a net margin of £3 per cow. In contrast, although an improvement on last year, the average net margin among those selling yearling cattle remained negative at £28 per cow. Thirty-six per cent of businesses selling calves at weaning achieved a positive net margin. In contrast, among those selling yearlings, 40% of the businesses achieved a positive net margin.
- Non-LFA suckler herds reported an average gross margin of £413 per cow, unchanged on the year however, higher fixed costs pushed net margins down to an average of just £3. Fifty-six per cent of businesses surveyed achieved a positive net margin. Those in the top third achieved a net margin of £106 per cow. The improvement over the average was achieved through higher revenue per cow as a result of producing 38kg more output per cow in the herd.
- Rearer finisher businesses surveyed recorded an average gross margin of £555 per cow, an improvement of £65 on the year, with the top third averaging £744. The average net margin also improved to £0. The number of enterprises in the group that achieved a positive net margin improved to 45%, up from 30% last year.
- Cereal-based cattle finishers surveyed reported an average gross margin of £145 per beast and a net margin of £40 – a fall of £22 on the year. Although cattle were generally sold at higher prices than last year, margins were squeezed by higher feed and bedding costs. Those in the top third achieved an £144 improvement in net margin over the average; this was characterised by adding more weight per animal finished but achieved this with lower concentrate use. Two-thirds of businesses in the survey reported a positive net margin unchanged on last year.
- Forage-based finishers have been split into two groups, those selling cattle under 22 months of age and those selling cattle over 22 months of age. Those selling younger cattle achieved an average gross margin of £164 per beast and reported a net margin of (-)£74 – an improvement of £18 on the year. Those selling older cattle achieved a gross margin of £155 per head and net margin of (-)£105 a decline of £26 per head on the year. Twenty -eight per cent of those selling younger cattle achieved a positive net margin, up slightly on the year, compared to just 6% of those selling the older cattle, unchanged on the year.

- LFA hill sheep enterprises in the survey achieved, on average, a gross margin of £23 per ewe, a decline of 10% on last year. The top third benefited from higher prolificacy and lamb weights resulting in a net output £10 per ewe higher than the average; with variable costs £4 per ewe lower, this improved productivity transferred into a gross margin £14 per ewe better than the average. Nevertheless, on average the group achieved a net margin of (-)£17 per ewe, a deterioration of £1 per ewe on last year. Net margins among the top third fell to (-)£9 per ewe having been positive last year. Less than 10% of the sample achieved a positive net margin, falling from 14% who achieved this last year.
- Two-thirds of upland ewe enterprises surveyed reported a positive net margin, up from 60% last year, with the average of £4.50 per ewe – double last year's level. However, those in the top third achieved a net margin of £17 per ewe, slightly down on last year. On average, variable and fixed costs per ewe were little different from last year, so improvement in margins was driven by higher market prices.
- Lowground breeding ewe businesses in the survey saw improvement in technical performance from last year, resulting in more lambs to sell. Improved market prices also contributed to significant improvement in incomes. However, higher variable and fixed costs eroded that improved income to a point where net margins were some £5 per ewe better than last year. Eighty-five per cent of those surveyed achieved a positive margin and improvement from 66% last year.
- Store lamb finishers faced lower market returns in early 2017 than a year earlier. This contributed significantly to the gross and net margin per lamb finished falling by around £3 per lamb. Notwithstanding that the average net margin per store lamb finished was positive, only 38% of the flocks surveyed achieved a positive margin – down from 71% last year.
- For a second year, estimates have been made of the greenhouse gas emissions associated with the enterprises surveyed and reported on the basis of net liveweight produced or added during the surveyed year. The calculations were made using the SAC Consulting's resource efficiency calculator AgRE Calc. The results show a clear correlation between the best financial returns, the best technical efficiency and the lowest greenhouse gas emissions per unit of output. In the same way that this report summarises the opportunity that exists for the industry to improve financial margins, it also shows the scope to reduce emissions at the same time.

INTRODUCTION

This report summarises the results of a survey of Scottish beef and sheep enterprise profitability during the 2016 calf and lamb crop year. The survey was commissioned by Quality Meat Scotland and carried out by SAC Consulting.

The survey covers 69 breeding ewe enterprises farming 38,000 ewes and 106 suckler cattle enterprises farming 10,300 suckler cows, 13 enterprises finishing just over 7,400 store lambs and 50 cattle finishing enterprises selling 4,500 prime cattle. The number of organic herds and flocks in the survey made up 2% of the suckler herds and 1% of the ewe flocks surveyed. The survey provides a snapshot of the industry during 2016. This report compares, for each sector, the costs, revenues and margins achieved by the top third of producers, the bottom third and the sample average.

The concluding sector of the report provides some comparative analysis with the results from 2014 and 2015. However, it must be stressed that the comparisons are not identical samples of businesses.

Within the analysis of the survey, an enterprise's estimated fixed and variable costs can be found as well as their estimated gross and net margins. The gross margin is left after variable costs have been deducted from an enterprise's revenues. Then, once fixed costs have been subtracted from the gross margin, one is left with the enterprise's net margin, which rewards the farmer for their labour and capital investment. Fixed costs have been allocated to the livestock enterprises on a farm in direct proportion to their share of the total sales revenue of that business. Within mixed livestock farms, fixed costs have been allocated between cattle and sheep enterprises in relation to their proportion of Grazing Livestock Units. The reporting of bottom third, average and top third is based on ranking enterprises by gross margin per head of livestock.

The analysis has been extended to include estimates of the time committed to the enterprises by family labour for which no charge has been recorded in the estimate of net margins. The level of income required to provide a 5% return on an enterprise's working capital has also been estimated, in addition to the opportunity cost of the land used.

All area-based support payments have been excluded from this year's analysis of the returns derived from livestock enterprises, since there is no obligation for livestock production to take place in order to receive area payments. However, the Scottish beef calf premium has been included, since it is coupled to the level of production.

Estimates of carbon efficiency have been made using SAC Consulting's AgREcalc methodology.

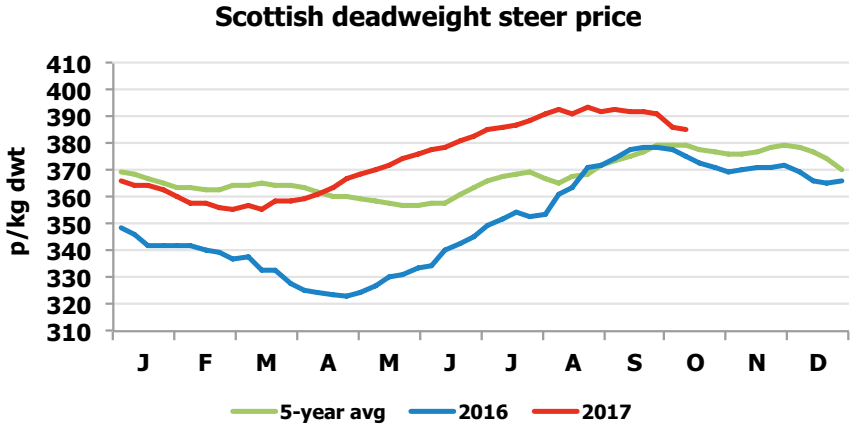
The considerable range of land types and production systems found in Scotland inevitably means that any survey of businesses cannot cover all options. However, results are presented for a comprehensive range of enterprise types, namely:

- LFA Hill herds selling calves at weaning
- LFA Upland herds selling calves at weaning
- LFA Upland herds selling forward stores
- Non-LFA Herds
- Rearer-finisher herds
- Cereal-based finishing enterprises finishing cattle under 20 months of age
- Forage-based enterprises finishing cattle at under 22 months of age
- Forage-based enterprises finishing cattle at over 22 months of age
- Non-LFA breeding flocks
- LFA upland ewe flocks
- LFA hill flocks using Blackface or Cheviot stock
- Store lamb finishers

Both the range of performance and the key contributing factors to these differences in performance between businesses are demonstrated by the results of the survey. The results also provide individual businesses with a benchmark against which to gauge their own performance, thereby allowing them to investigate the strengths and weaknesses of their enterprise compared with those of similar businesses.

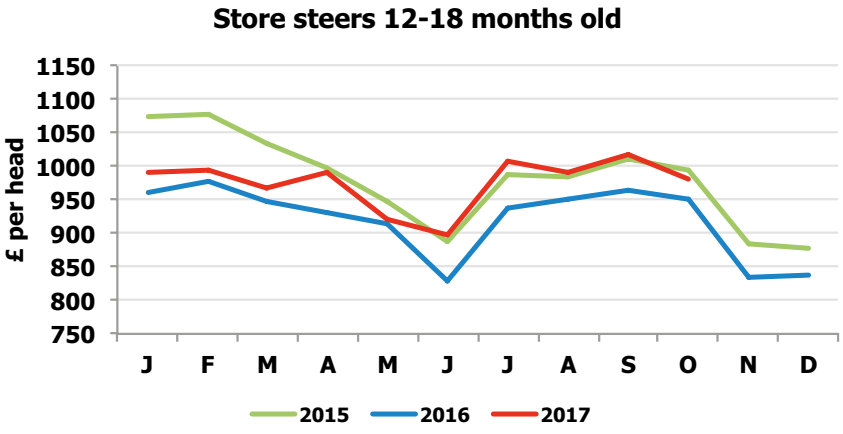
Cost Price Changes During 2016

Farmgate cattle prices opened 2016 6% below the five-year average (2012–16) and 7% below where they had begun 2015, at 349p/kg dwt for the average steer. They fell sharply for a couple of weeks before stabilising, but then began to slide again towards the end of February, with this trend lasting for two months. Having slumped to 323p/kg in the final week of April, its lowest level since July 2011, the market then began to recover, despite supplies showing a seasonal lift in May and June. The momentum continued through the lower-supply period of July and August, and the market caught up with the five-year average and reached its annual peak at the end of September, with the average steer trading at 379p/kg. A traditional lift in supply as housing decisions were made then placed some downwards pressure on the market through October, and the pre-Christmas lift in prices was more limited than usual, suggesting that processors went into the festive period well supplied relative to demand. In the final week of the year, the average steer price stood at 366p/kg – up 18p on the first week of 2016 but 1% below the five-year average.



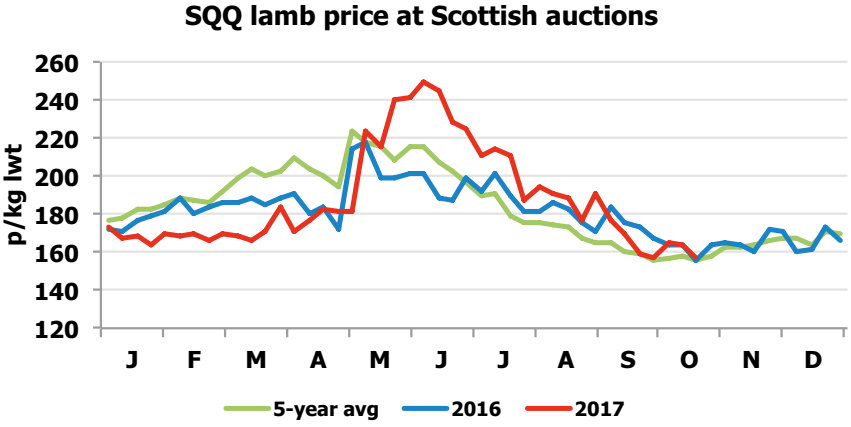
Throughout the first quarter of 2016, prime cattle prices traded 8–9% lower than in 2015. From mid-April, this gap began to close, slipping to 1.5% at the beginning of June. However, a stronger uplift in the summer of 2015 meant that the differential widened again, reaching 6% in July. However, with the 2016 upturn being longer-lasting, the price gap closed between mid-July and mid-August, and 2016 prices moved ahead of 2015 levels by 2–3% in early September. A similar evolution of prices during the autumn then meant that this 2–3% premium was maintained for the remainder of the year.

At 351p/kg, the annual average steer price in 2016 fell 3% short of its 2016 level. However, once a small fall in carcase weights was taken into account, the annual average price paid by Scottish abattoirs for a steer carcase decreased by 4% to £1,359.



Store cattle prices followed their traditional seasonal pattern in 2016, with their spring and autumn peaks being at a similar level. Store cattle were cheaper to buy throughout 2016 than they had been in the previous year. In part, this may reflect a change in buyer sentiment given the stronger enforcement of pricing penalties for overweight finished carcases. For a 12–18-month old store steer, the seasonal peak in September fell 4.5% short of 2015 levels, with an average per head selling price of £965.50 during the month.

In the year as a whole, 5% more steers aged 12–18 months were sold than in 2015, but, at £936 per head, they averaged 5.5% cheaper than in the previous year.

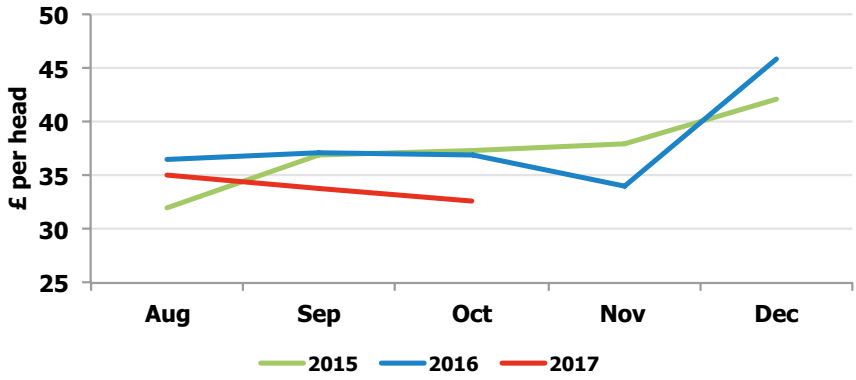


In the 6–12 month age band, 3% fewer steers were traded and the average price also declined by 5.5%, slipping to £839.

