



Balance sheet analysis and farming performance, England 2010/11- 2012/2013

This release presents the main results from an analysis of the profitability and resilience of farms in England using data from the Farm Business Survey. Six measures have been examined; liabilities, net worth, gearing ratios, liquidity, net interest payments as a proportion of Farm Business Income and Return on Capital Employed (ROCE). The key results are:

Liabilities ([section 1](#))

- Across all farms average (mean) liabilities (debt) are £150,000 per farm.
- Ten percent of all farms have liabilities of £400,000 or more and therefore would require consistent income flows to ensure that interest on borrowing can be paid. Over a quarter of farms have liabilities of less than £10,000.
- Pig & poultry farms have the highest levels of liabilities whilst grazing livestock farms have the lowest.
- Levels of debt (liabilities) increase with farm size.

Net worth ([section 2](#))

- Average (mean) net worth across all farms is £1.2 million. Around 40% have a net worth of £1million or more. This indicates that these farm businesses are likely to be resilient to fluctuations in income, at least in the short term.
- Cereal and general cropping farms have the highest average net worth, driven by the larger average area of land owned by these farm types, at between £1.6-1.7 million.
- Horticulture, LFA grazing livestock and pig & poultry farms have the lowest average net worth at approximately £700,000.
- As might be expected, net worth tends to increase with farm size; averaging £740,000 per farm for spare time and part time farms to £2.4 million for very large farms.
- Mixed mainly owner occupied farms have a greater average net worth (£1.7 million) than other tenure types.

Gearing ratio ([section 3](#))

- The average (mean) gearing ratio across all farms is 11%, with around half of farms having a gearing ratio of less than 5%, suggesting that the vast majority of farms are viable over the longer term.
- Pig & poultry farms have the highest average gearing ratio at nearly 30%.
- Tenanted farms have a higher average gearing ratio (28%) compared to owner occupied farms (10%) and those of mixed tenure (9% for mixed mainly owner occupied and 17% for mixed mainly tenanted farms).

Liquidity ([section 4](#))

- The average (mean) liquidity ratio across all farms is 246%.
- The majority of farms have a strong liquidity ratio, with over 60% having a ratio of at least 200%, indicating that the majority of farms are able to meet their current liabilities using current assets. However, 17% of farms potentially face financial difficulties with a liquidity ratio of less than 100%.
- On average, cereals and lowland grazing livestock farms have a liquidity ratio of over 300%. However, for dairy farms the average ratio is 143%.
- The liquidity ratio decreases with farm size from 330% for spare/part time and small farms to 195% for very large farms.

Net Interest payments as a proportion of FBI ([section 5](#))

- Net interest payments are on average (mean) 6% of Farm Business Income, ranging from 5% for cereal farms to 13% for pig & poultry farms.
- For nearly a third of all farms net interest payments are less than 5% of their Farm Business Income. This suggests that these farms are able to meet interest charges on borrowed capital.
- Five percent of farm businesses have negative Farm Business Income and therefore would not have been able to pay some or all of the interest on their debts, without further borrowing or drawing on their assets.

Return on Capital Employed ([section 6](#))

- The median Return on Capital Employed (ROCE) across all farms is 1%, but there is a wide range of performance across farms.
- Cereal, general cropping, dairy and pig & poultry farms have a greater ROCE than other farm types.
- Grazing livestock and horticultural farms have a negative median ROCE.
- Larger farms tend to have a greater ROCE than smaller farms.

Detailed results

This release presents the main results from an analysis of the profitability and resilience of farms in England using data from the Farm Business Survey. This notice provides an analysis of six indicative measures:

Measure	Rationale
Liabilities	A measure of indebtedness
Net worth	A measure of wealth
Gearing	To explore investment habits and the potential risk associated with farming enterprises
Liquidity	To examine the short term financial viability of farms
Net interest payments as a proportion of Farm Business Income	To examine whether farms can afford to pay the interest on their debts
Return on Capital Employed (ROCE)	Provides an indication of productivity and efficiency

The data used for this analysis is from only those farms present in the Farm Business Survey (FBS) for 2010/11 to 2012/13. Those entering or leaving the survey in this period have been excluded. Weights were derived for this sub sample of around 1490 farms in line with the method described in the [survey methodology](#) section (e.g. to preserve the population totals for robust farm types and farm size groups). The measures are three year averages for 2010-2013 and are presented in 2012/ 2013 prices (uprated according to RPI inflation). This helps to stabilise the fluctuations in income that can significantly change the financial position of a farm from year to year.

The results are presented together with [confidence intervals](#). The results presented in this notice can be found at: <https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/farm-business-survey#publications>

Figures in italics are based on fewer than fifteen observations and should therefore be treated with caution. In order to preserve the anonymity of respondents, asterisks (*) are used to replace results that are based on fewer than five observations or could be used to reconstruct these results.

1 Liabilities

Key findings:

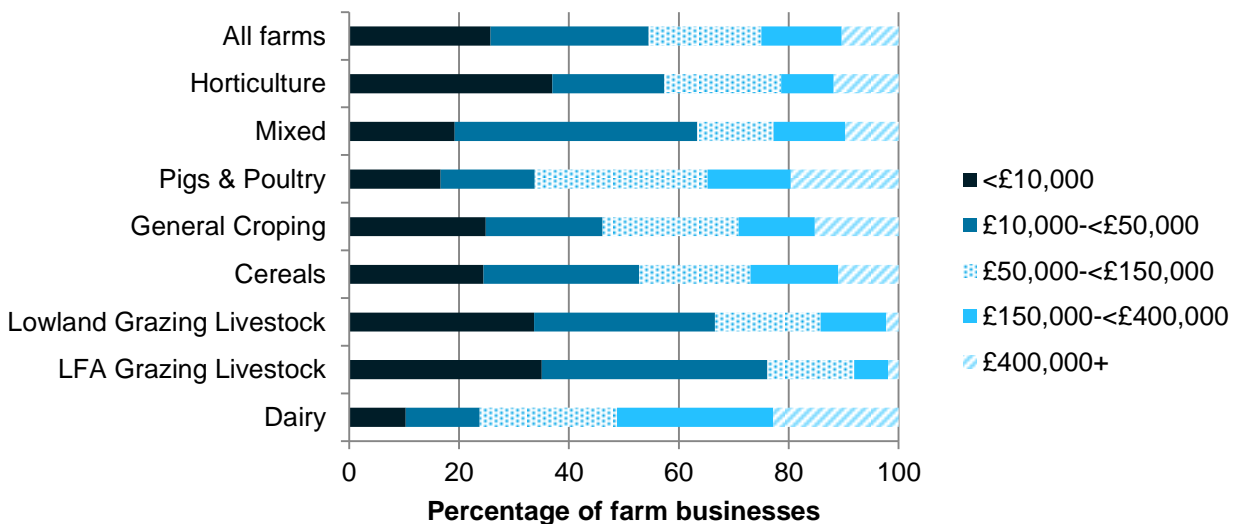
- Across all farms average (mean) liabilities (debt) are £150,000 per farm.
- Ten percent of all farms have liabilities of £400,000 or more while 26% have less than £10,000.
- Pig & poultry farms have the highest levels of liabilities whilst grazing livestock farms have the lowest.
- Levels of debt (liabilities) increase with farm size.

This section examines liabilities to consider the indebtedness of farm businesses. Liabilities are the total debt (short and long term) of the farm business including mortgages, long term loans and monies owed for hire purchase, leasing and overdrafts. High levels of liabilities will require consistent income flows to ensure that interest on borrowing can be paid.

The average level of debt across all farms is approximately £150,000. Farm type and size were found to be influencing¹ factors. There is considerable variation between farm types which may be due to differences in the scale of capital investment required or due to differences in profitability. The Pig & poultry sectors have the highest level of debts with average liabilities of around £280,000. Grazing livestock farms (LFA and Lowland) have the lowest levels of debts (£54,000 and £67,000 respectively).

Ten percent of all farms have liabilities of £400,000 or more while 26% have less than £10,000 (Figure 1.1). Over fifty percent of dairy farms have liabilities of £150,000 or more, compared to just 8% of LFA grazing livestock farms. Around a third of grazing livestock farms and horticulture farms have less than £10,000 worth of liabilities, compared to 10% of dairy farms.

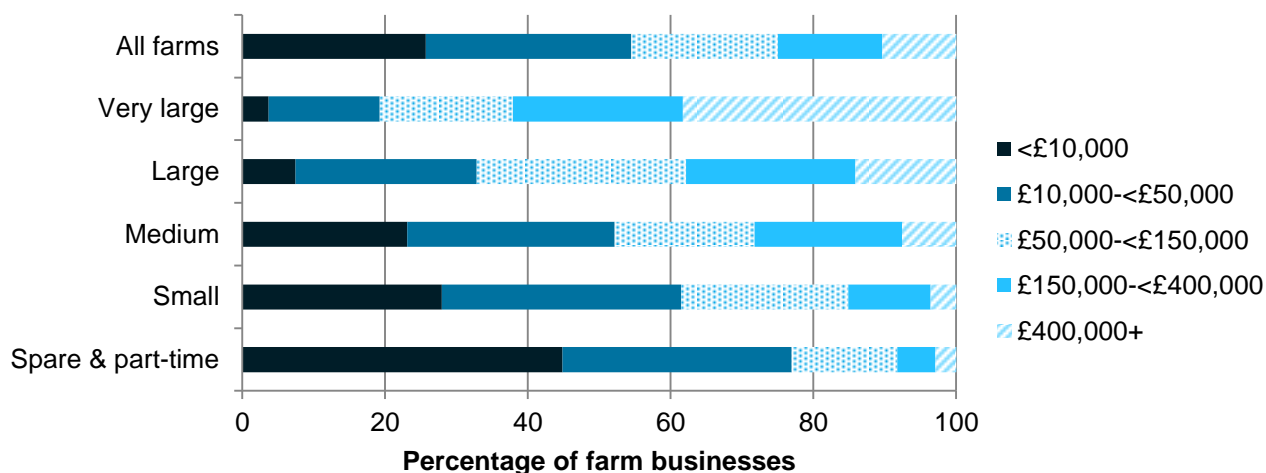
Figure 1.1: Distribution of liabilities by farm type



¹ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant. Farm type and size were highly significant ($p < 0.001$).

