

HORIZON

Brexit Scenarios: an impact assessment



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HORIZON



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FOREWORD

AHDB's analysis of the big Brexit themes aims to improve industry understanding of the issues, as well as flagging the opportunities and threats they create. We have examined future trade relationships, implications for the labour force and policy options among other issues, such as plant protection and the influence of the World Trade Organisation (WTO).

This publication '*Brexit scenarios: an impact assessment*' will map out the range of possible post-Brexit situations and quantify their impact on UK farming. This information has so far been lacking from the post-referendum debate and is crucial to help our levy payers prepare for Brexit.

To this end, AHDB has worked with Agra CEAS Consulting (part of Informa Agribusiness Consulting) to produce an impact assessment and quantitative analysis. The impact will be examined across all six AHDB sectors

and will include analysis of farm incomes, outputs and structure at a microeconomic level, as well as trade volumes and value at a macroeconomic level.

The three chosen scenarios are not intended to predict or describe actual outcomes of the Brexit negotiations. Their purpose is to capture the range of possible repercussions. The results are not predictions of the consequences of Brexit but projections of the effects of each specified scenario. The analysis isolates the effect of Brexit on farming from other factors such as exchange rates, interest rates and economic growth, which are assumed to remain unaffected by Brexit.

This modelling work has looked at the sector level impact. However, the approach taken also provides a framework for farmers to understand the Brexit impact on their businesses.

Key findings

- In sectors where direct support accounts for a significant proportion of farm business income, this impact assessment shows the dramatic immediate impact of reduced support levels on business profitability
- Trade issues also have a significant bearing on farm business income. The UK is a net importer of products for most food sectors, and the EU is a key trading partner. In areas such as dairy and pigs, the scenarios show that farmers may benefit from rising prices, reflecting the rising costs of trade
- In sectors where exports are significant, such as cereals and sheep meat, rising costs of trade for UK products into EU markets will mean downward pressure on domestic farmgate prices. In turn, this is reflected in farm business income levels
- In some scenarios higher labour costs, resulting from restrictions on migrant workers, will reduce farm business incomes. The significance of this will be highest in horticulture, where labour forms the highest proportion of costs
- Whichever scenario is chosen, higher-performing farms¹ remain profitable in in every sector. These farms are best placed to weather the negative impacts of any of the Brexit scenarios. They are capable of generating positive incomes when the lower-performance farms are making losses. This suggests taking steps to improve productivity and performance would enable farmers to mitigate potentially negative impacts of Brexit, even before details on agricultural trade or policy emerge

“ In short, while details of the trade and policy framework are unclear, this should not stop farmers taking action to prepare for Brexit ”

¹ As defined by top 25% of performers on an input to output basis.

INTRODUCTION

The UK's decision to leave the European Union (EU), its Single Market and the Common Agricultural Policy (CAP) has created much uncertainty for the agricultural sector. AHDB has identified four main areas of concern. These are:

- (i) Terms of international trade, both with the remaining EU-27 and with other countries
- (ii) Domestic agricultural policy, as manifest in support payments, rural development and market management
- (iii) Migrant labour and its availability
- (iv) The UK regulatory environment

This study explores these four areas using three scenarios. These scenarios are intended to contain the likely possibilities resulting from the UK's exit from the EU. At one end, there is a scenario that essentially represents a 'business-as-usual' option where policy, regulatory framework and trading relations remain as close to the status quo as is possible given that the UK will no longer be part of the EU's Single Market. This is termed **Scenario 1: Evolution**.

The other two options involve degrees of reduction in support payments to UK farmers and restrictions to migrant labour, plus either the adoption by the UK of a liberal approach to trading, termed **Scenario 2: Unilateral Liberalisation** (which implies increased competition from imports outside the EU) or an alternative in which trade only takes place under WTO Most Favoured Nation (MFN) tariffs, termed **Scenario 3: Fortress UK**.

In August 2017, the FAPRI-UK Project launched a report, which looked at the potential impact of Brexit based on the various trade scenarios. Findings from FAPRI-UK are broadly in line with this report. However, this modelling work looks beyond trade to include analysis of the impact of agricultural support, labour costs and regulatory changes.

Further information on the scenarios can be found in the technical report, available at www.ahdb.org.uk/brexit

This report also includes detailed information on the methodology employed and the assumptions which have been made.