Prime sheep producer prices opened 2016 at 172p/kg lwt. Compared to the beginning of 2015, this was a shortfall of 9%, and it was 2.5% below the five-year average. Prices trended higher until mid-April, peaking at 190p/kg, but the seasonal trend was less pronounced than in previous years. The market then cooled at the tail-end of the season, closing April where it had begun the year. As the new season began, prices spiked to a 2016 high of 218p/kg, but although this compared favourably with the previous year's 206p/kg peak for producers, it was the second successive year where the new season bounce was relatively modest. The market then began to cool as lamb volumes picked up. However, the seasonal slide was relatively weak compared to previous years, as Ramadan underpinned prices at the beginning and end of June, while the revaluation of the sterling exchange rate following the EU referendum made exporting attractive. Although prices trended lower, in mid-August they remained above 180p/kg. Towards the end of August, prices began to come under pressure as lamb availability approached its seasonal peak. However, a spike in demand in early September in the run up to the Eid al-Adha festival did push prices back up to 184p/kg for a week, before the seasonal pressure returned. Through October and November, prices hovered around the 160p/kg mark, before firming to around 170p/kg in early December as auctions held their Christmas sales. In the final week of the year, the market cleared at 166p/kg; 3.5% below where they had begun it.

Prime sheep auction prices began the year around 10% lower than in early 2015. The gap narrowed in February to around 5% and held there until the end of the season. The market then opened the 2016/17 season above year-earlier levels, running 5–10% higher for most of May and June. Following the EU referendum, prices traded 20–30% higher than 12 months before, with the gap then closing to 10–15% after Eid al-Adha in mid-September. A smaller seasonal lift in the pre-Christmas period than had been the case in 2015 saw this year-on-year premium slip below 10% in mid-November, and it eventually disappeared in the final week of the year.

Blackface store lamb autumn sales average prices

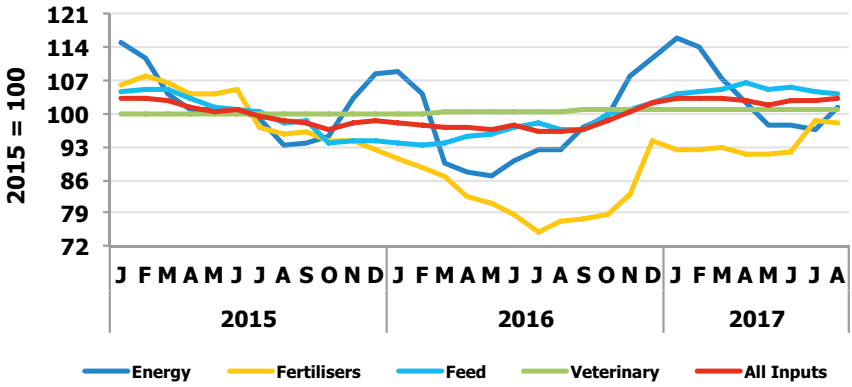


With auction prices exceeding year-earlier levels for two-thirds of 2016, the annual average price was 6% higher than in 2015, at 178p/kg lwt.

Store lamb prices were relatively stable between August and October 2016. Blackface stores traded at around £37 a head, Cheviots at £50 a head and Suffolks at £60. Prices and volumes fell back significantly in November, before thin trading in December resulted in a considerable lift in average prices.

2016 was the second consecutive autumn to see a fall in the average price paid for a Blackface store lamb. However, the decline slowed from 6% in 2015 to 2% in 2016, taking the price down 76p to £36.64. This fall was on an unchanged volume and came despite a prolonged period of year-on-year gains for finished lamb prices, suggesting that finishers remained cautious about their opportunity to generate a profit.

Selected agricultural input costs



Source: Defra

On average, UK agricultural input costs fell for a third consecutive year in 2016 and slipped to their lowest level since 2010. Lower average prices reflected a higher 2015 base to compare against, as feed and energy prices trended higher from the spring onwards while fertilisers recovered in the second half of the year. A fall in the sterling exchange rate following June's EU referendum also had an impact on the price of imported commodities. Vet costs continued to flatline. The cost of feed was driven higher during the summer months by flooding in France and Argentina, which reduced crop yields and had a negative impact on global supply. For energy costs, while electricity and gas were relatively stable during 2016, the oil price recovered in the second half of the year, boosting fuel prices. Feed costs were stable through the first quarter of 2015, before sliding as estimates of another strong global harvest were made and then materialised.

However, prices did pick up a little towards the year-end on the back of concerns over winter wheat planting in the US and Black Sea region. There was also a downwards trend for energy costs in 2015 as the lagged effect of oil price declines in 2014 passed through to electricity, gas and fuel markets. Although the constituent parts of the energy index continued to slide in late 2015, the index rose, possibly down to a shift in relative volume shares within the index. In the fertiliser market, while high global inventories of nitrogen, phosphate and potash placed downwards pressure on prices in the first half of the year, the second half of the year saw a recovery driven by a tighter balance between supply and demand plus exchange rate movements.

2017 Prospects

Since the survey data was collected in the spring of 2017, there have been a number of developments in the marketplace. Cattle supplies remained tight for most of the summer and into autumn, in part down to an earlier delivery profile as penalties for heavy carcases incentivised lower carcase weights. In turn, lower carcase weights added to the decline in production volumes. In addition, past restructuring in the dairy sector began to have an impact with the previous year's sharp decline in dairy-sired calf registrations feeding into a sharp reduction in young bull supplies. The continuing weakness of sterling against the euro supported the competitiveness of UK beef in price-sensitive markets, both at home and on the continent, while demand for manufacturing-grade beef has reportedly been firm in Europe and beyond this year. This combination of factors has underpinned farmgate prices, keeping them above 2016 levels, although the gap has narrowed in the autumn.

Store cattle prices have followed their traditional pattern again in 2017. However, they have generally traded above 2016 levels, perhaps reflecting firmer farmgate prices for finished cattle. In the early autumn sales, the market has been more stable than in 2016, with October prices averaging similar to September levels whereas they had fallen between these two months last year.

On the sheep side, producer prices for hoggs were subdued in the run-up to Easter, despite a sharp fall in import volumes and significantly higher cost of imports. This was likely to have been driven by a large carryover of hoggs and some demand-side weakness. Buyers of store lambs in the autumn of 2016 may, therefore, have struggled to make a sufficient margin. Moving into the 2017/18 season, slow growth rates and an earlier Ramadan ensured that prices made a strong start, trading 20–30% above 2016 levels in late May and through most of June. However, the general weakness in demand remained and prices fell back quickly, as lamb supplies picked up through the summer and were only slightly above 2016 levels in August. Following a brief spike for the Eid al-Adha festival at the beginning of September, lamb prices then fell below 2016 levels, before moving back in line with 2016 in October.

Although the pace of economic growth in the UK fared better than expected in 2016, it has seen a notable downturn in 2017. Businesses have acted cautiously when considering investments, due to the uncertainty caused by the process of leaving the EU. Meanwhile, the return of inflation at a time when wage growth remains muted has dampened household spending. Nevertheless, the UK economy has continued to absorb a rising population, and the unemployment rate has fallen to its lowest levels since the mid-1970s. With 75% of the population aged 16–64 in work and the unemployment rate at 4.4%, the UK is running close to 'full employment'.

In terms of red meat sales, the latest Kantar Worldpanel data covers the 12-week period to September 10 and shows that beef and lamb sales volumes fell across GB. Consumers spent more money buying beef, but due to higher retail prices, the volume purchased fell by 1%. On the lamb side, 6% less money was spent, and this translated into a 9% fall in purchased volumes as a result of higher retail prices. Looking at processed products, beef ready meals and steak pies performed better than in the summer of 2016, but burger sales were subdued. Meanwhile, lamb-based ready meals struggled. Looking at the competitor meats, sharply falling prices for chicken have seen its share of meat consumption continue to rise, while there was a small decline in pork sales as a sharp increase in retail prices more than offset higher spending on pork. Sales of processed pork products such as bacon and sliced, cooked meats sold better than twelve months before, but the sausage market contracted.

The upwards trend in input costs seen through the second half of 2016 ran out of steam and, on average, input costs stabilised in the first eight months of 2017. However, this meant that input costs exceeded 2016 levels by 5–7%. Energy costs have shown a similar trend to 2016, sliding in the opening months before beginning to pick up in the summer, due mainly to index composition effects which see motor fuels take up a greater share of total costs while electricity and heating fall back. Prices for electricity and heating fuel have risen slightly through 2017 as past commodity price increases have passed through the supply chain, but motor fuel has fallen back. However, all three categories have been at a higher base than last year. Following a stable first half of the year, average fertiliser costs picked up strongly in July, due to a switch away from phosphorus and potassium to nitrogen. On the feed side, prices have been remarkably stable so far this year, but have remained at a higher level than last year. Strong supplies in the Black Sea region have helped keep the global grain market in balance, while strong import demand from China has kept the soyameal market in check.

As is always the case, profitability will have been linked to the timing of sales and input purchases. Nevertheless, for cattle, the indications look more positive for 2017. Finished prices have spent most of 2017 5–10% ahead of 2016 levels with store values also running higher, generally by closer to 5%. However, lower carcase weights for steers may have lowered the gains to revenue per carcase. For sheep producers, those selling prime lambs

in the early weeks of the season are likely to have seen significantly higher returns than last year. However, since August, market returns are likely to have been closer to 2016 levels. Given the day-to-day volatility in the sheep trade, it is at times when weekly average prices are closely in line with year-earlier levels that the choice of sales day can be crucial. If lambs were sold on a day when the market price fell suddenly as processors had already secured adequate volumes, then returns may have suffered significantly compared to last year. However, in contrast to the prime market, there has been a broad weakness in store lamb values this autumn. In part, this may have been driven by buyer caution following the limited pre-Easter boost to hogg prices in early 2017. A second factor pressuring the store trade may have been increased supplies, given the 3% higher lamb crop reported in the June census.

For both cattle and sheep producers, inputs purchased this year are likely to have been dearer than in 2016 as suppliers passed on the increased raw material prices of the second half of 2016 at a lag.

Other factors to consider will be mortality rates and productivity of breeding herds and flocks. Producers seeing improvements in these areas are most likely to have seen their business's financial performance increase. On the sheep side, scanning rates were reported to have been particularly high for the second consecutive year and this was backed up by reports of strong lambing percentages. June census results for 2017 indicate the highest lamb-to-ewe ratio for many years, building on a strong 2016. Meanwhile, for cattle, a relatively benign winter may have helped producers to achieve reductions in mortality rates.

Structural Changes in 2016

Among the suckler herds surveyed, 33% increased cow numbers by more than 5% while a further 16% reduced cow numbers by more than 5%. Overall, the number of cows farmed by those in the survey increased by 1.8% in contrast to a national decline of 0.8% reported in the Scottish agricultural census of December 2016.

With regard to breeding sheep enterprises, the total number of ewes farmed by those in the survey increased by 2%, in contrast to a 3% decline reported in the national flock in the December 2015 Scottish agricultural census. However, flock size among non-LFA lowground flocks fell by 8%. Forty-three per cent of flocks increased in size by more than 5% while 19% of surveyed businesses reduced flocks by more than 5%.

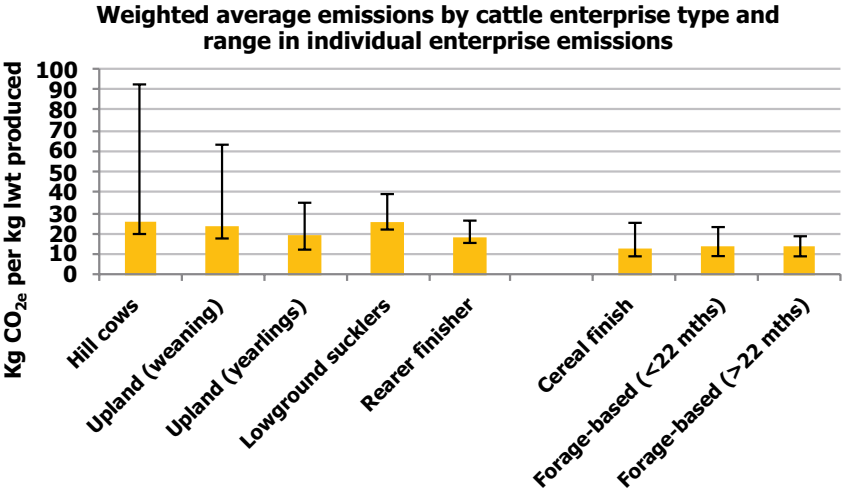
GREENHOUSE GAS EMISSIONS

The Scottish Government has detailed its position on climate change through the Climate Change Act (2009) and subsequent secondary legislation. This act sets some clear targets for greenhouse gas reductions in Scotland. Agriculture and livestock production is recognised as a key contributor to GHG emissions in Scotland. All sectors of industry and the wider community are expected to strive to reduce their emissions.

To help scope the scale of variation in emissions from Scottish livestock enterprises, the scope of the enterprise profitability survey has been extended to include estimations of GHG emissions associated with the output, or production, of these enterprises. SAC Consulting's Agricultural Resource Efficiency Calculator AgRE Calc has been used to estimate the type, source and extent of the GHG emissions produced from the cattle and sheep production systems surveyed.

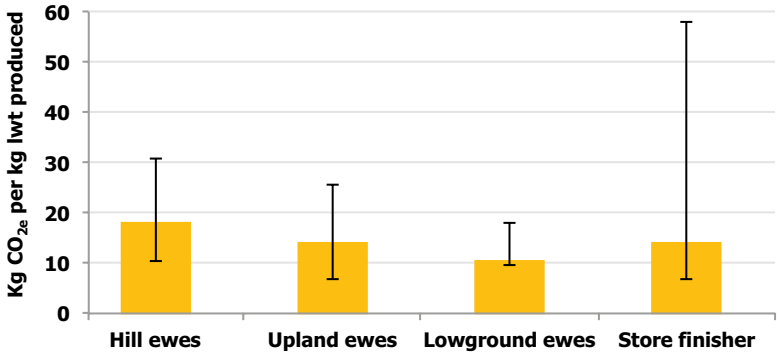
The three main GHGS produced from a farm are Carbon Dioxide (CO_2), Methane (CH_4) and Nitrous Oxide (N_2O), and their sources include:

- Carbon Dioxide (CO_2) is released through burning fossil fuels such as coal, oil and diesel, and via disposal of waste; it is embedded in inputs such as feed, bedding, fertiliser and lime.
- Methane (CH_4) is produced as a natural by-product during ruminant digestion and from the management of organic manures.
- Nitrous Oxide (N_2O) is released during the application of inorganic and organic fertilisers, from urine deposition by grazing animals and from crop residues.