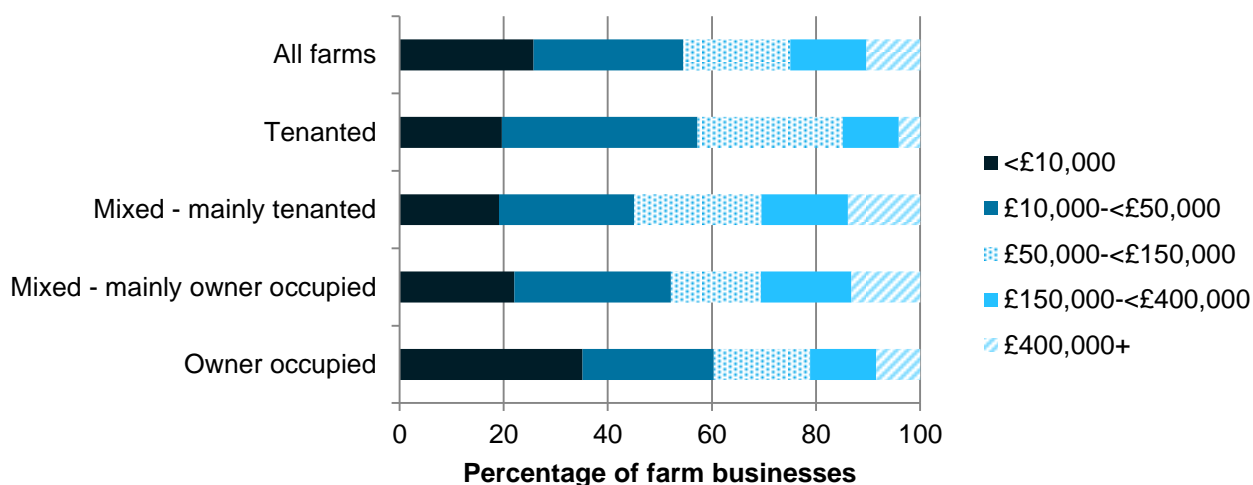
Levels of debt tend to increase with farm size² from an average of £53,000 for spare/part time farms to £480,000 for very large farms. Very large farms still have significantly greater levels of debt even after accounting for area. Across all farms average level of liabilities per hectare³ is approximately £1,000. Very large farms have the highest average liabilities per hectare at £1,500 compared to averages of £800 to £1000 per hectare for smaller farm size groups. Figure 1.2 shows that 45% of spare and part time farms have liabilities of less than £10,000, compared to just 4% of very large farms. Around 40% of very large farms have liabilities of £400,000 or more, compared to 8% of spare and part time farms.

Figure 1.2: Distribution of liabilities by farm size



Tenanted farms have the lowest levels of debt with average liabilities of around £99,000, while mixed mainly tenanted farms have the highest levels of debt at £176,000. However, once you allow for farm type and size the differences between tenure groups are not significant. Tenanted farms probably have lower liabilities than other farm tenures as a result of having a lower asset base to borrow against. Over a third of owner occupied farms have liabilities of less than £10,000, while 30% of mixed mainly tenanted farms have liabilities of £150,000 or more (Figure 1.3).

Figure 1.3: Distribution of liabilities by farm tenure



² Farm sizes are based on the estimated labour requirements for the business, rather than its land area. Please see the section on [definitions](#) for more information.

³ Per hectare of farmed area. Farmed area = Utilised Agricultural Area + net land hired in (i.e. land hired in minus land hired out)

The gearing ratio⁴ can provide a deeper understand of indebtedness. For those farms with less than £10,000 worth of liabilities, 95% have a gearing ratio of less than 5%, which shows that these farms are in a favourable situation. For further information on this please see [section 3](#).

⁴ The gearing ratio gives a farm's liabilities as a proportion of its assets

2 Net worth

Key findings

- Average net worth across all farms is £1.2 million. Around 40% have a net worth of £1million or more. This indicates that these farm businesses are likely to be resilient to fluctuations in income, at least in the short term.
- Cereal and general cropping farms have the highest average net worth at between £1.6-1.7 million per farm, driven by the larger average area of land owned by these farm types
- Horticulture, LFA grazing livestock and pig & poultry farms have the lowest average net worth at approximately £700,000.
- Average net worth increases with farm size; increasing from £740,000 for spare time and part time farms to £2.4 million for very large farms.
- Mixed mainly owner occupied farms have a greater average net worth (£1.7 million) than other tenure types.

This section examines the net worth of farm businesses. Net worth subtracts the value of total liabilities from total assets, including tenant type capital⁵ and land. This represents the wealth of a farm if all of their liabilities were called in. Businesses with a high net worth are likely to be resilient, at least in the short term to fluctuations in their income. This is because they can draw on these reserves to support the business if the financial position of the farm deteriorates.

Average net worth across all farms is £1.2 million per farm. Farm type, size and tenure were found to be influencing⁶ factors. Cereal and general cropping farms have the highest average net worth at between £1.6-1.7 million, driven by the larger average area of land owned by these farm types. Horticulture, LFA grazing livestock and pig & poultry farms have the lowest average net worth at approximately £700,000. Across all farms, around 40% have a net worth of £1million or more (Figure 2.1), implying that a large number of farms are likely to be resilient in the short term.

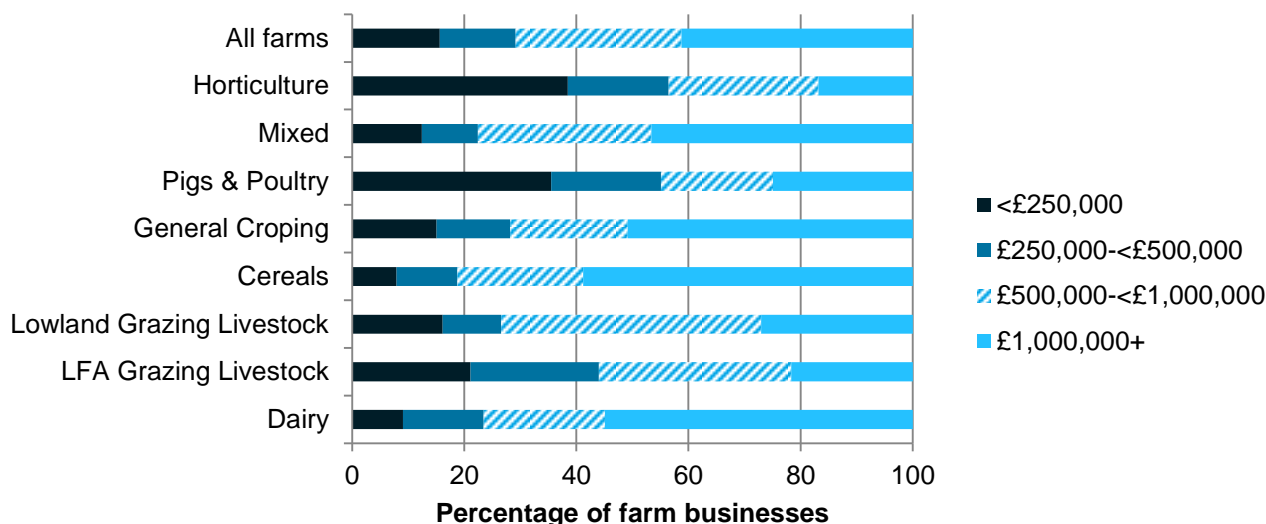
There are differences between farm types; nearly 60% of cereal farms have a net worth of £1 million or more compared to 17% horticultural farms, again reflecting land area with arable farms generally owning more land than horticulture farms. On a per hectare basis⁷, horticulture, pig & poultry farms have, on average, much greater levels of net worth (£24,200 per hectare and £19,800 per hectare respectively) compared to other farm types (ranging from £4,500 per hectare for LFA grazing livestock farms to £9,300 per farm for cereal farms).

⁵ For a definition of tenant type capital see the section on [definitions](#)

⁶ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant. Farm type, size and tenure were highly significant ($p < 0.001$).

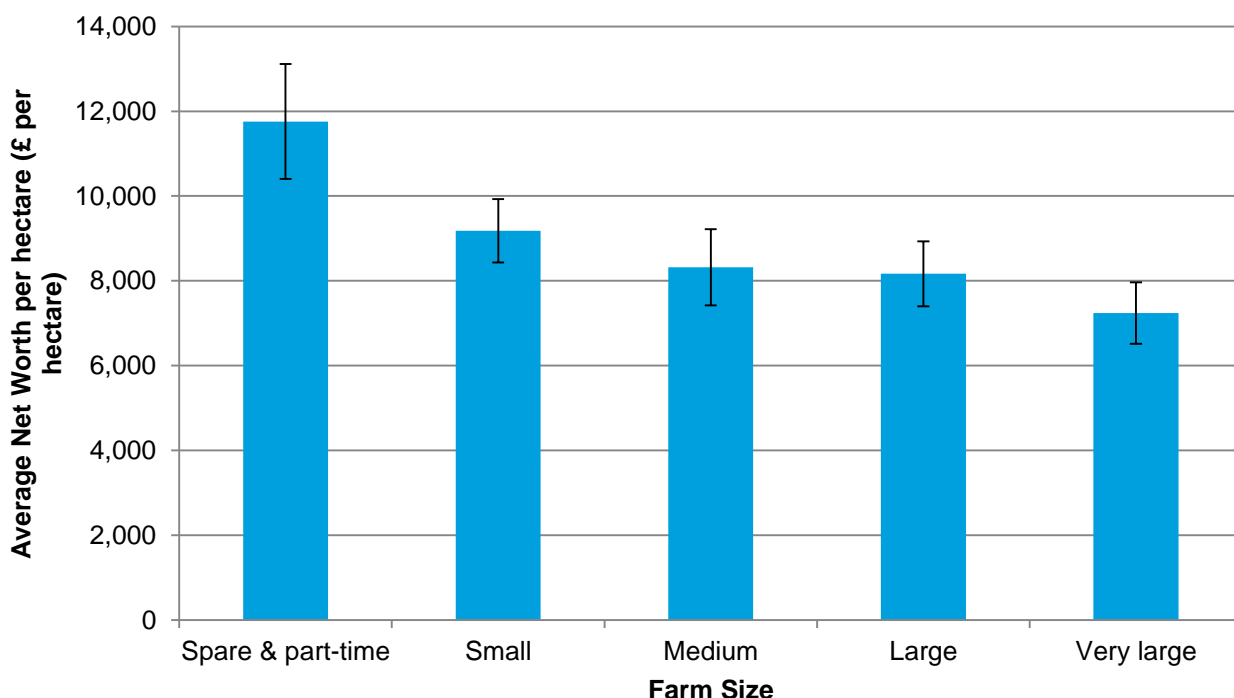
⁷ Per hectare of farmed area. Farmed area = Utilised Agricultural Area + net land hired in (i.e. land hired in minus land hired out)

Figure 2.1: Distribution of net worth by farm type



As might be expected, average net worth per farm increases with farm size⁸; from £740,000 for spare time and part time farms to £2.4 million for very large farms. However, on a per hectare⁹ basis, average net worth tends to decline as farm size increases, from £11,800 per hectare for spare and part time farms to £7,200 per hectare for very large farms (Figure 2.2). Across all farms average net worth per hectare is approximately £8,600. The number of farm businesses with a net worth of £1 million or more increases with farm size, from 25% of spare and part time farms to 68% of very large farms (Figure 2.3).