AHDB intend to publish further analysis on Brexit and its impact. This will include modelling the impact of these scenarios against farm types which are specific to Scotland and Wales.

This study explores the impacts of each scenario on the types of farming found within the Farm Business Survey (FBS): cereals, general cropping (with special attention given to potatoes), dairy, pigs, beef and sheep (uplands), beef and sheep (lowland) and horticulture. Together, these cover the main production sectors of UK agriculture. The all-farms situation is also described.



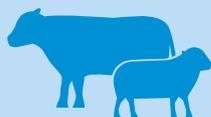
POTATOES



PORK



HORTICULTURE



BEEF & LAMB



CEREALS & OILSEEDS



DAIRY

Table 1. The Brexit Scenarios

	Scenario 1: Evolution	Scenario 2: Unilateral Liberalisation	Scenario 3: Fortress UK
Public support	<ul style="list-style-type: none"> Direct Payments (DPs) and agri-environment payments are maintained at current levels 	<ul style="list-style-type: none"> Direct Payments (DPs) removed, agri-environment and other payments under Pillar II are increased to equal 50% of current overall support 	<ul style="list-style-type: none"> Direct Payments (DPs) removed, agri-environment payments reduced to 25% of current levels of overall support
	<ul style="list-style-type: none"> Pillar I and Pillar II payments remain the same 	<ul style="list-style-type: none"> Pillar I payments reduced to 0%, Pillar II payments (and associated costs) increased by 259% to disburse 50% of total PI+PII funds 	<ul style="list-style-type: none"> Pillar I payments reduced to 0%, Pillar II payments (and associated costs) increased by 130% to disburse 25% of total PI+PII funds
Labour	<ul style="list-style-type: none"> Retained at the current level 	<ul style="list-style-type: none"> Non-UK regular labour restricted to 50% of current levels Retained at the current level for seasonal (casual) workers 	<ul style="list-style-type: none"> Non-UK regular labour restricted to 50% of current levels Non-UK seasonal (casual) labour restricted to 50% of current levels
	<ul style="list-style-type: none"> No change to labour costs 	<ul style="list-style-type: none"> 50% increase in regular labour cost, no change in casual labour cost 	<ul style="list-style-type: none"> 50% increase in regular labour cost, 50% increase in casual labour cost
Trade relationship with the EU	<ul style="list-style-type: none"> Comprehensive Free Trade Agreement (FTA) enabling tariff-free trade between the UK and the EU 	<ul style="list-style-type: none"> No trade deal between the UK and the EU is agreed UK-EU trade relationship the same as with the rest of the world 	<ul style="list-style-type: none"> No trade deal between the UK and the EU is agreed UK-EU trade relationship the same as with the rest of the world (RoW)
	<ul style="list-style-type: none"> Increase of 5% in UK prices to reflect the cost of trade friction in an FTA 	<ul style="list-style-type: none"> Increase of 8% in UK prices to reflect the cost of trade friction without an FTA, no tariff applied 	<ul style="list-style-type: none"> Increase of 8% plus cost of WTO tariff in UK prices – exceptions for lamb and beef, in line with existing quota
Trade relationship with the RoW	<ul style="list-style-type: none"> WTO rules apply UK has access to a share of the EU's existing WTO Tariff Rate Quotas (TRQs) and agrees FTAs with third countries that already have FTAs with the EU 	<ul style="list-style-type: none"> WTO rules apply, although UK unilaterally reduces import tariffs to 0% for all agricultural products within set quotas 	<ul style="list-style-type: none"> UK adopts the same common external schedule of tariffs as the EU and retains a proportion of its existing WTO TRQs, including for New Zealand and Australian lamb and the Hilton Beef quota
	<ul style="list-style-type: none"> Increase of 8% in UK prices to reflect the costs of trade friction with the RoW 	<ul style="list-style-type: none"> Increase of 8% in UK prices to reflect the cost of trade friction, no tariff applied 	<ul style="list-style-type: none"> Increase of 8% plus cost of WTO tariff in UK prices – exceptions for lamb and beef in line with existing quota
Regulatory environment	<ul style="list-style-type: none"> All existing EU regulations adopted into UK law, meaning no change to regulatory costs 	<ul style="list-style-type: none"> All existing EU regulations adopted into UK law, with the regulatory burden reduced over time 	<ul style="list-style-type: none"> All existing EU regulations adopted into UK law, meaning no change to regulatory costs
	<ul style="list-style-type: none"> No change to costs 	<ul style="list-style-type: none"> 5% decrease in costs of seeds, fertilisers, crop protection, other crop costs, veterinary fees and medicines, plus other livestock costs 	<ul style="list-style-type: none"> No change to costs

THE RELATIVE IMPACT OF THE SCENARIOS ON FARM BUSINESS INCOME

These results describe the immediate (first-order) impacts on Farm Business Income (FBI) of the policy scenarios outlined on page 5. The full technical report includes further analysis of the effect on other factors (subsequent adjustments), such as fluctuations in prices.