The emissions are expressed as carbon dioxide equivalents (CO_{2e}) based on their relative global warming potential over a 100-year period with nitrous oxide being the most significant at 298 times the impact of CO_2 and methane 25 times the impact of CO_2. The emissions have been reported as an intensity, i.e. emissions per unit of output. The results highlight the wide diversity of emissions within and between enterprise types and the correlation between emissions and financial performance. They also illustrate the opportunities that exist to control GHG while maintaining or improving financial sustainability.

Weighted average emissions by sheep enterprise type and range in individual enterprise emissions



Comparison of greenhouse gas emissions

Comparing and contrasting carbon emissions allows some general observations to be made, namely that lower emissions tend to be associated with higher margins. This should not be a surprise, as the drivers for improved margins are also the drivers for improved emissions i.e. the productivity of the system and the technical efficiency of that system.

Equally, carbon emissions and enterprise profitability are also influenced by the physical environment in which the enterprise is based. The levels of rainfall, sunshine hours and temperature can not only influence animal productivity and performance but can also result in considerable seasonal change in input use: for example, fertilisers and animal feeds, and the need for fuel and electricity for extended field work and/or housing periods and feed preparation and delivery.

Suckler herds ranked by gross margin per cow

	Bottom Third		Average		Top Third	
	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output
Hill suckler herds						
2015	222	35.4	270	29.2	324	26.8
2016	263	29.7	278	25.6	293	23.0
Upland herds selling at weaning						
2015	258	24.2	266	26.1	282	25.6
2016	258	24.6	279	23.6	312	21.5
Upland herds selling yearlings						
2015	334	21.8	347	21.7	374	20.7
2016	310	21.1	343	19.4	362	19.6
Non-LFA lowground suckler herds						
2015	266	26.8	286	23.8	305	19.1
2016	268	24.6	288	25.7	326	26.3
Rearer finisher herds						
2015	475	17.3	489	17.8	515	17.6
2016	402	19.3	473	18.1	570	16.7

Cattle finishing ranked by gross margin per animal sold

	Bottom Third		Average		Top Third	
	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output
Cereal-based finishing						
2015	290	12.6	313	11.4	333	10.8
2016	283	14.3	315	12.7	345	10.1
Forage-based finishing under 22 months						
2015	276	14.1	295	12.9	309	12.3
2016	290	15.5	304	13.6	365	11.1
Forage-based finishing over 22 months						
2015	255	14.6	289	13.0	309	11.4
2016	230	14.3	264	13.8	316	11.9

Breeding ewe flocks ranked by gross margin per ewe

	Bottom Third		Average		Top Third	
	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output	Kg output per cow	CO_{2e} / kg output
Hill flocks						
2015	24.4	23.3	33.3	17.4	40.5	15.2
2016	25.6	20.1	31.9	16.6	36.9	15.7
Upland flocks						
2015	57.3	13.7	60.4	12.7	65.1	11.5
2016	54.9	13.7	59.6	12.9	64.7	12.8
Non-LFA lowground flocks						
2015			67.9	12.9		
2016			71.0	9.9		

CATTLE ENTERPRISES

Results from LFA hill suckler herds

The 15 herds in this category are those enterprises where open, unimproved hill land makes up more than three-quarters of the farm area, resulting in low stocking densities, and where more than half the calves are sold at weaning. Herd size ranged from 20 to 122 cows, with an average size of 48 head.

- Hill suckler herds achieved an average gross margin of £318 per cow. The top third achieved an average gross margin of £425, 34% better than the average and over four times the level among the bottom third. Herd size among the top third was slightly higher than the average and significantly higher than the bottom third.

- Fixed costs averaged £418 per cow, but with a considerable variation from £250 to over £700 per cow. This resulted in an average net margin of (-)£99 per cow, while the top third achieved a net margin of £33. Four enterprises in the survey achieved a positive net margin.

- Although the top third reared two more calves per 100 cows, they sold them at higher weights than the average. The value of the calf output among the top third was 5% higher than the average, purely a reflection of higher productivity as the selling price per kg was lower than the average. This gap widened to 10% with the bottom third, as bottom-third producers had lower production and prices than the top third.

- Top-third producers had lower cow replacement rates and consequently lower herd maintenance costs.

- Although top-third producers had the highest per cow fixed cost structure, the higher productivity meant that they had the lowest fixed cost per kg of output produced. Equally, higher productivity per cow was not achieved at higher direct input costs, as variable costs per cow among the top third were also lower than the average.

LFA hill suckler herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	15	5
Average herd size (head)	28	48	63
		£ per cow	
Calf output after valuation changes	613.54	645.31	674.73
Subsidies	89.48	94.20	87.75
Gross Output	**703.02**	**739.51**	**762.49**
Less replacements	83.88	66.69	68.21
Net Output	**619.14**	**672.83**	**694.27**
Variable Costs			
Purchased concentrates	127.37	104.78	95.05
Home-grown concentrates	0	0	0
Roughages purchased	91.74	66.71	20.51
Forage	87.11	68.55	71.57
Total feed and forage	*306.22*	*240.04*	*187.12*
Veterinary	81.66	43.02	26.43
Bedding	73.85	32.68	25.71
Other costs	53.08	38.69	29.34
Total Variable Costs	**515.02**	**354.42**	**268.60**
Gross Margin	**104.03**	**318.40**	**425.67**
Fixed Costs			
Labour	79.94	85.48	81.71
Contractors	5.39	16.41	26.00
Power and machinery	99.08	88.85	84.03
Property maintenance and rent	128.22	97.28	92.28
Depreciation	96.24	84.24	73.88
Finance	34.73	17.24	14.32
Administration	66.59	28.83	20.09
Total Fixed Costs	**510.18**	**418.35**	**392.32**
Net Margin	**(-)406.05**	**(-)99.34**	**33.35**
Annual herd maintenance cost – pence per kg calf produced	32	24	23
Variable cost – pence per kg calf produced	196	127	92
Fixed cost – pence per kg calf produced	194	150	134
Unpaid family labour hours	32hrs 20min	13hrs 50min	6hrs 40min

Totals may not add up due to rounding

LFA hill suckler herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	22	29	35
Calves born dead or alive per 100 cows	93	95	96
Calves born dead per 100 cows	3	4	4
Calves died before weaning per 100 cows	0	1	1
Calves reared per 100 cows	90	90	91
Daily liveweight gain (kg)	0.8	0.88	0.93
Weight – kg per calf sold	294	307	325
Weight produced kg per cow	263	278	293
Cow replacement rate per 100 cows	18.6	14.5	12.7
Cow mortality %	3	2.5	3
Purchased concentrates – kg per cow	544	450	377
Home-grown concentrates – kg per cow	0	0	0
Stocking rate GLU/ha	0.07	0.13	0.16
CO_{2e} Kg/net lwt kg produced	29.7	25.6	23.0

Figures may not tally due to rounding

Results from LFA suckler herds

The upland suckler herd sample has been split into two sub-groups in order to give a better reflection of the production systems in use in Scotland. One group includes farms of a more extensive nature that sell the majority of calves at weaning, while the other group has farms that sell calves as forward stores at around one year old. Although the main calving period was noted, the sample size of autumn calving herds was insufficient to allow separate analysis of the different cost structures between spring and autumn calving.

Extensive upland herds selling calves at weaning

The 30 herds in this category farmed 3,467 cows, an average herd size of 115 cows within a range from 21 to 403 cows, and reported an average gross margin of £412 per cow and a net margin of £3 per cow. The top third of enterprises returned a gross margin of £536 per cow, £124 (30%) better than the average and £241 per cow better than the bottom third. Top-third producers reported a net margin of £113, which was £110 per head better than the average. Thirty-six per cent of businesses reported a positive net margin unchanged from last year.

- Top-third producers produced 33kg more calf weight per cow than the average and 54kg more than the bottom third. This was achieved through a combination of factors:
  - Higher calving percentages – 92 calves reared per 100 cows (2 more than the average)
  - 29 kg per calf higher sale weights
- Higher physical production combined with a 3p/kg lwt higher selling price resulted in gross output 12% higher among the top third than the average. Top-third producers also had lower cow mortality rates and lower herd maintenance costs, leading to net output 14% higher than the average.
- Variable costs were 10% lower among the top third than the average.
- Fixed costs per cow among the top third were higher than the average, but because of the higher physical output, the fixed costs per kg of output were 11p/kg lower than the average.

Upland herds selling calves at around one year old

Twenty-seven herds farming an average of 104 cows each were categorised as herds selling calves at an older age of about twelve months. This older age at sale resulted in the average weight of calves sold being 394kg, some 26% higher than those sold at weaning. As a consequence, not surprisingly, variable costs per cow were higher among this group than those of their counterparts selling calves at weaning, by 32%. However, when considered against the weight of animal sold rather than per cow, the variable costs among this group were 7% higher per kg of calf reared.

Heavier sale weights and better rearing percentages among those selling yearlings resulted in an income considerably higher than those selling weaned calves, and the extra variable costs associated with keeping the calves longer were recouped from the marketplace. The average gross margin among this group was consequently some 10% better than for those selling weaned calves.

Fixed costs, however, were 17% higher among this group compared with those selling younger cattle, due particularly to higher power and machinery, administration and depreciation costs. As a result, the £40 per cow improvement in gross margin was eroded to a point where the net margin among those selling yearling stores was £30 per cow worse than those selling weaned calves.

- Top-third businesses selling yearlings returned a gross margin of £574 per cow, £121 (27%) better than the average and £279 better than the bottom-third producers. They achieved this better financial return through improved herd productivity, rearing six more calves per 100 cows than the average. They sold these calves at a slightly higher weight, resulting in the yield per cow in the herd being 6% higher than the group average.

- Top-third producers had lower cow mortality rates and a much lower herd replacement rate, resulting in lower herd maintenance costs than the average. They also delivered higher output while keeping variable costs per cow below the average.
- Top-third producers had a smaller fixed cost burden than the average, largely as a result of lower labour costs. All businesses in the top third achieved a positive net margin.

Over the year, 16% of those businesses selling yearling calves increased their herd size by more than 5% while 36% of those selling weaned calves achieved this target.

Extensive upland suckler herds selling weaned calves
Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	10	30	10
Average herd size (head)	121	115	131
		£ per cow	
Calf output after valuation changes	609.17	664.99	751.39
Subsidies	76.55	82.93	88.61
Gross Output	**685.73**	**747.92**	**840.00**
Less net replacement cost	82.39	75.06	70.22
Net Output	**603.34**	**672.86**	**769.78**
Variable Costs			
Purchased concentrates	40.81	32.04	26.33
Home-grown concentrates	13.10	12.08	15.39
Roughages purchased	53.38	44.78	45.70
Forage	63.45	77.09	74.55
Total feed and forage	*170.75*	*166.00*	*161.97*
Veterinary	58.38	40.24	28.26
Bedding	46.20	29.66	20.74
Other costs	32.49	24.78	22.18
Total Variable Costs	**307.82**	**260.68**	**233.14**
Gross Margin	**295.52**	**412.18**	**536.64**
Fixed Costs			
Labour	76.66	63.40	49.99
Contractors	39.37	34.15	26.69
Power and machinery	70.40	84.35	87.04
Property maintenance and rent	100.99	94.63	90.33
Depreciation	49.79	77.14	97.94
Finance	16.07	26.34	41.52
Administration	29.76	29.25	32.94
Total Fixed Costs	**383.04**	**409.27**	**423.45**
Net Margin	**(-)87.53**	**2.91**	**113.19**
Annual herd maintenance cost pence per kg calf produced	32	27	23
Variable cost – pence per kg calf produced	119	93	75
Fixed cost – pence per kg calf produced	148	147	136
Unpaid family labour hours	8hrs 30m	10hrs	11hrs

Totals may not add up due to rounding

Extensive upland suckler herds selling weaned calves
Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	26	26	26
Calves born dead or alive per 100 cows	95	96	96
Calves born dead per 100 cows	4	3	2
Calves died per 100 cows	3	3	2
Calves reared per 100 cows	88	90	92
Daily liveweight gain (kg)	1.08	1.11	1.16
Weight – kg per calf sold	293	312	341
Weight produced – kg per cow	258	279	312
Cow replacement rate per 100 cows	17.0	14.1	11.3
Cow mortality %	1.2	1.3	1.2
Purchased concentrates – kg per cow	216	162	132
Home-grown concentrates – kg per cow	107	102	132
Stocking rate GLU/ha	1.51	1.14	1.10
CO_{2e} Kg/net lwt kg produced	24.6	23.6	21.5

Totals may not add up due to rounding

Upland suckler herds selling yearling calves
Financial performance measures

	Bottom Third	Average	Top Third
Number in sample	8	25	8
Average herd size (head)	93	104	128
		£ per cow	
Calf output after valuation changes	719.76	797.75	858.18
Subsidies	71.49	74.51	82.00
Gross Output	791.25	872.26	940.17
Less net replacement cost	79.25	76.56	73.38
Net Output	**712.00**	**795.70**	**866.80**
Variable Costs			
Purchased concentrates	61.85	67.43	75.43
Home-grown concentrates	30.08	29.46	22.01
Roughages purchased	35.86	27.07	17.50
Forage	109.60	93.10	80.72
Total feed and forage	237.38	217.06	195.66
Veterinary	72.07	52.04	41.14
Bedding	59.59	40.20	29.43
Other costs	47.56	33.70	26.36
Total Variable Costs	416.59	343.01	292.58
Gross Margin	**295.42**	**452.70**	**574.22**
Fixed Costs			
Labour	128.59	75.31	53.79
Contractors	30.97	50.23	50.10
Power and machinery	100.42	102.92	97.91
Property maintenance and rent	94.18	93.90	97.15
Depreciation	89.86	92.88	91.27
Finance	34.12	27.04	26.43
Administration	34.24	38.07	34.95
Total Fixed Costs	512.40	480.35	451.61
Net Margin	**(-)216.98**	**(-)27.65**	**122.60**
Annual herd maintenance cost – pence per kg calf sold	26	22	20
Variable cost – pence per kg calf produced	134	100	81
Fixed cost – pence per kg calf produced	165	140	125
Unpaid family labour hours	8hr 45min	9hr 50min	8hr 45min

Totals may not add due to rounding

Upland suckler herds selling yearling calves
Technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	21	25	30
Calves born dead or alive per 100 cows	91	94	97
Calves born dead per 100 cows	4	3	2
Calves died per 100 cows	6	4	2
Calves reared per 100 cows	81	87	93
Daily liveweight gain (kg)	0.88	0.97	1.12
Weight – kg per calf sold	379	394	393
Weight produced – kg per cow	310	343	362
Cow replacement rate per 100 cows	18	14	7
Cow mortality %	2.5	2.5	1.5
Purchased concentrates – kg per cow	408	438	412
Home-grown concentrates – kg per cow	236	248	185
Stocking rate GLU/ha	1.1	1.1	1.3
CO_{2e} Kg/net lwt kg produced	21.14	19.43	19.62

Results from non-LFA lowground suckler herds

Sixteen non-LFA suckler enterprises farming 1,268 cows were surveyed. They achieved an average gross margin of £413 per cow and an average net margin of £3 in a range from (-)£152 to +£219. Nine businesses reported a positive net margin per cow.