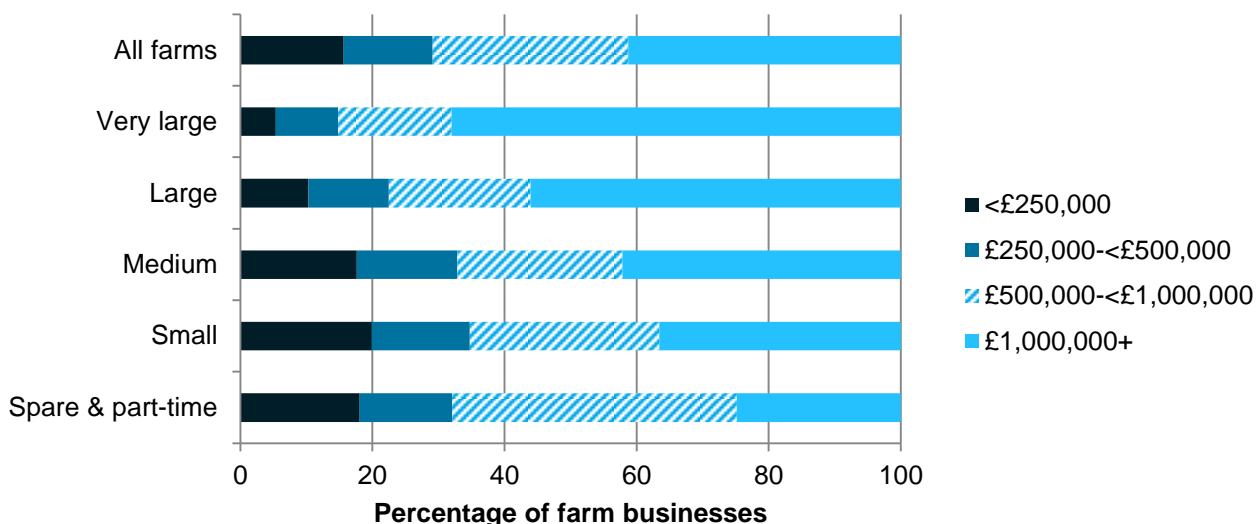
Figure 2.2: Average net worth per hectare of farmed area⁹ by farm size.



⁸ Farm sizes are based on the estimated labour requirements for the business, rather than its land area. Please see the section on [definitions](#) for more information

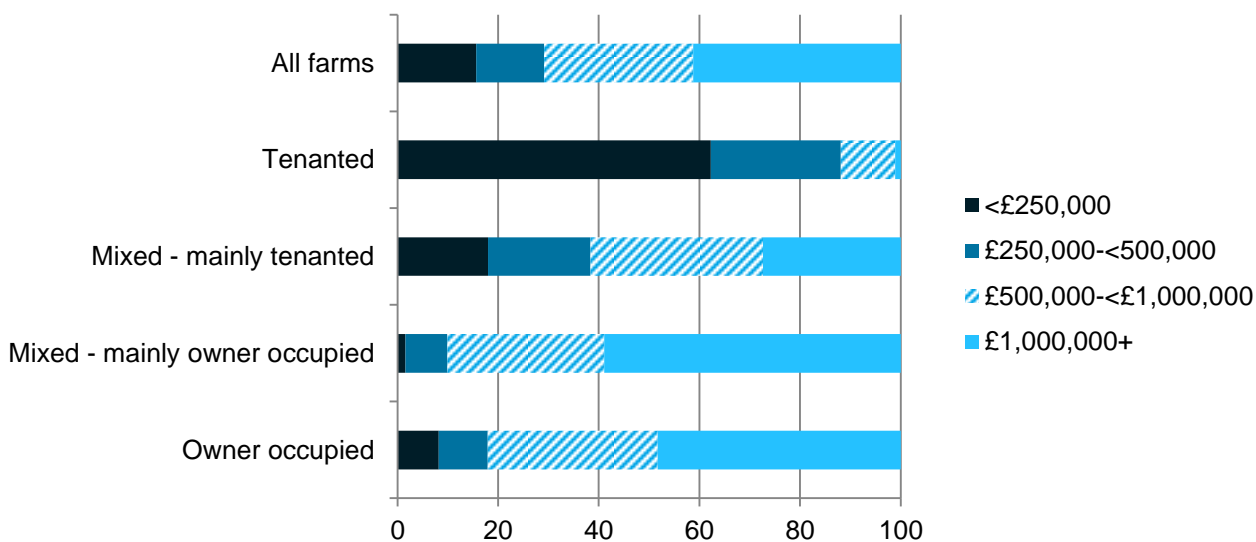
⁹ Per hectare of farmed area. Farmed area = Utilised Agricultural Area + net land hired in (i.e. land hired in minus land hired out)

Figure 2.3: Distribution of net worth by farm size



Land forms a major contribution to the asset base of farms; those farms with greater levels of ownership tend to have greater levels of net worth. Mixed mainly owner occupied farms have the highest average net worth at £1.7 million whilst tenanted farms have an average net worth of £255,000. Over 60% of tenanted farms have less than £250,000 of net worth compared to just 2% of mixed mainly owner occupied farms. Only 1% of tenanted farms have a net worth of £1 million or more, compared to 60% of mixed mainly owner occupied farms (Figure 2.4).

Figure 2.4: Distribution of net worth by farm tenure



The gearing ratio¹⁰ compares what the business owes with the assets that the owners have tied up in the business. The proportion of farms with a gearing ratio of 40% or more decreases as the amount of net worth increases. For further information on the gearing ratio please see [section 3](#).

¹⁰ The gearing ratio gives a farm's liabilities as a proportion of its assets

3 Gearing

Key findings:

- The average gearing ratio across all farms is 11%.
- 50% of farms having a gearing ratio of less than 5%. Indicating that the vast majority of farms are in a favourable situation in terms of servicing any loans.
- Pig & poultry farms have the highest average gearing ratio at nearly 30%.
- The gearing ratio increases with farm size from 7% for spare/part time farms to 16% for very large farms.
- Tenanted farms have a higher average gearing ratio (28%) compared to other farm tenures.

In order to get a deeper understanding of indebtedness in the industry we can compare what the business owes with the assets that the owners have tied up in the business. We use an accounting measure which gives a farm's liabilities as a proportion of its assets, sometimes referred to as the **gearing ratio**. If a farm has assets equal to its liabilities, this will give a gearing ratio value of 100%. If a farm's assets are twice as large as its liabilities, the gearing ratio will be 50%. The gearing ratio provides a measure of the **long term financial viability** of a farm. A lower ratio (less than 50%) is generally seen as more acceptable because this suggests that the farm business is more likely to be able to meet its investment needs from earnings. A higher ratio may be seen as a greater risk as interest costs will be higher and the farm will have lower funds to borrow against. However, being highly geared does not necessarily imply an unsuccessful business. Investment can increase profitability, so increasing the gearing ratio can lead to better performance.

The average (mean) gearing ratio across all farms is 11% (Table 3.1), with 50% of farms having a gearing ratio of less than 5% and around 10% of farms have a gearing ratio of 40% or more. This indicates that the vast majority of farms are in a favourable situation. Farm type, size, tenure, liabilities and net worth were found to be influencing¹¹ factors. Pig & poultry farms have a significantly higher average gearing ratio (28%) than other farm types, with around 30% having a gearing ratio of 40% or more. Grazing livestock farms have the lowest gearing ratio (7%), with only 3% of those in the LFA having a gearing ratio of 40% or more.

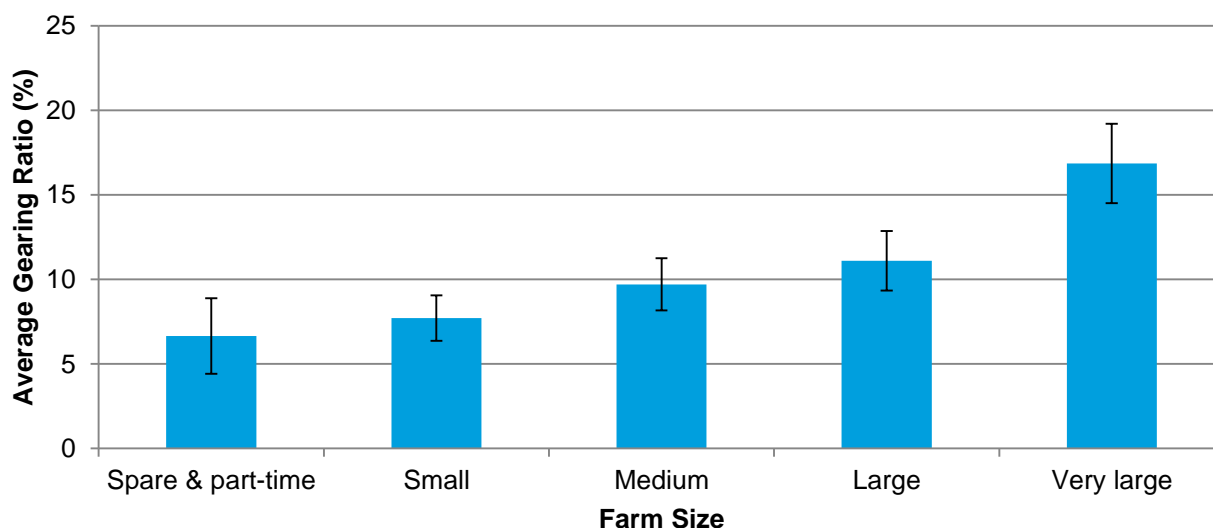
¹¹ A generalised linear regression model was fitted to examine which factors (farm type, farm size, farm tenure, liabilities and net worth) were significant. All factors were highly significant ($p < 0.001$).