Overview

As would be expected from the definition of the scenarios, **Scenario 1: Evolution** implies the least change in Farm Business Income (FBI) to the status quo. Under this scenario, most farm types would see FBI retained or enhanced.

Once the UK is no longer in the Single Market, the costs of imports will rise to reflect the additional expenses of doing business (known as trade friction). Where the UK is a net importer of agricultural and horticultural products domestic prices would rise in line with the price of imports. Where the UK is a net exporter prices would be expected to decline if UK exports were not economically viable and leading to a surplus on the domestic market.

The removal of Pillar I payments and their partial replacement with enhanced Pillar II-type support under domestic agricultural policy are a key driver of lower FBIs under the other two scenarios. Under **Scenario 2: Unilateral Liberalisation**, FBI would fall for all farm types, with the exception of pig farms. The impact of the removal of Pillar I payments is only partially compensated by increased Pillar II payments and these are focused on certain farm types such as Less Favoured Area (LFA) sheep and beef. This reduction in FBI is exacerbated by decreases in the value of sheep and beef production as lower-priced imports exert downward pressure on domestic prices. Sectors with the least reliance on Pillar I support as a proportion of revenue (pigs, dairy and horticulture) are best protected from falls in FBI.

Under Scenario 3: Fortress UK, all farm types, with the exception of dairy and pigs, would see reductions in FBI compared to the baseline. However, for some farm types (general cropping, lowland sheep and beef, and horticulture) FBI would be higher than under the second scenario as the protection afforded by WTO MFN tariffs would allow domestic prices to rise, more than offsetting lower Pillar II-type payments.

Drawing the elements of the scenarios together shows the importance of policy decisions to levels of FBI for most farm types:

- Sectors most reliant on Pillar I and II support as a proportion of FBI, especially the case with respect to Pillar I for cereals and Pillar II for LFA sheep and beef

- Sectors with a reliance on enterprises for which the UK currently has a net exportable product surplus
- Sectors that have high labour requirements will be hardest hit by increases in labour costs; this will affect horticultural enterprises especially
- Sectors that produce commodities for which the UK has a substantial import requirement will see FBI protected by higher domestic prices under **Scenario 3: Fortress UK**; this will particularly be the case in the pig sector, but also in the dairy and horticultural sectors. In the red meat sector, decreases in sheep prices will be balanced to some extent by increases in beef prices under the third scenario.

All of the impacts above will be affected to some extent by supply decisions taken by retailers and consumer preference and will be mitigated by the adjustments that farmers make.

Results

The first-order impact of **Scenario 1: Evolution** on each of the examined sectors is shown in Figure 1. This reflects only the additional costs of trade. FBI under this scenario is represented by the columns compared to the baseline (current situation) which is represented by the dot.

The farm types used in the scenarios typically have a mixture of enterprises. The impact on specific enterprises can be pronounced. However, when combined with others often found on farm, the results may be tempered. Therefore, FBI in several sectors (general cropping, LFA sheep and beef and lowland sheep and beef) is little changed as increases in prices and values of output for some enterprises are balanced out by decreases for others.

It is important to note that processing potato data was calculated per hectare and multiplied by the average potato area farmed by potato growers contributing data to the AHDB in the period 2012–2016. This is not likely to be representative of all farmers in the same way as FBS data. This enterprise FBI is not directly comparable to the farm sector FBI as it represents income from only the processing potato enterprise, whereas the others represent income from all enterprises. It may therefore either understate or overstate actual FBI on farms growing processing potatoes.

Under this scenario, FBI in cereals farms falls relative to the baseline as, while there is an increase in the wheat price and a greater value of wheat output as a result, this is more than offset by decreases in barley and oilseed rape prices as the surplus cannot be exported at a competitive price and needs to be disposed of on the domestic market.