- Top-third producers achieved an average gross margin of £513 per cow, £100 (24%) better than the overall average. Fixed costs per cow among the top third were £3 per cow lower than the average and thus the improvement in financial performance widened to £103 at net margin level.
- Improved margin was aided by better physical performance including:
  - Higher calf-rearing rates – four more calves reared per 100 cows than the average
  - Higher sale weights – 28 kg per head heavier at sale than the average
  - 38 kg more weight of production per cow than the average

These elements combined to result in gross output of £91 per cow higher than the average, as the sale price per kg was little different between the average and top third.

- Top-third producers also had lower cow mortality rates and a lower cow replacement rate than the average, leading to lower herd maintenance costs and widening the improvement in net output to £96 per cow – a 14% improvement.
- Fixed costs per cow were £3 per cow lower among the top third, although they did carry the highest finance costs and power and machinery costs.
- In contrast, the lower output resulting from rearing four calves per 100 cows fewer than the average resulted in lower variable costs per cow among the bottom third, but the same variable cost per kg of output. However, lower income meant that bottom-third gross margin was 14% lower than the average, which, combined with higher fixed costs, pushed the bottom-third group to a point of negative net margin – £85 worse than the average.

Non-LFA lowground suckler herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	16	5
Average herd size (head)	84	79	74
		£ per cow	
Calf output after valuation changes	603.46	669.62	756.70
Subsidies	77.38	79.40	81.18
Gross Output	**680.85**	**747.02**	**837.88**
Less net replacement cost	84.02	72.69	68.04
Net Output	**596.82**	**673.33**	**769.85**
Variable Costs			
Purchased concentrates	33.78	23.09	12.40
Home-grown concentrates	12.68	18.99	17.58
Roughages purchased	35.99	30.66	32.64
Forage	40.68	74.26	72.92
Total feed and forage	*123.13*	*147.00*	*135.53*
Veterinary	44.83	44.21	49.95
Bedding	25..97	30.60	31.25
Other costs	47.08	38.23	39.60
Total Variable Costs	**241.01**	**290.04**	**256.33**
Gross Margin	**355.81**	**413.29**	**513.52**
Fixed Costs			
Labour	66.71	81.29	73.71
Contractors	44.21	31.56	37.11
Power and machinery	77.66	73.30	85.38
Property maintenance and rent	98.80	74.28	47.85
Depreciation	92.84	86.86	87.92
Finance	38.74	38.34	52.26
Administration	18.63	24.71	22.96
Total Fixed Costs	**437.65**	**410.34**	**407.20**
Net Margin	**(-)81.84**	**2.95**	**106.32**
Annual herd maintenance cost – pence per kg calf produced	31	26	21
Variable cost – pence per kg calf produced	90	90	79
Fixed cost – pence per kg calf produced	163	142	125
Unpaid family labour hours	7hr 10min	7hr 5min	10hrs 45min

Totals may not add up due to rounding

Non-LFA lowground suckler herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	24	24	24
Calves born dead or alive per 100 cows	90	94	99
Calves born dead per 100 cows	3	4	4
Calves died per 100 cows	3	2	3
Calves reared per 100 cows	84	88	92
Daily liveweight gain (kg)	1.08	1.11	1.13
Weight – kg per calf sold	319	326	354
Weight produced – kg per cow	268	288	326
Cow replacement rate per 100 cows	17.5	14	12
Cow mortality %	1.8	1.3	1.1
Purchased concentrates – kg per cow	305	154	45
Home-grown concentrates – kg per cow	109	160	147
Stocking rate GLU/ha	1.6	1.5	1.5
CO_{2e} Kg/net lwt kg produced	24.6	25.7	26.3

Figures may not tally due to rounding

Results from rearer finisher enterprises

In the case of these 20 enterprises farming 2,191 cows, the reported margins relate to the costs and income for a twelve-month period to the end of April 2017.

The businesses surveyed produced an average gross margin per cow of £554, within a range from £320 to £755 per cow, and an average net margin of £0 per cow. Nine (45%) enterprises reported a positive net margin.

- The top-third producers ranked by gross margin per cow achieved a net output £140 higher than the average, largely through the production of 20% more saleable output per cow – although the sale price per kg lwt was lower than the average. Net output was also impacted by the lower cow replacement rates and lower mortality rates, which contributed to lower herd maintenance charges among the top third.

- Top-third producers achieved higher output with lower variable costs per cow, particularly lower concentrate feed volumes and cost, although this was offset slightly by higher forage costs per cow.

- Fixed costs among the top third were £50 per cow higher than the average, mainly due to higher labour and property and machinery maintenance charges. Nevertheless, because of the higher physical output, fixed costs per kg of output were 10% lower than the average.

- Although fixed and variable costs were lower per cow among the bottom third, lower physical output led to gross and net margins some £104 per cow lower than the average.

Rearer finisher herds – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	7	20	7
Average herd size (head)	150	109	80
		£ per cow	
Calf output after valuation changes	909.67	1024.10	1142.84
Subsidies	80.29	82.08	88.898
Gross Output	**989.95**	**1106.18**	**1231.73**
Less net replacement cost	85.73	74.92	60.65
Net Output	**904.23**	**1031.26**	**1171.08**
Variable Costs			
Purchased concentrates	92.29	77.00	25.30
Home-grown concentrates	92.11	98.85	81.06
Roughages purchased	48.67	57.76	55.39
Forage	91.14	99.34	113.81
Total feed and forage	324.22	327.94	275.55
Veterinary	43.38	50.33	55.30
Bedding	51.47	51.79	56.52
Other costs	44.50	46.69	39.75
Total Variable Costs	**463.57**	**476.76**	**427.12**
Gross Margin	**440.66**	**554.50**	**743.96**
Fixed Costs			
Labour	108.70	116.42	132.40
Contractors	39.95	33.90	34.17
Power and machinery	97.36	110.11	131.13
Property maintenance and rent	154.06	130.09	126.84
Depreciation	72.55	30.49	117.30
Finance	28.53	30.49	23.05
Administration	44.34	42.42	40.62
Total Fixed Costs	**545.49**	**555.07**	**605.52**
Net Margin	**(-)104.83**	**(-)0.57**	**138.45**
Annual herd maintenance cost – pence per kg calf produced	21	16	11
Variable cost – pence per kg calf sold	115	101	75
Fixed cost – pence per kg calf sold	136	117	106
Unpaid family labour hours	9hr 20min	9hr 20min	9hr 55min

Totals may not add up due to rounding

Rearer finisher herds – technical performance measures

	Bottom Third	Average	Top Third
Cows per bull	28	26	20
Calves born dead or alive per 100 cows	92	93	96
Calves born dead per 100 cows	4	3	2
Calves died per 100 cows	3	2	1
Calves reared per 100 cows	85	88	93
Daily liveweight gain (kg)	0.84	0.89	0.81
Weight – kg per calf sold finished	617	622	638
Weight reared kg per cow per year	402	473	570
Cow replacement rate per 100 cows	15.3	13.5	12.0
Cow mortality %	1.3	1.3	1.3
Purchased concentrates – kg per cow	498	386	127
Home-grown concentrates – kg per cow	721	794	668
Stocking rate GLU/ha	1.24	1.13	0.90
Selling price p/kg dwt finished	341	343	334
Selling price p/kg lwt store	0	0	0
CO_{2e} Kg/net lwt kg produced	19.32	18.09	16.68

Totals may not add up due to rounding

Cattle finishing

Results from cereal-based cattle finishing enterprises

Fifteen cereal-based cattle finishing enterprises were surveyed. They sold 1043 cattle and achieved an average gross margin of £145 per animal. The average net margin among those surveyed was positive, at £40 per head, and ranged from (-)£120 to £313 per head. Ten businesses (66%) reported a positive net margin.

- Enterprises in the top third of those surveyed had a net output £102 per animal better than the average and £194 better than the bottom third. They sold the heaviest cattle, producing carcase weights of around 380–400 kg. They achieved the best growth rates but started with the lightest weight cattle and fed them for the longest period. Despite this they used the least amount of home-grown and purchased concentrates. Output was also helped by having the lowest mortality during the finishing period and the best sale prices.
- Those in the bottom third turned their cattle over the quickest but carried the highest concentrate use and highest mortality rates. Despite benefiting from strong prime heifer sale prices, they did see lowest per kg prices for their steers and young bulls. They sold their steers at 50kg lwt more than those in the top third of financial performance. These liveweights would have put carcases at over 420kg and may contribute to the lower selling prices for steers that they received. In contrast, they received the best prices for heifers through lower carcase weights, but had the lowest proportion of heifers in their mix of sales.

Cereal-based cattle finishing enterprises – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	5	15	5
Average herd size (head)	80	69	69
		£ per head	
Stock Sales	**1249.62**	**1280.75**	**1344.62**
Less stock purchases	827.37	766.79	728.11
Net Output	**422.25**	**513.97**	**616.51**
Variable Costs			
Purchased concentrates	88.55	95.42	89.75
Home-grown concentrates	176.94	156.40	136.60
Other feeds	24.32	24.70	21.42
Forage	5.55	8.61	11.89
Total feed and forage	*295.36*	*285.13*	*259.66*
Veterinary	14.71	16.88	16.83
Bedding	54.04	36.41	23.90
Other costs	16.58	29.81	38.04
Total Variable Costs	**380.69**	**368.22**	**338.43**
Gross Margin	**41.56**	**145.74**	**278.08**
Fixed Costs			
Labour	30.11	27.55	29.64
Contractors	7.04	6.10	3.50
Power and machinery	25.41	20.30	17.81
Property maintenance and rent	9.37	13.58	11.06
Depreciation	27.26	20.83	17.65
Finance	16.37	9.55	6.51
Administration	5.94	7.66	7.98
Total Fixed Costs	**121.51**	**105.57**	**94.15**
Net Margin	**(-)79.95**	**40.17**	**183.93**
Stores purchased – pence per kg lwt sold	130	120	112
Variable cost – pence per lwt sold	60	58	52
Fixed cost – pence per kg lwt sold	19	17	15
Unpaid family labour hours	1hr 5min	1hr 5min	20min

Totals may not add due to rounding

Cereal-based cattle finishing enterprises – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	215	232	250
Start weight (kg lwt)	354	324	302
Finish weight (kg lwt)	637	639	647
Daily liveweight gain (kg)	1.32	1.36	1.38
Mortality (%)	2.5	1.6	1.4
Purchased concentrates – kg/head	616	510	380
Home-grown concentrates – kg/head	1512	1303	1098
Purchase price (£ per kg lwt)	2.32	2.34	2.37
Sale price sold dwt (£ /kg dwt)	3.38	3.47	3.58
Sales			
Steers % of sales	47	28	32
Liveweight at sale	732	714	683
Steer selling price – p/kg dwt	335	348	371
Heifers % of sales	11	24	28
Liveweight at sale	482	565	629
Heifer selling price – p/kg dwt	360	350	354
Young bulls % of sales	42	48	40
Liveweight at sale	601	631	630
Young bull selling price – p/kg dwt	339	346	350
CO_{2e} Kg/net lwt kg produced	14.34	12.72	10.12

Results from forage-based cattle finishing enterprises

The forage-based finishers surveyed have been split into two groups based on the age at which the majority of the cattle were sold. The average age at which Scottish prime cattle are slaughtered is around 22 months of age. This has been taken as the age for splitting the business surveyed. Thus the two groups are those selling finished cattle under 22 months of age and those selling finished cattle at over 22 months of age.

The first group, selling younger cattle, comprises 18 businesses finishing an average of 87 cattle and the second group, selling older cattle, comprises 17 businesses but with an average size of 112 cattle.

- Those selling younger cattle reported a gross margin of £164 per animal sold, falling to a net margin of (-)£74 per animal sold; five (28%) of the businesses in this group achieved a positive net margin. Their counterparts selling older cattle reported a gross margin of £155 per head and a net margin of (-)£105; one business in this group achieved a positive net margin.
- Those selling younger cattle finished them around 14 weeks more quickly than those selling older cattle, but they sold heavier cattle.