Table 3.1: Distribution of Gearing ratio and average gearing ratio by farm type

Farm Type	Percentage of farm businesses					Average Gearing Ratio (%)	95% Confidence Interval (%)
	Gearing Ratio						
	<5%	5%-<10%	10%-<20%	20%-<40%	40%+		
Dairy	28	11	25	21	15	17	±2
LFA Grazing Livestock	53	20	17	7	3	7	±1
Lowland Grazing Livestock	62	11	12	9	7	7	±1
Cereals	55	13	15	11	6	9	±2
General Cropping	48	14	16	16	6	13	±3
Pigs & Poultry	26	13	16	17	28	28	±7
Mixed	52	20	10	10	8	9	±3
Horticulture	43	13	21	9	14	17	±4
All farms	50	14	16	12	9	11	±1

The gearing ratio increases with farm size (Figure 3.1) from 7% for spare/part time farms to 16% for very large farms. Over 60% of spare/part time farms have a gearing ratio of less than 5%, compared to 26% of very large farms.

Figure 3.1: Average Gearing Ratio by farm size



Tenanted farms have a higher average gearing ratio (28%) compared to other farm tenures. The gearing ratio for owner occupied farms was 10%. Over a quarter of tenanted farms have a gearing ratio of 40% or more, compared to 6% of owner occupied farms and 3% of mixed mainly owner occupied farms (Figure 3.2). These figures highlight the importance of the value of land in contributing to owner occupied and mixed tenure farms' asset base.

Figure 3.2: Distribution of Gearing Ratio by farm tenure

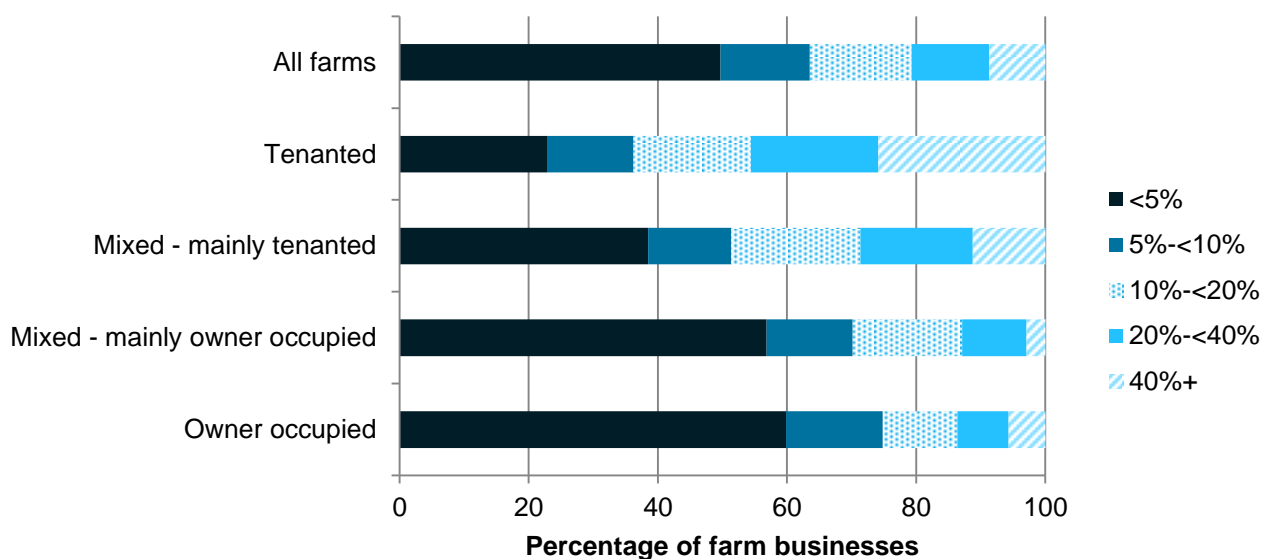


Table 3.2 shows the gearing ratio by liabilities. For those farms with less than £10,000 of liabilities, 95% of them have a gearing ratio of less than 5%, which shows that these farms are in a favourable situation. For those farms with £400,000 or more of liabilities, over 30% have a gearing ratio of 40% or more. The proportion of farms with a gearing ratio of 40% or more increases as the amount of liabilities increases.

Table 3.2: Gearing ratio by liabilities

Gearing Ratio	Liabilities				
	<£10,000	£10,000-<£50,000	£50,000-<£150,000	£150,000-<£400,000	£400,000+
<5%	95	72	19	4	5
5%-<10% ^(a)	5	13	32	14	
10%-<20%		10	25	39	21
20%-<40%	0	3	15	25	43
40%+	0	3	10	18	32
All farms	100	100	100	100	100

(a) The 5%-<10% and 10% -<20% gearing ratio groups have been combined for the less than £10,000 liabilities group due to insufficient observations. The less than 5% and 5%-<10% gearing ratio groups have also been combined due to insufficient observations.

Table 3.3 shows the gearing ratio by net worth. For those farms with less than £250,000 of net worth, 34% of them have a gearing ratio of 40% or more. For those farms with a net worth of £1million or more, over 50% have a gearing ratio of less than 5%. The proportion of farms with a gearing ratio of 40% or more decreases as the amount of net worth increases.

Table 3.3: Gearing ratio by net worth

Gearing Ratio	Net Worth			
	<£250,000	£250,000-<500,000	£500,000-<£1,000,000	£1,000,000+
<5%	23	44	58	56
5%-<10%	11	9	16	15
10%-<20%	15	18	12	18
20%-<40%	17	15	11	10
40%+	34	14	3	1
All farms	100	100	100	100

4 Liquidity

Key findings

- The average liquidity ratio across all farms is 246%.
- The majority of farms have a strong liquidity ratio, with over 60% having a ratio of at least 200%, indicating that the majority of farms are able to meet their current liabilities using current assets. However, 17% of farms potentially face financial difficulties with a liquidity ratio of less than 100%.
- On average, cereals and lowland grazing livestock farms have a liquidity ratio of over 300%. However, for dairy farms the average ratio is 143%.
- The liquidity ratio decreases with farm size from 330% for spare/part time and small farms to 195% for very large farms.
- Owner occupied and mixed mainly owner occupied farms have the highest average liquidity ratio at 260-270%.

'Liquidity' is a measure of the **short term financial viability** of farms. A large proportion of the assets on a farm, such as land or machinery, will typically have a monetary value that is difficult or costly to realise in the short term. The liquidity ratio¹² provides an indication of the ability of a farm to finance its immediate financial demands from its current assets, such as cash, savings or stock. If the liquidity ratio is equal to or above 100%, then a farm is able to meet its current liabilities using current assets. If the ratio is less than 100%, then a farm is unable to meet its immediate financial demands using current assets.

The majority of farms have a strong liquidity ratio; two thirds having a ratio of at least 200% (Table 4.1). Seventeen percent of farms potentially face financial difficulties as they have a liquidity ratio of less than 100%. This could suggest financial difficulties if creditors were to call in debts. These are more likely to be dairy, LFA grazing livestock and pig & poultry farms¹³.

The average liquidity ratio across all farms is 246%. Farm type, size and tenure were found to be influencing¹⁴ factors. Lowland grazing livestock and cereal farms, have the highest average ratios at over 300%. Dairy farms have the lowest average liquidity ratio (143%), although nearly two thirds have a liquidity ratio of more than 100%.

¹² Liquidity ratio is current assets divided by current liabilities.

¹³ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant for those farms with a liquidity ratio of less than 100%. Farm type remains significant after allowing for farm size and tenure.

¹⁴ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant for the liquidity ratio for all farms. All factors were significant at the 5% level.

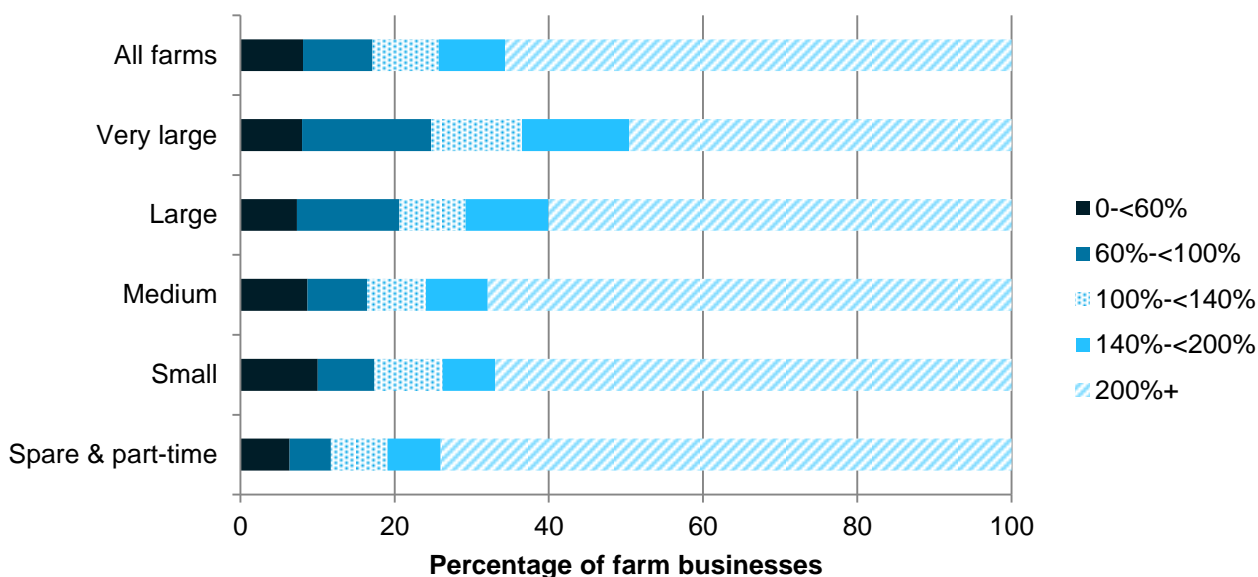
Table 4.1: Distribution of liquidity and average liquidity ratio by farm type

Farm Type	Percentage of farm businesses					Average Liquidity ratio (%)	95% Confidence Interval (%)
	Liquidity						
	0-<60%	60%-<100%	100%-<140%	140%-<200%	200%+		
Dairy	11	23	10	15	40	143	±21
LFA Grazing Livestock	10	12	7	5	66	261	±54
Lowland Grazing Livestock	7	6	9	7	71	305	±66
Cereals	6	5	7	8	74	321	±73
General Cropping	6	8	10	7	70	249	±57
Pigs & Poultry	16	10	11	11	52	175	±36
Mixed	5	6	11	11	67	289	±61
Horticulture	12	6	6	9	66	208	±44
All farms	8	9	9	9	66	246	±22

A small number of farms (16) with no recorded current liabilities have been excluded from this analysis.