Figure 2 represents the first-order impact of **Scenario 2: Unilateral Liberalisation** on each of the examined sectors. The picture here is very different, with large decreases in FBI (compared with the baseline) expected in all sectors except pigs. The main difference between the outcome of this scenario and the first scenario is the removal of Pillar I support and an increase in Pillar II support, but only to 50% of the total support available currently. The cost of regular labour also increases as access to migrant labour is restricted. Reductions in the cost of regulation mitigate the fall in FBI to a limited extent. FBI in all sectors remains positive, although in the case of lowland sheep and beef, FBI is fairly marginal.

The first-order impact of **Scenario 3: Fortress UK** is presented in Figure 3. The key point to note here is that FBI becomes negative for cereals and LFA sheep and beef farms; FBI for lowland sheep and beef farms is positive but only just. The protection to domestic producers afforded by the use of WTO MFN tariffs and the relatively small impact of changes to policy mean that FBI in dairy farms increases relative to the baseline; FBI also increases in the pig sector for the same reasons. In both cases, the increase in FBI is mitigated to some extent by extra labour costs.

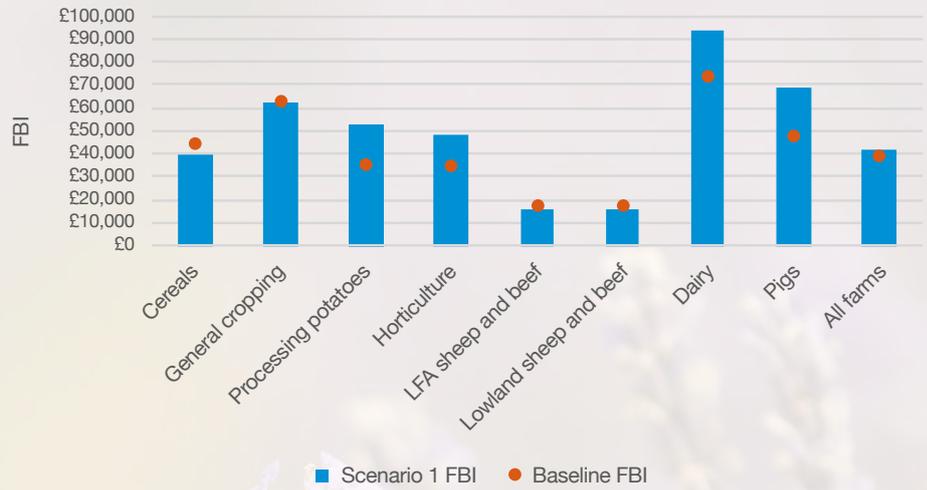


Figure 1. FBI under Scenario 1: Evolution for each sector

Note: Results for processing potatoes are based on enterprise rather than farm level.

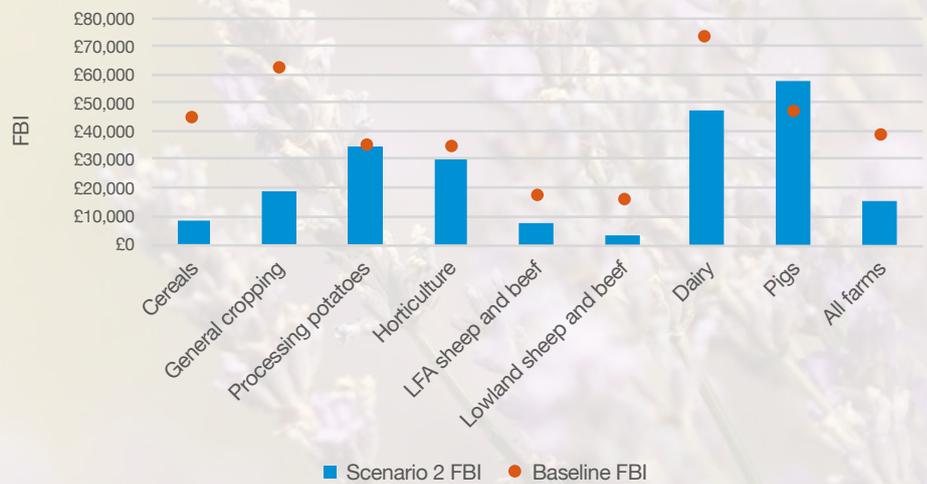


Figure 2. FBI under Scenario 2: Unilateral Liberalisation for each sector

Note: Results for processing potatoes are based on enterprise rather than farm level.