Forage-based cattle finishing under 22 months – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	6	18	6
Average herd size (head)	120	87	52
		£ per head	
Stock Sales	**1180.25**	**1222.49**	**1322.05**
Less stock purchases	843.01	777.25	684.44
Net Output	**337.23**	**445.24**	**637.60**
Variable Costs			
Purchased concentrates	73.49	47.15	21.40
Home-grown concentrates	124.11	101.55	87.30
Other feeds	12.43	15.20	13.34
Forage	26.39	31.46	38.01
Total feed and forage	*236.41*	*195.37*	*160.05*
Veterinary	14.79	17.74	15.40
Bedding	40.61	31.93	28.10
Other costs	30.06	33.76	28.21
Total Variable Costs	**321.87**	**278.80**	**231.75**
Gross Margin	**15.36**	**166.44**	**405.85**
Fixed Costs			
Labour	38.81	42.22	52.67
Contractors	12.93	17.10	11.89
Power and machinery	49.05	53.07	76.82
Property maintenance and rent	21.91	37.92	50.92
Depreciation	63.51	55.95	55..82
Finance	34.59	20.48	10.80
Administration	11.34	13.89	14.94
Total Fixed Costs	**232.15**	**240.64**	**273.86**
Net Margin	**(-)216.78**	**(-)74.20**	**131.99**
Stores purchased – pence per kg lwt sold	130	122	103
Variable cost – pence per lwt sold	49	44	35
Fixed cost – pence per kg lwt sold	36	38	41
Unpaid family labour hours	3hr 55min	3hr 50min	5hr 55min

Totals may not add up due to rounding

Forage-based cattle finishing under 22 months – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	223	307	392
Start weight (kg lwt)	366	338	305
Finish weight (kg lwt)	656	642	670
Daily liveweight gain (kg)	1.25	0.99	0.93
Mortality (%)	0.8	0.5	0
Purchased concentrates – kg/head	438	267	96
Home-grown concentrates – kg/head	1060	829	710
Purchase price (£ per kg lwt)	228	229	224
Sale price sold dwt (p per kg dwt)	327	332	342
Sales			
Steers % of sales	10	29	46
Liveweight at sale	690	661	647
Steer selling price – p/kg dwt	309	337	350
Heifers % of sales	90	71	54
Liveweight at sale	652	635	689
Heifer selling price – p/kg dwt	329	330	337
Young bulls % of sales	0	0	0
Liveweight at sale	0	0	0
Young bull selling price – p/kg dwt	0	0	0
CO_{2e} Kg/net lwt kg produced	15.48	13.62	11.12

Forage-based cattle finishing over 22 months – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	6	17	6
Average herd size (head)	187	112	58
		£ per head	
Stock Sales	**1293.56**	**1285.47**	**1217.50**
Less stock purchases	889.69	838.51	683.57
Net Output	**403.87**	**446.96**	**533.93**
Variable Costs			
Purchased concentrates	127.98	90.90	40.90
Home-grown concentrates	33.29	49.93	51.65
Other feeds	7.05	17.11	30.07
Forage	40.13	46.01	57.12
Total feed and forage	*208.45*	*203.94*	*179.15*
Veterinary	6.58	11.38	22.60
Bedding	34.33	33.87	14.61
Other costs	36.22	42.48	57.19
Total Variable Costs	**285.58**	**291.68**	**274.14**
Gross Margin	**118.29**	**155.28**	**259.79**
Fixed Costs			
Labour	43.99	37.76	30.18
Contractors	29.97	27.78	31.84
Power and machinery	44.71	48.13	51.24
Property maintenance and rent	27.33	38.12	66.98
Depreciation	70.21	66.75	59.36
Finance	16.33	20.85	28.70
Administration	16.10	20.62	22.49
Total Fixed Costs	**248.64**	**260.02**	**290.80**
Net Margin	**(-)130.35**	**(-)104.75**	**(-)31.01**
Stores purchased – pence per kg lwt sold	144	133	111
Variable cost – pence per lwt sold	46	46	44
Fixed cost – pence per kg lwt sold	40	41	47
Unpaid family labour hours	4hr 5min	5hr 10min	9hr 50min

Totals may not add up due to rounding

Forage-based cattle finishing over 22 months – technical performance measures

	Bottom Third	Average	Top Third
Feeding period (days)	347	408	451
Start weight (kg lwt)	387	365	300
Finish weight (kg lwt)	617	629	616
Daily liveweight gain (kg)	0.66	0.65	0.70
Mortality (%)	0.2	0.4	1.1
Purchased concentrates – kg/head	576	407	214
Home-grown concentrates – kg/head	290	401	398
Purchase price (£ per kg lwt)	229	229	226
Sale price sold dwt (p per kg dwt)	361	352	342
Sales			
Steers % of sales	50	57	60
Liveweight at sale	610	637	627
Steer selling price – p/kg dwt	380	362	345
Heifers % of sales	50	43	39
Liveweight at sale	624	615	600
Heifer selling price – p/kg dwt	342	342	338
Young bulls % of sales	0	0	0
Liveweight at sale	0	0	0
Young bull selling price – p/kg dwt	0	0	0
CO_{2e} Kg/net lwt kg produced	14.30	13.86	11.88

SHEEP ENTERPRISES

Results from LFA hill ewe flocks

This group of enterprises comprises purebred Blackface and Cheviot flocks farmed on some of the most disadvantaged land in Scotland. The sample covered 22 such flocks farming over 13,784 ewes. These flocks are characterised by low lambing percentages, averaging 98% lambs reared within a range of 63% to 129%. The average gross margin achieved across this group was £23 per ewe, while the average net margin was (-)£17 per ewe within a range of (-)£64 to £3 per ewe. Two producers (9%) within this group made a small positive net margin.

- Producers in the top third benefit from better technical performance. The improvement in gross margin per ewe of £14 over the average is largely due to:
  - A higher number of lambs reared – 13 more lambs per ewe than average
  - Lambs were sold at a slightly heavier weight, resulting in 16% more lamb produced per ewe
  - A lower retention rate for flock maintenance plus a higher lambing percentage left those in the top third with a greater number of lambs for sale which sold at higher unit prices to deliver £10 per ewe more income
- Bottom-third producers achieved a gross margin of £8 per ewe, £15 lower than the average and a net margin of (-)£31 per ewe, £14 worse than the average. However, it must be recognised that 70% of the flocks in the bottom third were flocks in the North West Highlands and Islands region, where climate and topography have a severe impact on ewe performance and the ability of producers to sell prime lambs. This is reflected in a lamb reared percentage of 84%. On average, lambs were sold at lighter weights and production per ewe was 20% lower than the average.
- Lower output meant that while variable costs per ewe were the same among the bottom third as the average, the variable cost per kg of output among the bottom third was 14 p/kg higher than the average. In contrast, those in the top third had both the lowest variable cost per ewe and per kg of output.
- Bottom third producers had the lowest fixed costs per ewe, but – because of the lower output per ewe – the highest fixed cost per kg of output. The reverse was true for those in the top third, which carried the highest fixed costs per ewe but lowest per kg of output.

LFA hill ewe flocks – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	7	22	7
Flock size	662	626	565
		£ per ewe	
Lamb sales	35.26	49.34	59.94
Wool	1.36	1.92	1.29
Gross Output	**36.62**	**51.25**	**61.23**
Less replacement costs	10.54	10.08	9.90
Net Output	**26.07**	**41.17**	**51.34**
Variable Costs			
Purchased concentrates	6.58	4.53	2.73
Home-grown concentrates	0	0	0
Other feeds	0.80	2.43	0.95
Forage	1.36	1.60	2.01
Total feed and forage	*8.74*	*8.56*	*5.69*
Veterinary	4.48	4.57	3.77
Bedding	0.33	0.14	0.03
Other costs	4.70	4.96	4.89
Total Variable Costs	**18.24**	**18.23**	**14.38**
Gross Margin	**7.83**	**22.94**	**36.95**
Fixed Costs			
Labour	10.36	11.73	12.37
Contractors	1.42	3.09	3.35
Power and machinery	6.39	6.60	7.34
Property maintenance and rent	10.42	8.22	10.47
Depreciation	5.78	6.54	6.92
Finance	1.17	1.07	0.77
Administration	3.07	3.22	4.68
Total Fixed Costs	**38.60**	**40.47**	**45.89**
Net Margin	**(-)30.78**	**(-)17.53**	**(-)8.94**
Flock replacements – pence per kg lamb produced	41	32	27
Variable cost – pence per kg lamb produced	71	57	39
Fixed cost – pence per kg lamb produced	151	127	124
Unpaid family labour hours	50min	40min	35min

Totals may not add up due to rounding

LFA hill ewe flocks – technical performance

	Bottom Third	Average	Top Third
Ewes per ram	35	30	30
Ewe mortality %	6	6	6
Ewe replacement rate %	24.0	23.5	20.5
Lambs born dead or alive per 100 ewes	96	115	131
Lamb mortality (inc. born dead) %	12	17	20
Lambs reared per 100 ewes	84	98	111
Average weight of lambs kg	30.6	32.5	33.2
Weight of lamb produced per ewe kg	25.6	31.9	36.9
Purchased concentrates kg/ewe	27.2	19.7	13.7
Home-grown concentrates kg/ewe	0	0	0
Lambs sold finished per 100 ewes	3	6	4
Value per lamb £/head	42.05	61.45	66.64
Lambs sold/transferred store per 100 ewes	44	57	69
Value per lamb £/head	36.76	43.90	47.15
Lambs sold/transferred for breeding per 100 ewes	36	35	38
Value per lamb £/head	48.72	58.50	64.88
CO_{2e} Kg/net lwt kg produced	20.12	16.62	15.73

Results from LFA upland ewe flocks

LFA upland breeding flocks are identified as LFA farms running crossbred flocks. Thirty -four such flocks were recorded in this survey, which collectively farmed some 16,877 ewes. These enterprises achieved an average gross margin of £55 per ewe and average net margin of £4 per ewe. Twenty-three of the businesses surveyed (67%) returned a positive net margin within a range (-)£37 to £48 per ewe.

- Producers in the top third produced a gross margin of £70 per ewe, 27% better than the average and two-thirds higher than the bottom third.
- The improvement in gross margin between the average and the top third was due to both higher net output (+£8 per ewe) and reduced variable costs (£7 per ewe less). Higher output was achieved through improved flock performance including:
  - lamb sale weights that were 1.4 kg heavier than the average
  - seven more lambs were reared per 100 ewes than the average
  - 8.5% more liveweight produced per ewe than the average
  - above average selling prices for both prime and store lambs

Lower variable costs were primarily the result of lower use of purchased feed and lower forage costs.

- In contrast, bottom-third producers delivered:
  - ten fewer lambs reared per 100 ewes than the average
  - 8% less liveweight of lamb produced per ewe than the average
- Fixed costs among the top third were £2 per ewe more than the average, with the biggest contributor to this difference being higher finance costs. Nevertheless, because of the higher output, fixed costs per kg of output were 3p/kg lower than the average among the top third.
- Those in the bottom third carried both higher variable and fixed costs per ewe than the average, despite having the largest breeding flock suggesting little benefit from scale.

LFA upland ewe flocks – financial performance measures

	Bottom Third	Average	Top Third
Number in sample	11	34	11
Flock size	582	496	436
		£ per ewe	
Lamb sales	98.68	104.54	113.32
Wool	2.53	2.86	2.95
Gross Output	**101.21**	**107.41**	**116.26**
Less replacement costs	13.57	13.59	14.02
Net Output	**87.64**	**93.82**	**102.24**
Variable Costs			
Purchased concentrates	14.51	11.72	10.87
Home-grown concentrates	0.42	0.35	0.45
Other feeds	4.89	3.31	2.65
Forage	6.06	5.50	3.00
Total feed and forage	*25.88*	*20.88*	*16.97*
Veterinary	9.28	9.03	8.64
Bedding	1.77	1.19	0.56
Other costs	8.44	7.77	5.92
Total Variable Costs	**45.37**	**38.87**	**32.09**
Gross Margin	**42.27**	**54.94**	**70.15**
Fixed Costs			
Labour	9.78	9.35	9.84
Contractors	4.48	4.19	3.38
Power and machinery	9.40	8.49	8.84
Property maintenance and rent	11.34	12.24	12.80
Depreciation	8.23	9.23	9.81
Finance	2.71	3.04	4.04
Administration	4.60	3.87	4.05
Total Fixed Costs	**50.54**	**50.41**	**52.76**
Net Margin	**(-)8.27**	**4.53**	**17.39**
Flock replacements – pence per kg lamb produced	25	23	22
Variable cost – pence per kg lamb produced	83	65	49
Fixed cost – pence per kg lamb produced	92	84	81
Unpaid family labour hours	1hr	1hr 25min	1hr 25min

Totals may not add due to rounding

LFA upland ewe flocks – technical performance

	Bottom Third	Average	Top Third
Ewes per ram	35	32	33
Ewe mortality %	4.5	5	5
Ewe replacement rate %	24	24.5	21.5
Lambs born dead or alive per 100 ewes	156	165	169
Lamb mortality (inc. born dead) %	21	20	17
Lambs reared per 100 ewes	135	145	152
Average weight of lambs kg	40.7	41.1	42.5
Weight of lamb produced per ewes kg	54.9	59.6	64.7
Purchased concentrates kg/ewe	59	53	50
Home-grown concentrates kg/ewe	4	3	4
Lambs sold finished per 100 ewes	94	101	115
Value per lamb £/head	73.13	72.24	74.23
Lambs sold/transferred store per 100 ewes	19	23	15
Value per lamb £/head	60.50	58.37	65.22
Lambs sold/transferred for breeding per 100 ewes	22	21	22
Value per lamb £/head	84.83	81.45	81.20
CO_{2e} Kg/net lwt kg produced	13.75	12.95	12.77

Results from lowground breeding flocks

The thirteen businesses in the survey farmed some 7,375 ewes. The small sample size means that it is not sufficiently large to make sensible comparisons between the top and bottom third of businesses.