The liquidity ratio decreases with farm size from 330% for spare/part time and small farms to 195% for very large farms. A quarter of very large farms have a liquidity ratio of less than 100%, compared to 11% of spare/part time farms (Figure 4.1). Nearly three quarters of spare/part time farms have a liquidity ratio of 200% or more.

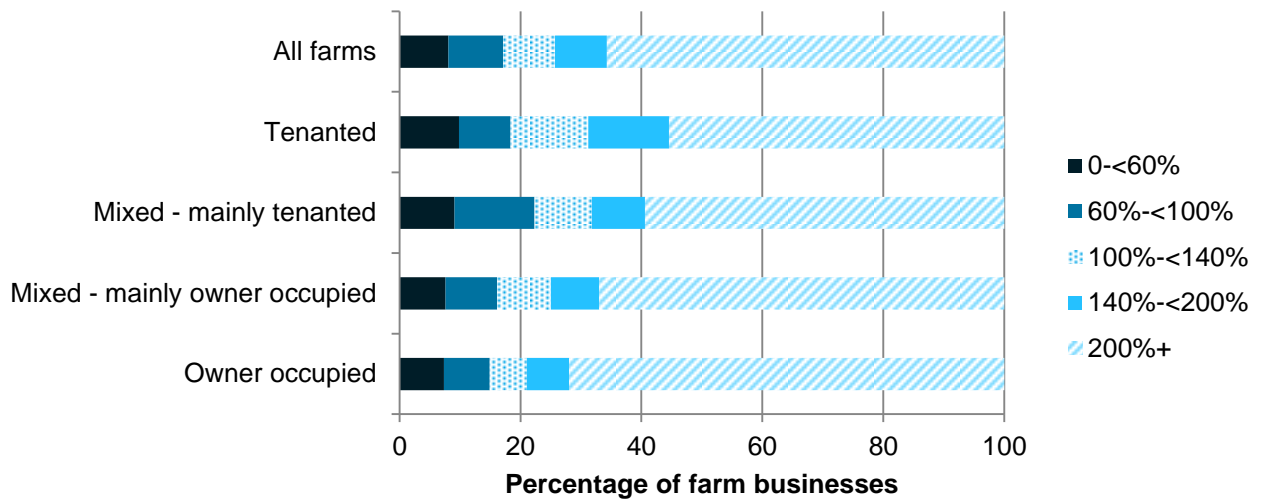
Figure 4.1: Distribution of liquidity ratio by farm size



A small number of farms (16) with no recorded current liabilities have been excluded from this analysis.

Owner occupied and mixed mainly owner occupied farms have the highest average liquidity ratio at 260-270%, whilst tenanted farms have the lowest average liquidity ratio at 200%. Over 70% of owner occupied farms have a liquidity ratio of 200% or more compared to 55% of tenanted farms (Figure 4.2).

Figure 4.2: Distribution of liquidity ratio by farm tenure



5 Net Interest payments as a proportion of Farm Business Income (FBI)¹⁵

Key findings:

- Net interest payments are on average 6% of Farm Business Income, ranging from 5% for cereal farms to 13% for pig & poultry farms.
- For nearly a third of all farms net interest payments are less than 5% of their Farm Business Income.
- Five percent of farm businesses have negative Farm Business Income and therefore would not have been able to pay some or all of the interest on their debts, without further borrowing or drawing on their assets.

This section examines net interest payments as a proportion of Farm Business Income. This measure provides an indication of whether farms can afford to pay the interest on their debts

Net interest payments were on average 6% of Farm Business Income (Table 5.1). Farm type was found to be an influencing¹⁶ factor. Pig and poultry farms have the highest net interest payments as a proportion of Farm Business Income (13%), while cereal farms have the lowest at 5%. Around 30% of farm businesses paid no interest (i.e. no loans) or their interest received (i.e. had savings) was greater than the interest paid on loans. Over 40% of horticultural farms paid no interest or received interest, compared to 21% of dairy and pig & poultry farms (Figure 5.1). Nearly a third of all farms have net interest payments of less than 5% of their FBI, whilst 5% have net interest payments of at least half of their FBI. Five percent of farm businesses have negative Farm Business Income¹⁷ and therefore would not have been able to pay some or all of the interest on their debts, without further borrowing or drawing on their assets.

Table 5.1: Net interest payments as a proportion of Farm Business Income (FBI) by farm type

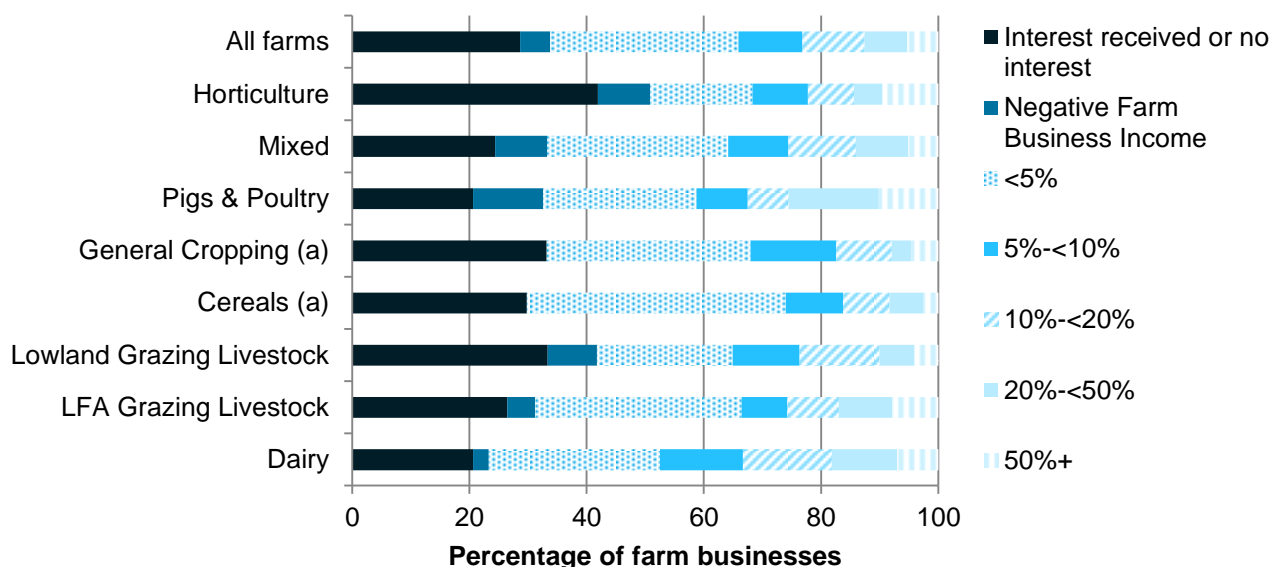
Farm Type	Average interest paid as a proportion of FBI (%)	95% Confidence Interval (%)
Dairy	9	±2
LFA Grazing Livestock	7	±2
Lowland Grazing Livestock	7	±2
Cereals	5	±1
General cropping	6	±2
Pigs & Poultry	13	±7
Mixed	6	±2
Horticulture	7	±3
All farms	6	±1

¹⁵ Before deducting interest

¹⁶ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant. Farm type was highly significant ($p < 0.001$).

¹⁷ This includes those businesses where FBI is negative after deducting interest payments and it also includes situations where FBI is also negative before interest is deducted.

Figure 5.1: Distribution of net interest payments as a proportion of Farm Business Income by farm type



The negative Farm Business Income (FBI) group includes those where FBI is negative after deducting interest payments and it also includes businesses for which FBI is also negative before interest is deducted. (a) Interest received/no interest and negative FBI groups have been combined for cereals and general cropping farm types due to insufficient observations

Larger farms tend to have highest net interest payments as a proportion of Farm Business Income at between 7 to 8%. However, once you allow for farm type the differences between farm size groups are not significant. Around 3% of very large farms have negative Farm Business Income¹¹ compared to 7% of small farms.

Owner occupied farms have the highest net interest payments as a proportion of Farm Business Income at 9%, compared to 5% for mainly owner-occupied farms. However, once you allow for farm type the differences between tenure groups are not significant. For 10% of mixed mainly tenanted farms net interest payments are at least half of FBI, compared to around 5% for other farm tenures.

6 Return on Capital Employed

Key Findings

- The median Return on Capital Employed (ROCE) across all farms is 1%, but there is a wide range of performance across farms.
- Cereal, general cropping, dairy and pig & poultry farms have a greater ROCE than other farm types.
- Grazing livestock and horticultural farms have a negative median ROCE.
- Larger farms tend to have a greater ROCE than smaller farms.

Return on capital employed (ROCE) is a measure of the return that a business makes from the available capital. ROCE provides a more holistic view than profit margins, focusing on efficient use of capital and low costs and allowing an equal comparison across farms of differing sizes.

$$\text{ROCE} = \frac{\text{Earnings before Interest and Tax}}{\text{Total Assets less Current Liabilities}}$$

Earnings have been calculated by using Defra's main income measure, Farm Business Income (FBI), minus the imputed cost of all unpaid labour.

Capital employed is the available amount that each farm could use to earn profit in the upcoming financial year. It has been calculated by subtracting current¹⁸ (i.e. short term) liabilities from total assets.

An additional measure of ROCE that uses Net Farm Income¹⁹ was also investigated and the results of this can be found in the accompanying workbook of results. Further information on the measures of ROCE can be found in [annex A](#).

A positive ROCE value shows that the farm is achieving an economic return on the capital used. Around 60% of farms have a positive ROCE value with 6% having returns of over 10%. A negative ROCE value²⁰ shows that the farm is making a loss. Farm type and size were each found to be influencing²¹ factors.

The median Return on Capital Employed (ROCE) for farm businesses is 1%. This indicates that, overall, the sector is seeing some economic return on the capital used. Cereal, general cropping, dairy and pig & poultry farms have a positive median ROCE (Figure 6.1). For grazing livestock and horticultural farms the median ROCE is negative. Horticultural farms show the greatest median loss whilst cereal and general cropping farms have the greatest medium return.