- Eleven of the flocks in this group achieved a positive net margin, with the average being £26 per ewe within a range from (-)£13 to £49 per ewe.
- Better financial returns tend to be associated with high physical performance, with those at the top of financial returns typically having the lamb weaned rates 3–4 lambs per 100 ewes greater than the average and consequently higher weights of lamb produced per ewe.
- While higher output is an indicator of better financial performance overall, it did not come at a higher cost. Better performing flocks showed some propensity to achieve improved lamb revenue while trimming variable costs compared to the overall average.

Lowground ewe flocks – financial performance measures

	Average
Number in sample	13
Flock size	567
	£ per ewe
Lamb sales	136.18
Wool	3.00
Gross Output	**139.18**
Less replacement costs	13.52
Net Output	**125.66**
Variable Costs	
Purchased concentrates	17.45
Home-grown concentrates	2.02
Other feeds	2.16
Forage	5.76
Total feed and forage	*27.39*
Veterinary	9.57
Bedding	0.47
Other costs	11.46
Total Variable Costs	**48.89**
Gross Margin	**76.77**
Fixed Costs	
Labour	12.56
Contractors	3.98
Power and machinery	9.32
Property maintenance and rent	10.41
Depreciation	8.22
Finance	2.19
Administration	3.68
Total Fixed Costs	**50.36**
Net Margin	**26.40**
Flock replacements – pence per kg lamb produced	19
Variable cost – pence per kg lamb produced	69
Fixed cost – pence per kg lamb produced	71
Unpaid family labour hours	50mins

Totals may not add up due to rounding

Lowground ewe flocks – technical performance

	Average
Ewes per ram	29
Ewe mortality %	4
Ewes replacement rate %	29
Lambs born dead or alive per 100 ewes	185
Lamb mortality (inc. born dead) %	18
Lambs reared per 100 ewes	167
Average weight of lambs kg	42.43
Weight of lamb produced per ewe kg	71.03
Purchased concentrates kg/ewe	73
Home-grown concentrates kg/ewe	17
Lambs sold finished per 100 ewes	152
Value per lamb £/head	80.96
Lambs sold/transferred store per 100 ewes	2
Value per lamb – £/head	66.07
Lambs sold/transferred for breeding per 100 ewes	13
Value per lamb – £/head	90.50
CO_{2e} Kg/net lwt kg produced	9.91

Results from store lamb finishing enterprises

Thirteen store lamb finishing businesses, selling just over 7,300 lambs, achieved an average gross margin of £8 per lamb. Net margins averaged £1 per lamb in a range from (-)£15 to £17 per lamb. The small sample size results in the differentiating of this group into top third and bottom third for comparative purposes being less worthwhile. Nevertheless, five of these enterprises (38%) achieved a positive net margin.

- The average finishing period was 156 days within a range of 85 days to 198 days, with the average finisher adding some 10kg to their lamb's purchase weight of 29.6kg.
- Average mortality among the group was 3%, within a range from 0.25% to 6%.
- Those with better financial returns had a slightly longer feeding period and sold heavier lambs than the group average. However, the extra output did not come at a higher cost per lamb. Consequently, although higher net revenue made the largest contribution to higher margins among those enterprises surveyed so too did good cost control.

Store lamb finishing – financial performance measures

	Average
Number in sample	13
Flock size	568
	£ per lamb
Lamb Sales	**67.86**
Less purchases	48.66
Net Output	**19.20**
Variable Costs	
Purchased concentrates	2.84
Home-grown concentrates	0.18
Other feeds	0.50
Forage	2.59
Total feed and forage	*6.12*
Veterinary	1.45
Bedding	0.02
Other costs	3.71
Total Variable Costs	**11.30**
Gross Margin	**7.90**
Fixed Costs	
Labour	1.45
Contractors	0.62
Power and machinery	1.26
Property maintenance and rent	1.13
Depreciation	1.33
Finance	0.30
Administration	0.32
Total Fixed Costs	**6.42**
Net Margin	**1.48**
Lambs purchased – pence per kg lwt lamb sold	124
Variable cost – pence per kg lwt lamb sold	29
Fixed cost – pence per kg lwt lamb sold	16
Unpaid family labour hours	15 mins

Totals may not add up due to rounding

Store lamb finishing – technical performance

	Average
Weight of lamb purchased kg	29.4
Liveweight of lamb sold	39.4
Carcase weight of lamb sold	18.5
Sale price – p/kg dwt	369
Daily liveweight gain	0.06
Finishing period – days	156
Mortality %	3.4
Purchased concentrates – kg/lamb	15
Home-grown concentrates – kg/lamb	2
CO_{2e} Kg/net lwt kg produced	12.98

RETURNS TO QUALITY

Beef

The quality of the stock presented to the market, and its value to processors through product size, improved meat yield, or less carcase trimming, will be reflected in market prices. For example, in 2016 the average price paid for -U3 and R4L steers was very similar on a pence per kilo basis, but for heifers, the -U3 maintained a premium of around 7p/kg dwt over the R4L. An improvement in carcase quality from O+4H to R4L was worth 14.8p/kg dwt to producers for steers and 15.9p/kg dwt for heifers during 2016.

Compared to 2015, the premium for leaner, better conformation steers (-U3) almost disappeared in 2016 whereas the premium between the benchmark R4L grade and the poorer conformation and fatter O+4H widened significantly. Taking the -U3 to R4L differential first, its erosion is the likely consequence of increased enforcement of pricing penalties for carcases exceeding target weight ranges, given that a -U grade carcase is more likely to exceed the target than an R4L carcase. However, heavy carcases are far less of an issue for heifers and so the widening of the -U3 premium here could suggest that increased prime cattle slaughterings at reporting abattoirs made them more discerning buyers. This could also have contributed to the widening of premia for R4L steers and heifers over O+4H steers and heifers.

Moving into 2017, the -U3 steer has traded at a small discount to the R4L throughout most of the first nine months, averaging 1.5p lower, indicating that abattoirs have maintained a policy of penalising heavy carcases. Though the R4L premium over an O+4H steer has narrowed slightly in 2017, it remained significant at 13p. For heifers, the premia have also fallen back by a small degree this year – perhaps a consequence of lower slaughter numbers.

	Average -U3 premium over R4L (p/kg)			Average R4L premium over O+4H (p/kg)		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Steer	4.4	2.9	0.2	11.7	10.7	14.8
Heifer	7.7	6.9	7.4	13.4	11.9	15.9

Lamb

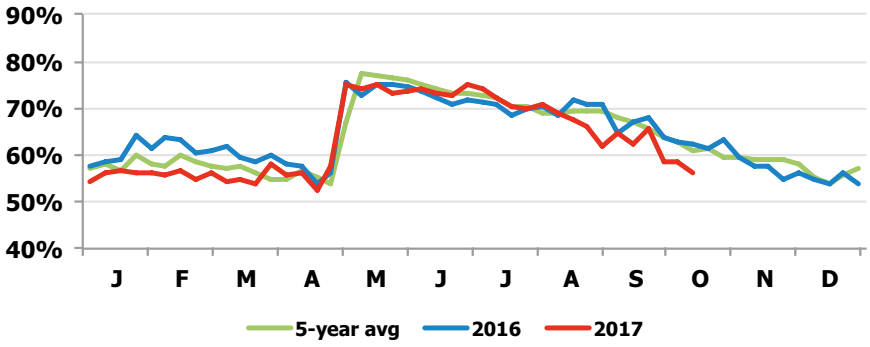
As is the case for beef, there is also a financial reward from the market place where a lamb carcase meets an improved conformation and fat level. In 2016, the average premium in Great Britain at price-reporting abattoirs for a carcase achieving a grade of U2 over a carcase with an R3L grade rose slightly to 11.2p/kg. Meanwhile, the average extra price paid per kilo for an R3L carcase over an O3H lamb fell back for a third consecutive year. Although the R3L to O3H premium narrowed, it remained wider than that between a U2 and an R3L carcase, reflecting that an O3H grade is outwith the target range.

	Average U2 premium over R3L (p/kg)			Average R3L premium over O3H (p/kg)		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Lambs	9.6	10.5	11.2	17.5	14.9	13.5

During the first nine months of 2017, there have been average price differentials of 9.8p/kg between a U2 and an R3L grade, and 14.3p between an R3L lamb carcase and an O3H. This means that while the U2 premium has fallen marginally from 2016, the R3L premium over an O3H widened.

These figures are average variations across Great Britain, but individual processors will have different requirements, and hence different pricing structures, which may have led to deviation from these levels. Therefore, a good relationship between producer and buyer, which involves regular dialogue and feedback, is very important.

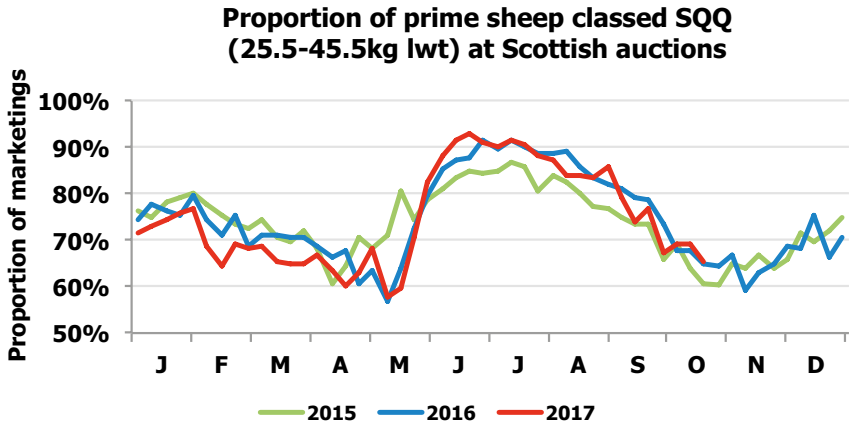
Proportion of prime sheep grading at R3L or better at price reporting GB abattoirs



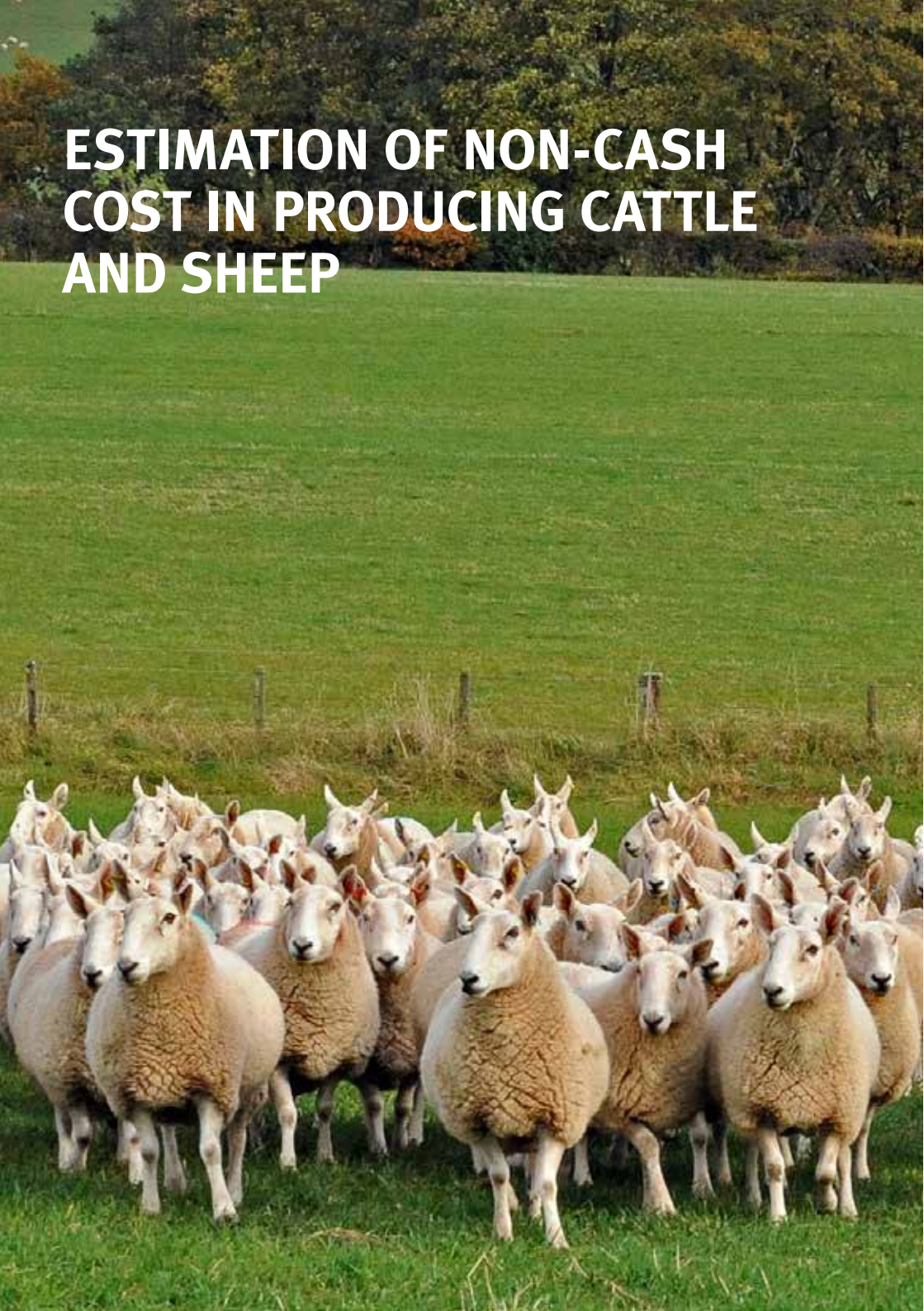
In addition to its seasonal supply profile, lamb has a seasonal variation in quality. As the new season began in 2016, 76% of lambs at GB price-reporting abattoirs achieved at least an R3L grading. This matched the previous year, which had been a three-year low. Carcase quality then generally remained behind year-earlier levels by 1–3 percentage points until early August, before reversing to exceed 2015 by 2–3 percentage points until late September. For much of the final quarter of 2016, carcase quality then slipped back behind 2015 levels. This gap widened in the first third of 2017, with hogg carcase quality showing an average year-on-year deficit of four percentage points.

Since the start of the 2017 marketing season, carcase quality has generally trailed 2016 levels, although it did run higher from mid-June to early August. In both 2016 and 2017, the peak slaughter week ahead of the Eid al-Adha festival saw a significant fall in carcase quality as processors sought to meet their additional requirements. There was a six-percentage point week-on-week drop in 2016 and a four-point week-on-week drop in 2017. Since early August, the year-on-year difference in carcase quality has been significant, averaging four percentage points lower in the ten weeks to mid-October.

In both 2016 and 2017, weaker grass growth and increased numbers of twins and triplets have resulted in a smaller proportion of heavy lambs on the market through the summer and autumn than had been the case in 2015. On average, the May to October period of 2016 and 2017 saw a similar proportion of heavy lambs being marketed at Scottish auctions. However, there were short-lived exceptions to this average, as fewer heavy lambs were traded in June 2017 but more in the first half of August and then throughout September. A higher proportion of the hoggs sold in the first third of 2017 were outwith the SQQ weight range, fitting with the reduction in carcase quality seen in the deadweight price reports.



ESTIMATION OF NON-CASH COST IN PRODUCING CATTLE AND SHEEP



The enterprise costings produced in this survey indicate the reward for the unpaid labour of those working with the herds and flocks and the reward for investing capital in an enterprise. A negative net margin indicates that there is no return for the labour and investment committed to an enterprise.

In this chapter, estimates are made of how much should be set against an enterprise if unpaid labour were to be charged for and if a return of 5% was required from the investment in livestock and running costs (but not buildings and land). The reward for investment in land and buildings can be considered to be the rental value of the land used by an enterprise. This analysis draws rental values from the Scottish Government RESAS 2016 report on tenanted land[1]. This rental value gives a measure of the opportunity cost of the land used by beef and sheep enterprises.

The value of unpaid labour is estimated using the proportion of a man-year committed to the enterprise and an average value for an hour of work. Time committed by the average farmer is drawn from the survey data, with one man-year defined as 2,200 hours of annual work[2]. One hour of labour has been valued at £15.03, which is an increase of 2% on the year.

Cattle enterprises

	Unpaid labour	Return on working capital[3]	Rent of land and buildings
	p/kg liveweight sold		
Hill suckler herds	75	22	41
Upland suckler herds selling calves at weaning	54	24	16
Upland suckler herds selling yearlings	43	21	13
Lowground suckler herds	37	22	29
Rearer-finisher herds	30	22	21
Cereal-based store finishing	2	8	4
Forage-based store finishing <22 months old	9	9	5
Forage-based store finishing >22 months old	12	9	8

[1] *"Tenanted Agricultural Land in Scotland 2016/17" Scottish Statistical Publication April 2017*

[2] *47-hour average week, assuming five weeks of leave*

[3] *Return required to give a 5% return on working capital*

Sheep enterprises

	Unpaid labour	Return on working capital[4]	Rent of land and buildings
	p/kg liveweight sold		
Hill flocks	31	15	25
Upland flocks	36	10	9
Lowground non-LFA flocks	18	9	16
Store lamb finishers	9	7	2

[4] *Return required to give a 5% return on working capital*

Total cost of producing a kilogramme of beef or sheep meat

Adding together the value of non-cash costs and the running costs of an enterprise provides an indication of the total cost of producing a kilogramme of beef or sheep meat. However, before doing this, all enterprises need to be brought to a common standard. Thus, finance charges and rents paid have been excluded from the fixed costs of the enterprises surveyed in making the following estimate. They have been replaced by the imputed value for return on working capital and rental value for the land used for the livestock enterprise.

The table on the following page summarises the cost of production for a kilogramme liveweight of beef or sheepmeat produced by the average performer among the enterprises covered by the survey.

	Non-cash estimates						Total costs	Selling price
	Repl. cost	Var. costs	Fixed costs	Labour	Working capital	Rental value		
	Pence per kg liveweight sold							
Sheep enterprises								
Store lambs	124	29	12	9	7	2	183	173
Hill ewe	31	57	104	31	10	25	258	154
Upland ewe	23	65	64	36	9	9	206	175
Lowland ewe	19	69	56	18	7	16	185	191
Cattle enterprises								
Hill suckler	24	127	132	75	22	41	421	232
Upland selling at weaning	27	93	111	54	24	16	325	237
Upland selling yearlings	22	100	105	43	21	13	304	232
Non-LFA suckler	26	90	99	37	22	29	303	231
Rearer-finisher	16	101	92	30	22	21	282	199
Forage finisher <22 months	122	44	26	9	8	5	214	193
Forage finisher >22 months	133	46	27	12	9	8	235	204
Cereal finisher	120	58	13	2	9	4	206	201

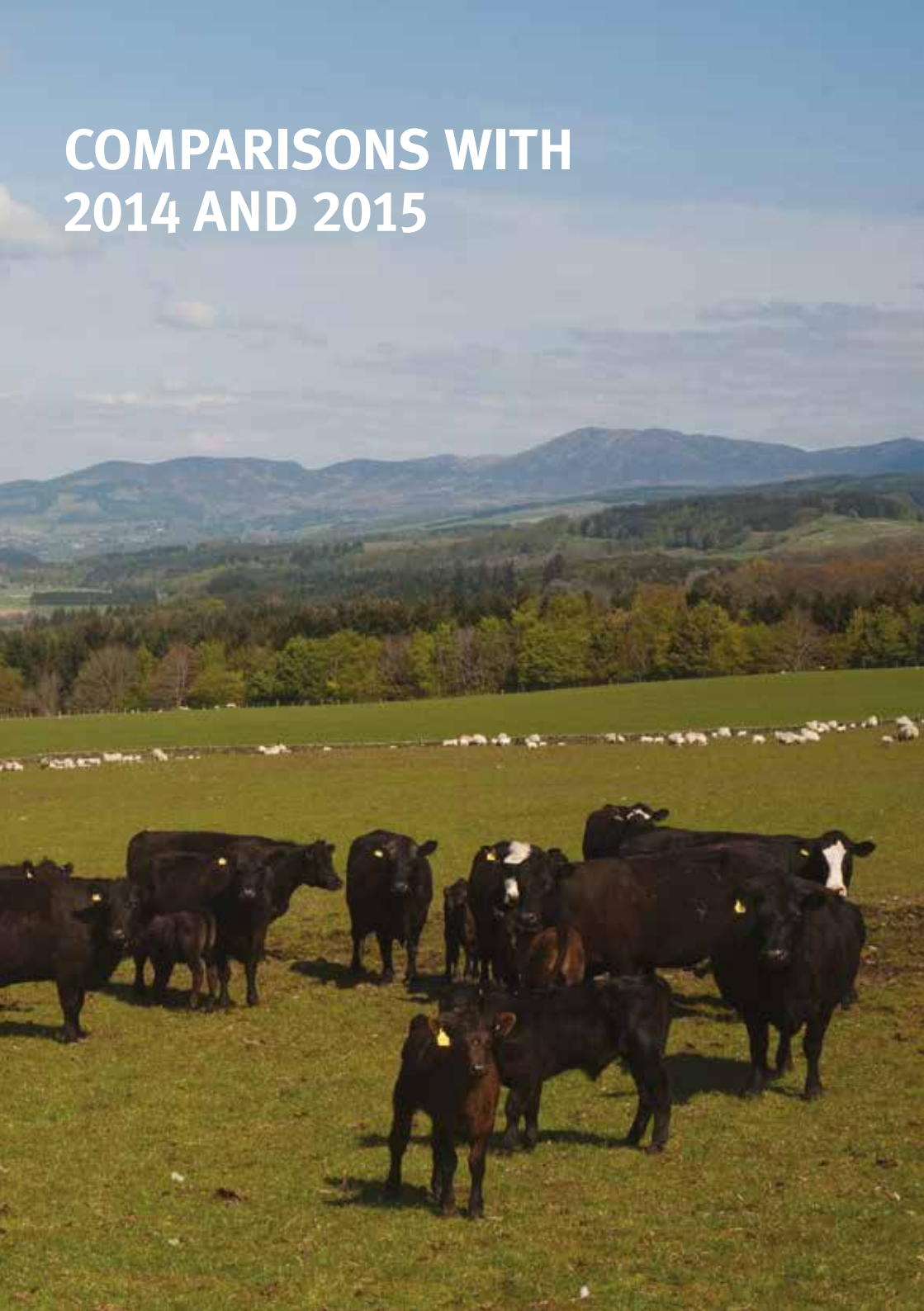
Labour based on £15.03 per hour and 2,200 hours per man year (£33,076 employment cost per year).

Rental values based on values published in Scottish Government's Tenanted Agricultural land in Scotland 2016/17.

Working capital charged at 5%.

Fixed costs adjusted for rent and finance paid.

COMPARISONS WITH 2014 AND 2015



The following tables summarise and compare the results from the 2016 calf and lamb crop with those of 2014 and 2015. Analysis is based on a comparison of the average from each of the three years surveyed and does not compare an identical sample.

Cattle Enterprises

Suckler herds

- With the exception of the lowground suckler herd, the sucker herd groups saw some modest improvement in margins from the 2016 calf crop. This repeats that achievement from the previous year. All herds benefited from higher net output, driven in general by a combination of improved cow productivity and higher sale prices. Nevertheless, it was only in the lowground suckler group and the upland group selling weaned calves that the average net margin was positive.
- Cost movements varied between enterprise types, with no consistency of movement. For example, hill herds and the more extensive upland herds selling weaned calves both saw significant increases in concentrate feed costs but lower forage costs, while the remaining groups saw reduced concentrate expenditure often associated with modest increase in forage costs.

Cattle finishing

- Rearer finisher enterprises surveyed in 2016–2017 saw an improvement in margins for shorter keep grass-based finishers while cereal finishers and long-keep grass finishers saw margins squeezed. Prime cattle prices fell short of year-earlier levels for the first two-thirds of 2016 but since then have been trading ahead of year-earlier levels. Thus, those selling finished cattle in the early part of the recording year saw returns lower than last year. As the year progressed, concerns over carcase size gained in significance and some long-keep finishers sold cattle at lower weights than a year earlier, but improved prices saw per head returns slightly ahead of the previous year. All finishers saw some reduction in store cattle purchase prices as store prices failed to match year-earlier levels throughout 2016, although some year-on-year increase took hold as 2017 progressed.
- Agricultural input costs climbed steeply in the second half of 2016 including for major variable costs such as feed and fertiliser. These increasing unit costs worked to the detriment of cereal finishers but also long-keep, forage-based finishers, offsetting any gains from lower store cattle price and higher prime stock price, which resulted in their margins being squeezed.

Sheep Enterprises

LFA Sheep

- The 2016–2017 lamb crop year was characterised by prime lamb prices stronger than year-earlier levels through to end of 2016 before first-quarter 2017 sales failed to match year-earlier levels. Store lamb prices were little changed in August and September 2016, but November sales disappointed. Compared to last year, the hill ewe group sold a higher proportion of store lambs and because of this their income fell slightly, but their variable costs of production also eased back and there were some savings in fixed costs. Upland flocks with more dependence on prime lamb sales saw revenue and net output increase, although there was some increase in costs as well. Nevertheless, LFA sheep flocks recorded improvements in their net margins compared to a year earlier.

Lowground sheep

- Earlier lambing lowground flocks benefited from the better market returns for both prime and store lambs through summer 2016 and early autumn 2016. They also saw some modest improvement in ewe productivity, giving them a higher number of lambs for sale. Although the level of increase in per animal market returns did not take them back to the levels seen in 2014, the extra productivity resulted in output recovering to similar levels to those seen in 2014.
- Extra lambs contributed to some modest increase in variable costs, but this was insufficient to erode the extra income and gross margins per ewe significantly. Fixed costs also showed some inflation, again eroding the improvement in margins but still leaving them higher than in 2015.

Lamb finishing

- With prime hoggs trading lower than year-earlier levels in the first quarter of 2017, store lamb producers saw a further deterioration in margins over the 2016–2017 year. There was a lack of a traditional uplift in the prime sheep market, with the average auction price in the first quarter of 2017 (Q1) just 1% higher than the average for Q4 2016. Over the previous five years, the price had risen by an average of 15.5% between Q4 of one year and Q1 of the next year. A higher mortality rate also eroded income potential. A longer finishing period contributed to higher feed costs, which trimmed margins further – as did inflation of fixed costs. Nevertheless, despite being the lowest net margin for three years, store lamb finisher margins did remain positive.