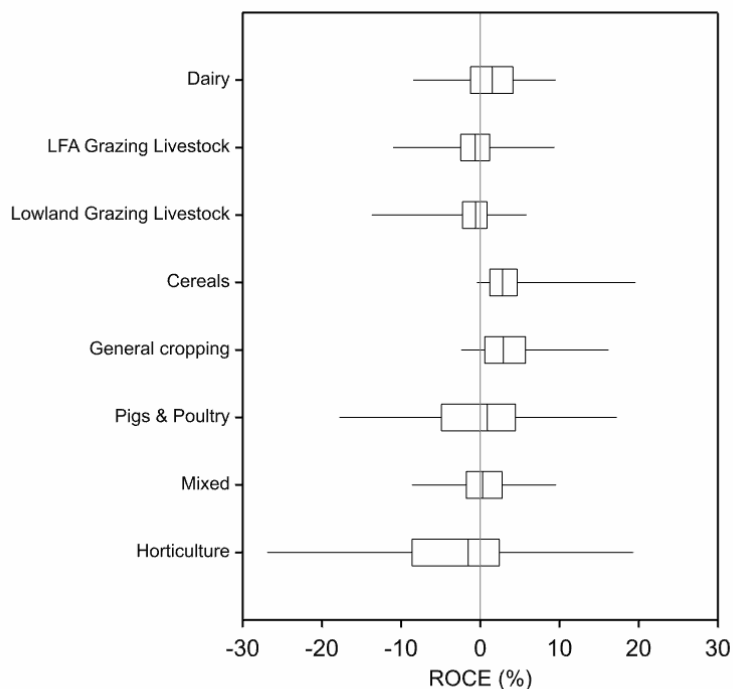
¹⁸ Short term liabilities are deducted in order to measure the capital assets that would remain after short term commitments have been met. Overdrafts are treated as a long term liability and therefore not deducted.

¹⁹ For a definition of Net Farm Income please see the section on [definitions](#).

²⁰ Note that the incidence of negative ROCE is higher than the incidence of negative FBI. This is because the value of unpaid labour has been deducted from FBI.

²¹ A generalised linear regression model was fitted to examine which factors (farm type, farm size and farm tenure) were significant. Farm type and size were highly significant ($p < 0.001$).

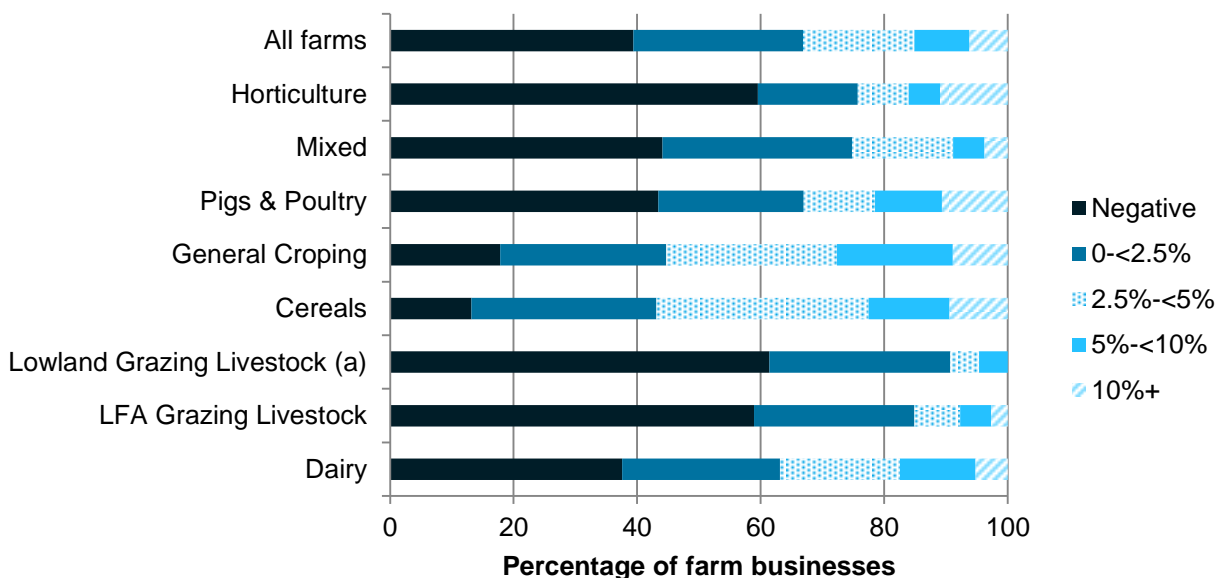
Figure 6.1: Box plot showing spread of ROCE by farm type covering 5%, 25%, 50%, 75% and 95% of farms



The vertical line represents the median ROCE, with the box itself showing the spread of the first and third quartiles; the spread between this and the first 5% of farms and the top 5% of farms are represented by the horizontal lines

Around 60% of grazing livestock and horticulture farms have a negative ROCE compared to 13% of cereal farms and 18% of general cropping farms (Figure 6.2). Eleven percent of horticulture and pig & poultry farms have a positive return of 10% or more, compared to around 3% of grazing livestock farms (LFA).

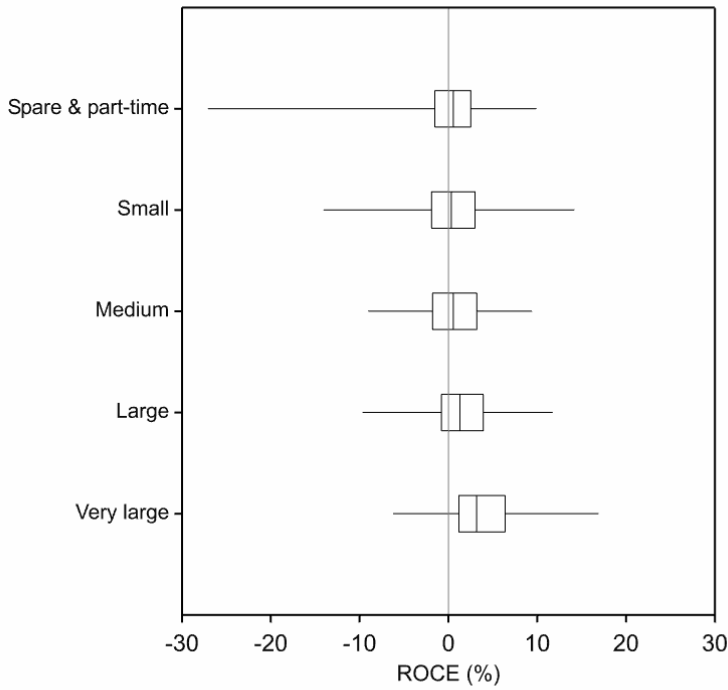
Figure 6.2: Distribution of ROCE by farm type



(a) The 5%-<10% and 10% groups have been combined for lowland grazing livestock due to insufficient observations

Larger farms tend to have a greater ROCE than smaller farms (Figure 6.3). Large and very large farms have a median ROCE of 1% and 3% respectively.

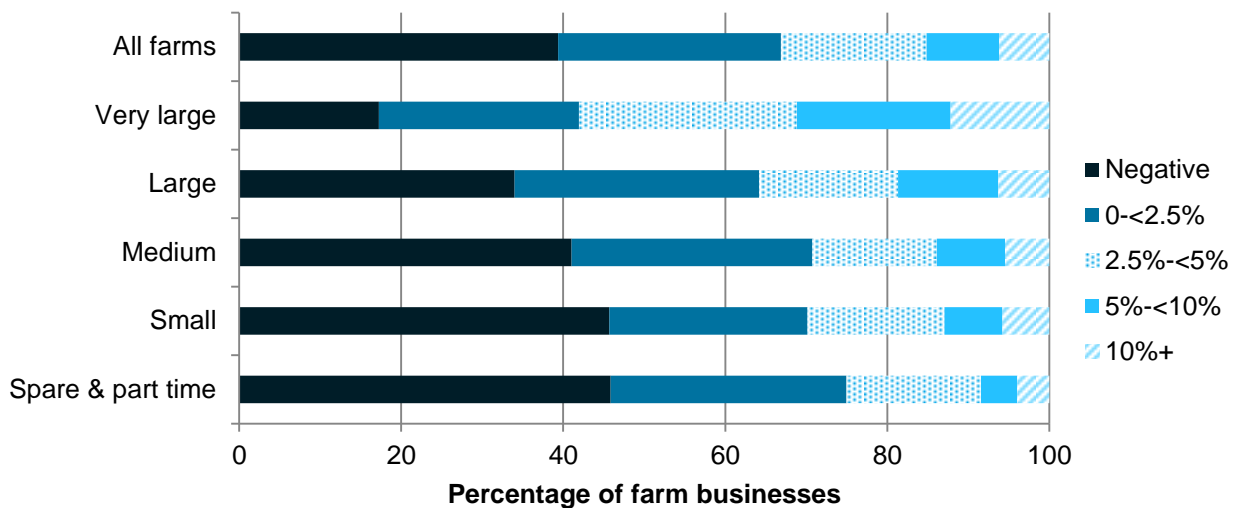
Figure 6.3: Box plots showing spread of ROCE by farm size covering 5%, 25%, 50%, 75% and 95% of farms.



The vertical line represents the median ROCE, with the box itself showing the spread of the first and third quartiles; the spread between this and the first 5% of farms and the top 5% of farms are represented by the horizontal lines

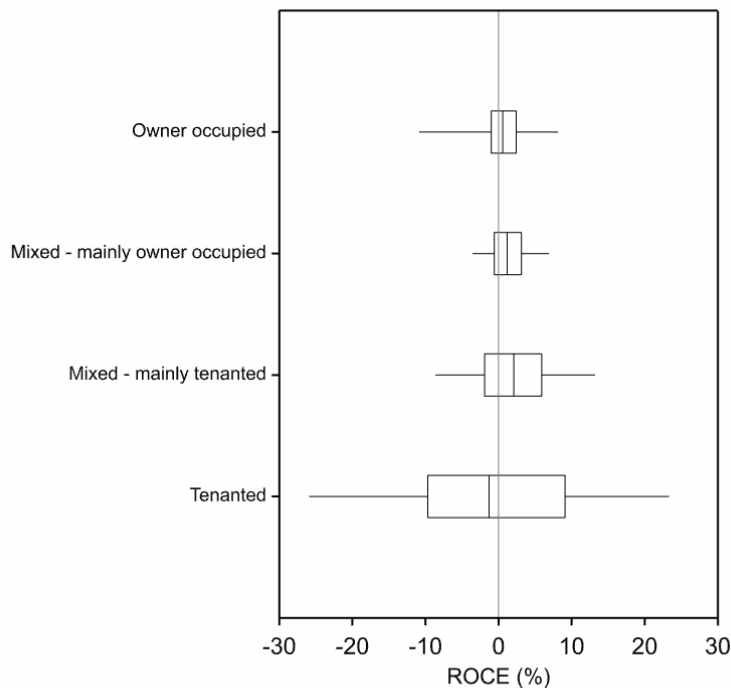
Figure 6.4 shows the distribution of ROCE for each farm size. A smaller proportion of very large farms have a negative ROCE compared to other farm size groups. Twelve percent of very large farms have a return of 10% or more, compared to 4% of spare/part time sized farms.