Suckler herds

	Hill suckler herds			Lowland suckler herds		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Number in sample	16	16	15	17	16	16
Avg. herd size (head)	54	50	48	90	97	79
	£ per cow					
Calf output including beef calf premium	**666.95**	**667.22**	**739.51**	**770.59**	**744.87**	**747.02**
Less replacements	74.76	63.48	66.69	90.07	70.41	73.69
Net Output	**592.19**	**612.73**	**672.83**	**680.52**	**674.47**	**673.33**
Variable Costs						
Total concentrates	106.32	91.38	104.78	54.86	53.04	23.09
Other feeds	62.15	37.37	66.71	47.10	35.88	49.65
Forage	104.43	100.92	68.55	74.66	65.70	74.26
Total feed and forage	*272.90*	*229.68*	*240.04*	*176.62*	*154.63*	*147.00*
Veterinary	37.16	36.91	43.02	38.28	39.43	44.21
Bedding	26.27	25.86	32.68	41.70	43.84	30.60
Other costs	36.50	34.50	38.69	25.99	23.35	38.23
Total Variable Costs	**372.83**	**326.96**	**354.42**	**282.59**	**261.26**	**260.04**
Gross Margin	**219.36**	**285.78**	**318.40**	**397.93**	**413.21**	**413.29**
Fixed Costs	**399.64**	**439.62**	**418.35**	**431.49**	**405.18**	**410.34**
Net Margin	**(-)180.28**	**(-)153.84**	**(-)99.94**	**(-)33.56**	**8.03**	**2.95**

	Hill herds			Lowland herds		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Physical Performance						
Calves born dead or alive per 100	94	94	95	93	91	94
Calves reared per 100	88	89	90	89	86	88
Daily liveweight gain (kg)	0.92	0.94	0.88	1.08	1.16	1.11
Return per calf (£ per head)	700	608	714	809	790	755
Calf price (£ per kg lwt)	2.34	1.99	2.32	2.49	2.38	2.31
Weight per calf (kg)	299	305	307	324	332	326

	Upland suckler herds Selling weaned calves			Upland suckler herds Selling yearling calves		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Number in sample	30	30	30	25	26	25
Avg. herd size (head)	117	107	115	106	110	104
	£ per cow					
Calf output incl. Beef calf premium	**687.91**	**675.10**	**747.92**	**841.34**	**839.89**	**872.26**
Less replacements	87.78	82.04	75.06	86.81	81.33	76.56
Net Output	**600.13**	**593.06**	**672.86**	**754.52**	**758.55**	**795.71**
Variable Costs						
Total concentrates	45.04	34.13	44.12	100.08	99.75	96.89
Other feeds	42.22	43.57	44.78	39.84	30.07	27.07
Forage	97.76	90.50	77.09	95.75	88.47	93.10
Total feed and forage	*185.02*	*168.20*	*166.00*	*235.67*	*218.29*	*217.06*
Veterinary	49.53	48.16	40.24	44.26	43.45	52.04
Bedding	34.50	33.54	29.66	51.50	42.55	40.20
Other costs	18.19	23.70	24.78	24.46	28.18	33.70
Total Variable Costs	**287.23**	**273.61**	**260.68**	**355.89**	**332.47**	**343.01**
Gross Margin	**312.90**	**319.45**	**412.18**	**398.63**	**426.08**	**452.70**
Fixed Costs	**422.48**	**406.32**	**409.27**	**457.02**	**464.19**	**480.35**
Net Margin	**(-)109.58**	**(-)88.87**	**2.91**	**(-)58.39**	**(-)38.11**	**(-)27.65**

	Upland herds – Early weaning			Upland herds – Late weaning		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
Physical Performance						
Calves born dead or alive per 100	95	93	96	94	95	94
Calves reared per 100	88	87	90	87	89	87
Daily liveweight gain (kg)	1.06	1.12	1.11	0.94	0.96	0.97
Return per calf (£ per head)	729	701	743	910	876	917
Calf price (£ per kg lwt)	2.43	2.29	2.38	2.36	2.24	2.32
Weight per calf (kg)	300	306	312	384	392	394

	Rearer/Finishers		
	2014	**2015**	**2016**
Number in sample	23	20	20
Average herd size (head)	112	97	109
	£ per cow		
Calf output incl. Beef calf premium	**1084.89**	**1054.30**	**1106.18**
Less replacements	98.58	68.50	74.92
Net Output	**986.31**	**985.80**	**1031.26**
Variable Costs			
Total concentrates	233.87	185.04	175.85
Other feeds	79.26	50.67	52.76
Forage	132.95	106.70	99.34
Total feed and forage	*446.09*	*342.41*	*327.94*
Veterinary	58.93	55.01	50.33
Bedding	55.56	52.51	51.79
Other costs	44.74	45.82	46.69
Total Variable Costs	**605.31**	**495.75**	**476.76**
Gross Margin	**381.00**	**490.05**	**554.50**
Fixed Costs	**598.56**	**568.32**	**555.07**
Net Margin	**(-)217.56**	**(-)78.27**	**(-)0.57**
Physical Performance			
Calves born dead or alive per 100	94	93	93
Calves reared per 100	88	86	87
Daily liveweight gain (kg)	0.89	0.90	0.89
Return per calf (£ per head)	1307	1191	1237
Sale price (pence per kg dwt)	350	341	343
Weight per calf (kg)	644	602	622

Businesses finishing cattle under cereal-based systems

	Cereal-based		
	2014	**2015**	**2016**
	£ per head		
Number in sample	19	15	15
Stock Sales	**1258.02**	**1228.63**	**1280.75**
Less stock purchases	727.06	741.69	766.79
Net Output	**530.96**	**486.94**	**513.97**
Variable Costs			
Concentrates	266.14	218.35	251.82
Other feeds	18.89	26.81	24.70
Forage	4.69	8.22	8.61
Total feed and forage	*289.73*	*253.37*	*285.13*
Veterinary	13.46	16.31	16.88
Bedding	26.07	30.43	36.41
Other costs	31.86	32.67	29.81
Total Variable Costs	**361.12**	**332.78**	**368.22**
Gross Margin	**169.84**	**154.16**	**145.74**
Fixed Costs	**114.94**	**91.71**	**105.57**
Net Margin	**54.90**	**62.45**	**40.17**
Physical Performance			
Feeding period (days)	241	214	232
Start wt (kg lwt)	307	315	324
Average carcase weight (kg dwt)	364	364	370
Daily LWT gain (kg)	1.3	1.4	1.4
Mortality (%)	1.3	0.7	0.8
Sale price (£ per kg dwt)	3.46	3.39	3.46
Purchase price (£ per kg lwt)	2.32	2.34	2.34
Gross Margin per day (£ per day of feeding period)	0.70	0.72	0.63

Businesses finishing cattle under forage-based systems

	Forage-based <22 months at slaughter			Forage-based >22 months at slaughter		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
	£ per head					
Number in sample	18	18	19	18	17	17
Stock Sales	**1201.53**	**1260.78**	**1222.49**	**1303.52**	**1265.09**	**1285.47**
Less stock purchases	791.75	776.12	777.25	813.35	845.97	838.51
Net Output	**409.78**	**484.65**	**445.24**	**490.17**	**419.11**	**446.96**
Variable Costs						
Concentrates	182.88	172.83	148.70	220.25	119.85	141.23
Other feeds	30.81	18.71	15.20	74.95	13.09	17.11
Forage	45.57	34.63	31.46	49.72	37.51	46.01
Total feed and forage	*259.26*	*226.17*	*195.37*	*345.41*	*170.45*	*203.94*
Veterinary	15.96	19.26	17.74	15.12	16.42	11.38
Bedding	24.10	39.91	31.93	23.42	22.30	33.87
Other costs	34.03	36.72	33.76	36.37	44.98	42.48
Total Variable Costs	**333.35**	**322.06**	**278.80**	**420.33**	**254.15**	**291.68**
Gross Margin	**76.42**	**162.59**	**166.44**	**69.85**	**109.98**	**155.28**
Fixed Costs	**203.18**	**255.26**	**240.64**	**272.94**	**244.55**	**260.02**
Net Margin	**(-)126.76**	**(-)92.67**	**(-)74.20**	**(-)203.09**	**(-)79.59**	**(-)104.75**
Physical Performance						
Feeding period (days)	326	315	307	414	380	408
Start wt (kg lwt)	343	330	338	338	357	365
Average carcase weight (kg dwt)	344	362	372	385	375	365
Daily LWT gain (kg)	0.77	0.94	0.99	0.79	0.76	0.65
Mortality (%)	1.5	0.8	0.5	0.5	0.4	0.4
Sale price (£ per kg dwt)	355	348	332	341	338	352
Purchase price (£ per kg lwt)	227	233	229	239	234	229
Gross margin per day (£ per day of feeding period)	0.23	0.52	0.54	0.17	0.29	0.38

Results from LFA sheep flocks

	LFA upland sheep flocks			LFA hill sheep flocks		
	2014	**2015**	**2016**	**2014**	**2015**	**2016**
	£ per ewe					
Number in sample	31	33	34	27	29	22
Lamb Sales	**108.28**	**101.29**	**104.54**	**54.25**	**54.92**	**49.34**
Wool	2.81	2.90	2.86	2.22	2.25	1.92
Gross Output	**111.08**	**104.19**	**107.41**	**56.47**	**57.17**	**51.25**
Less replacement costs	13.12	13.10	13.59	11.86	10.96	10.08
Net Output	**97.97**	**91.09**	**93.82**	**44.61**	**46.21**	**41.17**
Variable Costs						
Concentrates	12.47	11.02	12.07	5.80	5.09	4.53
Forage cost	7.16	8.19	5.50	4.06	1.28	1.60
Roughages	3.17	2.11	3.31	2.41	2.11	2.43
Total feed and forage	*22.81*	*21.32*	*20.88*	*12.26*	*8.49*	*8.56*
Bedding	1.26	1.02	1.19	0.05	0.01	0.14
Veterinary	8.21	8.97	9.03	6.26	5.61	4.57
Other costs	8.30	8.62	7.77	6.43	6.63	4.96
Total Variable Costs	**40.58**	**39.94**	**38.87**	**25.01**	**20.74**	**18.23**
Gross Margin	**57.39**	**51.16**	**54.94**	**19.60**	**25.47**	**22.94**
Fixed Costs	**49.35**	**49.11**	**50.41**	**41.78**	**42.11**	**40.47**
Net Margin	**8.04**	**2.04**	**4.53**	**(-)22.18**	**(-)16.64**	**(-)17.53**

Physical Performance	LFA upland sheep flocks			LFA hill sheep flocks		
Average no. ewes	520	525	496	789	712	626
Lambs born/100 ewes	165	169	165	114	113	115
Lambs died/100 ewes	16	20	20	18	15	17
Lambs reared/100 ewes	149	149	145	96	98	98
Lambs sold/retained:						
Slaughter %	70	71	70	13	17	6
Stores %	13	14	16	51	47	58
Breeding %	17	15	14	36	36	36
Return per lamb sold finished (£)	72.34	67.59	73.24	60.63	61.08	61.45
Carcase weight lambs sold finished (kg)	19.8	19.7	20.0	17.3	17.5	16.8
Return per lamb sold store (£)	60.65	53.93	58.38	46.45	43.25	43.91

Results from lowground sheep flocks

	2014	2015	2016
		£ per ewe	
Number in sample	12	12	13
Lamb Sales	**136.93**	**118.09**	**136.18**
Wool	2.58	3.74	3.00
Gross Output	**139.52**	**121.83**	**139.18**
Less replacement costs	13.19	12.60	13.52
Net Output	**126.33**	**109.23**	**125.66**
Variable Costs			
Concentrates	16.61	14.43	19.47
Forage cost	7.26	7.96	5.76
Roughages	4.25	1.82	2.16
Total feed and forage	*28.11*	*24.22*	*27.39*
Bedding	1.01	1.43	0.47
Veterinary	8.81	8.87	9.57
Other costs	8.18	9.50	11.46
Total Variable Costs	**46.11**	**44.02**	**48.89**
Gross Margin	**80.22**	**65.20**	**76.77**
Fixed Costs	**45.48**	**43.82**	**50.36**
Net Margin	**34.73**	**21.38**	**26.40**
Physical Performance			
Average no. ewes	598	594	567
Lambs born per 100 ewes	174	176	185
Lambs died per 100 ewes	14	16	18
Lambs reared per 100 ewes	160	160	167
Lambs sold/retained:			
Slaughter %	86	81	91
Stores %	4	8	2
Breeding %	10	11	7
Return per lamb sold finished (£)	86.31	74.34	80.96
Carcase weight lambs sold finished (kg)	20.0	20.2	20.0
Return per lamb sold store (£)	67.10	60.19	66.07

Store lamb finishing

	2014	2015	2016
		£ per lamb	
Number in sample	12	14	13
Lamb Sales	**70.91**	**70.49**	**67.76**
Less store lamb purchase costs	49.34	50.34	48.66
Output	**21.57**	**20.15**	**19.10**
Concentrates	4.08	3.57	3.02
Other feed	0.95	0.37	0.50
Forage	0.90	1.28	2.59
Total feed and forage	*5.93*	*4.22*	*6.12*
Bedding	0.02	0.05	0.02
Veterinary	1.24	1.08	1.45
Other costs	4.04	4.51	3.71
Total Variable Costs	**11.23**	**9.86**	**11.30**
Gross Margin	**10.33**	**10.29**	**7.80**
Fixed Costs	**4.42**	**5.73**	**6.42**
Net Margin	**5.92**	**4.57**	**1.38**
Physical Performance			
Feeding period (days)	110	132	156
Liveweight at start (kg)	31.6	29.6	29.4
Liveweight at finish (kg)	38.2	40.7	39.4
Mortality (%)	1.5	2.0	3.4
Concentrates (kg)	18	12	17
Average carcase weight (kg dwt)	18.0	17.5	18.5

GLOSSARY

Output: Income to the enterprise after deducting the cost of maintaining the breeding flock or purchasing store livestock, and after valuation changes.

Variable costs: Costs which vary directly with the size of production of the enterprise and which can be easily allocated to an enterprise.

Gross margin: The surplus income left over after deducting variable costs from output. It is the contribution of the enterprise towards covering the farmer's fixed costs and overheads, rewarding the owner of the business for their work and capital investment.

Fixed costs: Costs reflecting the overall running of the business, but which cannot be easily allocated to an enterprise because in many cases they are shared costs. In this analysis they have been broken down into the following categories:

Labour costs: All paid labour including regular wages and casual wages.

Contract: All contract labour and contractor services.

Power and machinery: Machinery repairs; fuel; electricity; hire charges; tax and insurance.

Property maintenance and rent: Farm and property repairs; council taxes and water charges; rent and grazing lets.

Depreciation: Machinery and property depreciation charges

Finance: Bank and loan interest and charges

Administration: Insurance; professional fees; miscellaneous expenses.

Net margin: The surplus income left after deducting all costs from the output. It is the contribution the enterprise makes to cover the cost of unpaid family labour and to reward the owner for their investment in the enterprise.

Working capital: The sum of money tied up in productive livestock, and the average capital needed to finance the annual costs of running the business; the latter is estimated to be half the total variable and fixed costs for the year.

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QM2934_11/17