Figure 6.4: Distribution of ROCE by farm size



Mixed mainly tenanted farms have a positive median return of 2% (Figure 6.5). Tenanted farms have a negative median. Given the measure does not include imputed rent for owner occupied farms it is not surprising that tenanted farms have a negative median value. However, once you allow for farm type and size the differences between tenure groups are not significant.

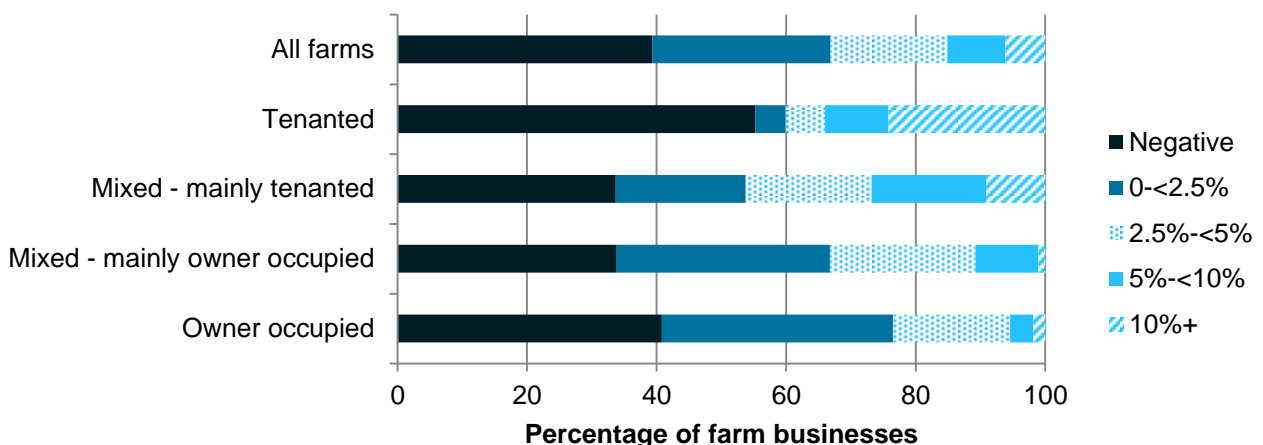
Figure 6.5: Box plot showing spread of ROCE by farm tenure covering 5%, 25%, 50%, 75% and 95% of farms



The vertical line represents the median ROCE, with the box itself showing the spread of the first and third quartiles; the spread between this and the first 5% of farms and the top 5% of farms are represented by the horizontal lines

Figure 6.6 shows that tenanted farms have the highest proportion (55%) of farms with negative ROCE, while mixed tenure farms have the lowest proportion (34%). Almost a quarter (24%) of tenanted farms have a return on capital of 10% or more compared to less than 10% of other tenure types.

Figure 6.6: Distribution of ROCE by farm tenure



Survey details

Survey content and methodology

The Farm Business Survey (FBS) is an annual survey providing information on the financial position and physical and economic performance of farm businesses in England. The sample of around 1,900 farm businesses covers all regions of England and all types of farming with the data being collected by face to face interview with the farmer. Results are weighted to represent the whole population of farm businesses that have at least 25 thousand Euros of standard output²² as recorded in the annual June Survey of Agriculture and Horticulture. In 2012 there were just over 56 thousand farm businesses meeting this criteria²³.

The data used for this analysis is from only those farms present in the Farm Business Survey (FBS) for 2010/11 to 2012/13. Those entering or leaving the survey in this period have been excluded. The sub sample consists of around 1490 farms.

For further information about the Farm Business Survey please see:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/farm-business-survey>

Data analysis

The results from the FBS relate to farms which have a standard output of at least 25,000 Euros. Initial weights are applied to the FBS records based on the inverse sampling fraction for each design stratum (farm type by farm size). These weights are then adjusted (calibration weighting²⁴) so that they can produce unbiased estimators of a number of different target variables.

The data used for this analysis is from only those farms present in the Farm Business Survey (FBS) for 2010/11 to 2012/3 and that have complete returns for their assets and liabilities. Those entering or leaving the survey in this period have been excluded. This sub sample consists of around 1490 farms. The results for this subsample have been reweighted using a method that preserves marginal totals for populations according to farm type and farm size²⁵ groups. As such, farm population totals for other classifications (e.g. regions) will not be in-line with results using the main FBS weights, nor will any results produced for variables derived from the rest of the FBS (e.g. farm business income).

Measures represent a three year average from 2010-2013, presented in 2012/2013 prices (uprated according to RPI inflation). This helps to stabilise the fluctuations in income that can significantly change the financial position of a farm from year to year.

²² For a definition of standard output please see the UK classification document here <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

²³ Prior to the 2010/11 campaign, the coverage of the FBS was restricted to those farms of size ½ Standard Labour Requirement (SLR) or more. For a definition of SLR please see the UK classification document here: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

²⁴ Further information on calibration weighting can be found here: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

²⁵ The UK classification document provides details of how farm type and farm size groups are derived. See: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

Accuracy and reliability of the results

We show 95% confidence intervals against the results. These show the range of values that may apply to the figures. They mean that we are 95% confident that this range contains the true value. They are calculated as the standard errors (se) multiplied by 1.96 to give the 95% confidence interval (95% CI). The standard errors only give an indication of the sampling error. They do not reflect any other sources of survey errors, such as non-response bias.

For the Farm Business Survey, the confidence limits shown are appropriate for comparing groups within the same year only; they should not be used for comparing with previous years since they do not allow for the fact that many of the same farms will have contributed to the Farm Business Survey in both years.

We have also shown error bars on the figures in this notice. These error bars represent the 95% confidence intervals (as defined above).

For the FBS, where figures are based on less than 5 observations these have been suppressed to prevent disclosure and where they are based on less than 15 observations these have been highlighted in the tables.

Availability of results

This release contains headline results for each section. The full breakdown of results, by farm type, farm size and farm tenure, can be found at:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/farm-business-survey#publications>

Defra statistical notices can be viewed on the Food and Farming Statistics pages on the Defra website at <https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics>. This site also shows details of future publications, with pre-announced dates.

Data Uses

Data from the Farm Business Survey (FBS) are provided to the EU as part of the Farm Accountancy Data Network (FADN). The data have been used to help inform policy decisions (e.g. Reform of Pillar 1 and Pillar 2 of Common Agricultural Policy) and to help monitor and evaluate current policies relating to agriculture in England (and the EU). It is also widely used by the industry for benchmarking and informs wider research into the economic performance of the agricultural industry.

User engagement

As part of our ongoing commitment to compliance with the Code of Practice for Official Statistics <http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>, we wish to strengthen our engagement with users of these statistics and better understand the use made of them and the types of decisions that they inform. Consequently, we invite users to make themselves known, to advise us of the use they do, or might, make of these statistics, and what their wishes are in terms of engagement. Feedback on this notice and enquiries about these statistics are also welcome.

Definitions

Mean

The mean (average) is found by adding up the weighted variable of interest (e.g. liabilities or net worth) for each individual farm in the population for analysis and dividing the result by the corresponding weighted number of farms. In this report average is usually taken to refer to the mean.

Percentiles

These are the values which divide the population for analysis, when ranked by an output variable (e.g. ROCE or net worth), into 100 equal-sized groups. For example, twenty five per cent of the population would have incomes below the 25th percentile.

Median

The median divides the population, when ranked by an output variable, into two equal sized groups. The median of the whole population is the same as the 50th percentile.

Farm Type

Where reference is made to the *type of farm* in this document, this refers to the 'robust type', which is a standardised farm classification system.

Farm Sizes

Farm sizes are based on the estimated labour requirements for the business, rather than its land area. The farm size bands used within the detailed results tables which accompany this publication are shown in the table below. Standard Labour Requirement (SLR) is defined as the theoretical number of workers required each year to run a business, based on its cropping and livestock activities.

Farm size	Definition
Spare & Part time	Less than 1 SLR
Small	1 to less than 2 SLR
Medium	2 to less than 3 SLR
Large	3 to less than 5 SLR
Very Large	5 or more SLR

Assets

Assets include milk and livestock quotas, as well as land, buildings (including the farm house), breeding livestock, and machinery and equipment. For tenanted farmers, assets can include farm buildings, cottages, quotas, etc., where these are owned by the occupier. Personal possessions (e.g. jewellery, furniture, and possibly private cash) are not included.

Net worth

Net worth represents the residual claim or interest of the owner in the business. It is the balance sheet value of assets available to the owner of the business after all other claims against these assets have been met. Net worth takes total liabilities from total assets, including tenant type capital and land. This describes the wealth of a farm if all of their liabilities were called in.

Liabilities

Liabilities are the total debt (short and long term) of the farm business including monies owed. It includes mortgages, long term loans and monies owed for hire purchase, leasing and overdrafts.

Tenant type capital

Tenant type capital comprises assets normally provided by tenants and includes livestock, machinery, crops and produce in store, stocks of bought and home-grown feeding stuffs and fodder, seeds, fertilisers, pesticides, medicines, fuel and other purchased materials, work in progress (tillages or cultivations), cash and other assets needed to run the business. Orchards, other permanent crops, such as soft fruit and hop gardens and glasshouses, are also generally considered to be tenant-type capital.

Return on capital employed (ROCE)

Return on capital employed (ROCE) is a measure of the return that a business makes from the available capital. ROCE provides a more holistic view than profit margins, focusing on efficient use of capital and low costs and allowing an equal comparison across farms of differing sizes. It is calculated as economic profit divided by capital employed.

Liquidity ratio

The liquidity ratio shows the ability of a farm to finance its immediate financial demands from its current assets, such as cash, savings or stock. It is calculated as current assets divided by the current liabilities of the farms.

Gearing ratio

The gearing ratio gives a farm's liabilities as a proportion of its assets

Utilised Agricultural Area (UAA)

Utilised Agricultural Area (UAA) is the crop area, including fodder, set-aside land, temporary and permanent grass and rough grazing in sole occupation (but not shared rough grazing) i.e. the agricultural area of the farm. It includes bare land and forage let out for less than one year.

Farm business income (FBI)

Farm Business Income (FBI) for sole traders and partnerships represents the financial return to all unpaid labour (farmers and spouses, non-principal partners and directors and their spouses and family workers) and on all their capital invested in the farm business, including land and buildings. For corporate businesses it represents the financial return on the shareholders capital invested in the farm business. Note that prior to 2008/09 directors remuneration was not deducted in the calculation of farm business income. It is used when assessing the impact of new policies or regulations on the individual farm business. Although Farm Business Income is equivalent to financial Net Profit, in practice they are likely to differ because Net Profit is derived from financial accounting principles whereas Farm Business Income is derived from management accounting principles. For example in financial accounting output stocks are usually valued at cost of production, whereas in management accounting they are usually valued at market price. In financial accounting depreciation is usually calculated at historic cost whereas in management accounting it is often calculated at replacement cost.

Net Farm Income (NFI)

Net Farm Income (NFI) is intended as a consistent measure of the profitability of tenant-type farming²⁶ which allows farms of different business organisation, tenure and indebtedness to be compared. It represents the return to the farmer and spouse alone for their manual and managerial labour and on the tenant-type capital invested in the farm business.

To represent the return to farmer and spouse alone, a notional deduction is made for any unpaid labour provided by non-principal partners and directors, their spouses and by others; this unpaid labour is valued at average local market rates for manual agricultural work.

To confine the measure to the tenant-type activities and assets of the business, an imputed rent is deducted for owner-occupied land and buildings and for landlord-type improvements made by the tenant. No deduction is made for interest payments on any farming loans, overdrafts or mortgages; interest earned on financial assets is also excluded.

²⁶ Tenant-type farming was never conceived of as including non-agricultural activities on farm (using farm resources) except perhaps for value added activities such as small-scale food processing, e.g. sales of farm produced butter and cream and retail sales of farm produced liquid milk. However, recent research has revealed that many of the more varied non-agricultural activities which have been increasing on farms over the years have been inadvertently included in the calculation of NFI, with the result that about three-quarters of non-agricultural activities on farm by value are currently included and one-quarter excluded, without any clear basis for this division. Although this means that the definition of NFI has become untenable on the current basis, it has been decided to continue with historical practice for reasons of continuity, rather than to change the definition, pending the introduction of a wider measure to include all on-farm business activities.

Annex A: How the Return on Capital Employed measure has been calculated using the FBS

Return on capital employed (ROCE) is a measure of the return that a business makes from the available capital. ROCE provides a more holistic view than profit margins, focusing on efficient use of capital and low costs and allowing an equal comparison across farms of differing sizes. Return on Capital Employed (ROCE) is calculated as:

$$\frac{\text{Earnings before Interest and Tax}}{\text{Total Assets less Current Liabilities}}$$

'Total assets less current liabilities', or TALCL, gives the value of the assets held by a farm which contribute to its ability to generate revenue.

'Earnings before interest and tax', or EBIT, is the net revenue generated by the farm's use of this asset base. This therefore allows for direct comparisons of the efficiency of different farms at using their assets to generate revenue, taking into account their relative ability to keep costs down.

This means that a higher ROCE can be achieved by either having a large net profit relative to the assets held by the farm, or by having a small capital employed base. A low ROCE will be generated where a farm has low profits and/or has a large amount capital employed relative to profits.

The Farm Business Survey collects detailed accounting data on a sample of around 1,900 farms per year. This information can be used to build up a measure of ROCE for each farm by calculating the associated EBIT and TALCL.

Although the calculation is simple there are issues which need to be addressed in order to ensure that the measure is robust and that any comparisons that are made give insight into real differences in profitability and efficiency of farms, and are not simply an artefact of the measurement process.

There are three particular areas which will determine the robustness of the measure:

- Ensuring that the large fluctuations in farm income from year to year do not distort the picture of profitability;
- How farms of different tenure types are treated.
- Ensuring that we understand the structure of farm debts and the psychology behind farm borrowing and how this relates to the definition of current and long term liabilities.

Fluctuations in income

Farm incomes vary substantially from year to year. In order to get a clearer picture of the actual profitability of farms a rolling three year average can be used to smooth out fluctuations, at least to some extent. The data looked at in this paper is an average of 2010-2012. The number of farms present for the three years is around 1490. The dataset has been reweighted to ensure that it is representative of the actual farm population in 2012/13.

Tenure types

Tenanted farms have much smaller capital bases than owner occupied farms. Given the use of the asset base in the denominator of the ROCE measure, comparing the ROCE of an owner occupied farm and a tenanted farm of the same type, size and with the same EBIT, the ROCE of the tenanted farm will be artificially inflated. Many farms are partially tenanted so ways to ensure that the measure treats tenanted and owner occupied farms equally were considered. Two ways were considered of how to do this.

- An imputed rent could be calculated for owner occupied farms and taken from their EBIT. The FBS systematically calculates an imputed rent for all owner occupied land on the basis of the grade of the soil and the rental value of surrounding land. Given that the profitability of both tenant type capital and owner occupied farms now allows for a return on the value of the land (which is siphoned to the real or assumed land owner), ROCE should be measured with EBIT relative to tenant type capital (less current liabilities). This measure may mean that some large owner occupied farms will show negative EBIT as a result of charging imputed rent where they would not have done otherwise.
- A net present value of tenanted land could be calculated and added onto the tenant type capital of tenanted farms to make their asset bases comparable to owner occupied farms. EBIT would then be calculated without subtracting rent from tenanted farms' gross incomes. This is more difficult to do because of the need to make assumptions about the length of the tenancies.

The ROCE measure represents the return on the money invested into the business, so for owner occupied farms these farms do not in fact have any associated rent. Therefore within this statistical notice it was decided that the ROCE measure presented (Farm Business Income based) would not deduct an imputed rent for owner occupied farms. A measure based on Net Farm Income (NFI) was investigated which does deduct an imputed rent for owner occupied farms and the results of this can be found in the accompanying workbook.

Structure of debt

Current liabilities are defined as liabilities which could be called in over the next year. Generally current liabilities include the cost of hire purchase, leasing, creditors and bank overdraft. It is important to understand the structure of debt in the farming industry. Capital employed (or TALCL) is meant to capture the capital the farm has at its disposal with which to earn profit on over the year. Farms often have very large overdrafts, making up a large proportion of their total liabilities. Farmers enjoy the flexibility of using overdrafts to borrow money compared to using structured loans. This raises the question of how overdrafts should be treated. A previous study using the 2007/08 to 2009/10 FBS showed that a little over 40% of farms did not use their overdrafts; these farms would not be affected by the treatment of the overdraft. However, about 1/3 farms were overdrawn for all three years of 2007-2009 so it was not clear cut whether overdraft should be treated as a long or short term liability.

Table A.1, shows ROCE (Net Farm Income based) where the overdraft was treated as a short term liability on the horizontal against ROCE (Net Farm Income based) where the overdraft was treated a long term liability on the vertical. The impacts of using the ROCE measure that treats the overdraft as a long term liability were:

- Many farms which appeared to have a negative ROCE in the measure treating an overdraft as a current liability had a positive ROCE in the measure with the overdraft as a long term liability. It is likely that these farms are using overdrafts as a flexible form of borrowing.
- Returns tend to be suppressed relative to the measure treating the overdraft as a short term liability. This is because treating the overdraft as a short term liability reduces the level of working capital for farms, implying higher returns relative to the capital employed. If a farm does not intend to pay off their overdraft in that year then the measure treating the overdraft as a short term liability will inflate the apparent profitability of that farm.

Treating the overdraft of the farm as a long term liability was therefore preferred.

Table A.1: Comparing Impacts of Treating Overdraft as a Long and Short Term Liability in Measuring ROCE (Net Farm Income based), 2007-2009 FBS

		ROCE (overdraft short term liability)						
		Negative	≥0 <0.1	≥0.1 <0.2	≥0.2 <0.4	≥0.4 <0.6	≥0.6 <1	≥1
ROCE (overdraft long term liability)	Negative	65%	0%	1%	0%	0%	0%	0%
	≥0 <0.1	27%	97%	11%	2%	0%	3%	5%
	≥0.1 <0.2	4%	2%	88%	17%	1%	8%	0%
	≥0.2 <0.4	3%	0%	0%	81%	42%	24%	2%
	≥0.4 <0.6	1%	0%	0%	0%	56%	16%	21%
	≥0.6 <1	0%	0%	0%	0%	0%	50%	8%
	≥1	0%	0%	0%	0%	0%	0%	65%

Source: Farm Business Survey, 2007/08 to 2009/10

Calculation

The ROCE measure presented in this statistical notice has been calculated in the following way:

- Earnings are calculated by using Defra's main income measure, Farm Business Income (FBI), minus the imputed cost of all unpaid labour. Capital employed has been calculated by subtracting current liabilities²⁷ (i.e. short term) from total assets.

An additional measure of ROCE that uses Net Farm Income was also investigated and the results of this can be found in the accompanying workbook of results. This was calculated in the following way:

- Earnings is calculated by the total output of farm businesses (including diversified enterprises) minus total costs (including rents, imputed rents on owned land, costs associated with diversified enterprises, and the imputed cost of all unpaid labour); this is Defra's Net Farm Income (NFI) measure minus unpaid labour of the farmer and spouse and net interest payments²⁸. Capital employed has been calculated by subtracting current¹⁹ (i.e. short term) liabilities from tenant type capital²⁹.

²⁷ Short term liabilities are deducted in order to measure the capital assets that would remain after short term commitments have been met. Overdrafts are treated as a long term liability and therefore not deducted.

²⁸ Net interest payments = interest payments paid-interest payments received.

²⁹ For a definition of Tenant type capital see the section on [definitions](#).

Issues with the measure

The FBS survey will take the capital base of a farm at a certain point in the year. Where farms can seasonally have large differences in the tenant type capital we will not be correctly capturing the denominator of the measure. For example, it is possible that the FBS survey of a poultry farm could take place immediately after all the birds have been slaughtered, although this is only likely to happen on farms that are very small. This would make the capital much lower than it is in reality, making the apparent profitability too high.