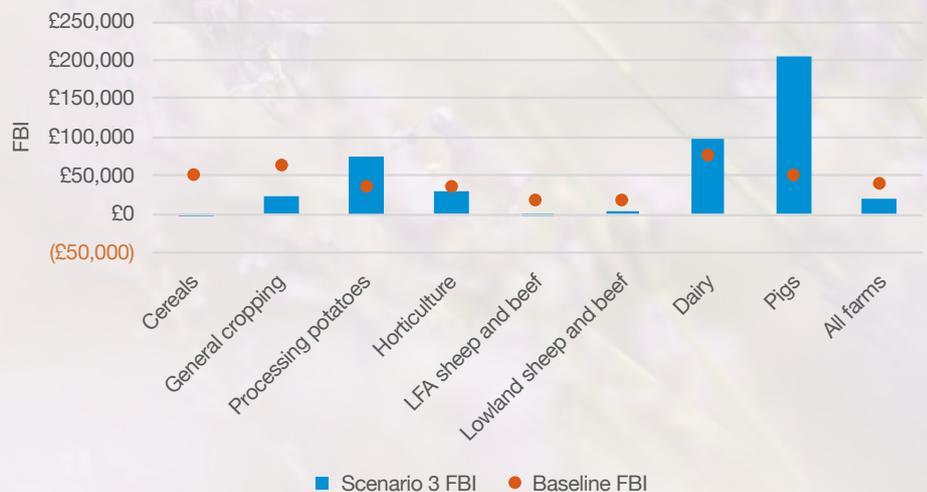


Figure 3. FBI under Scenario 3: Fortress UK for each sector

Note: Results for processing potatoes are based on enterprise rather than farm level.

RESULTS BY SECTOR

In this section, the results are presented by sector. For each sector analysed, one chart compares the baseline farm income level alongside the FBI outcome under the three different scenarios. A second chart then breaks the headline profitability into the farm business income components, in order to illustrate what has driven the change.

Cereals

Initial impact

The baseline FBI for cereal farms is £43,796 (Figure 4). Under **Scenario 1: Evolution**, this falls by 9% to £39,788, under **Scenario 2: Unilateral Liberalisation**, FBI falls by 81% to £8,216, while under **Scenario 3: Fortress UK**, FBI becomes negative after falling by 103% to -£1,341.

Figure 5 shows the components of FBI for each scenario and the baseline; comparisons between them give the explanation why FBI differs between scenarios.

- The 9% decrease in FBI seen under **Scenario 1: Evolution** is driven mainly by decreases in the output values for oilseed rape and barley, caused by the loss of export potential, which is not compensated for by the smaller increase in the value of wheat output; the FBIs of farms relying on these two crops will be especially vulnerable. This scenario is likely to slightly increase existing trends for consolidation in the cereal sector. There could also be a shift in production away from barley and oilseed rape towards wheat and other crops such as potatoes and sugar beet, where this is agronomically possible.
- The 81% decrease in FBI under **Scenario 2: Unilateral Liberalisation** is driven mainly by the removal of Pillar I payments (£37,439 per business), which is only partially offset by the increase in Pillar II payments. Decreases in the value of production output and increases in regular labour costs also have an impact, though reductions in regulatory costs provide some marginal relief for these changes. There is likely to be increased pressure on less-efficient farmers and there may also be downward pressure on farm size in order to reduce labour costs.
- Under **Scenario 3: Fortress UK**, the negative FBI results from a smaller increase in Pillar II support, which provides less offset for the loss of Pillar I support and an increase in both casual and regular labour costs. The value of production output also decreases relative to the baseline. There is likely to be severe pressure on less-efficient farmers and downward pressure on farm size, in order to reduce costs of paid labour.

The impact of the scenarios disaggregated by farm size and performance level is shown in Figure 6. FBI becomes negative under **Scenario 3: Fortress UK** for all cereal farms, driven by the largest farm size where regular labour costs are more substantial than in the other size groups. The largest size group is also outperformed by the medium size group under

Scenario 2: Unilateral Liberalisation, again as a result of relatively high regular labour costs (the higher level of Pillar I payments that larger farms have is also a factor). Under **Scenario 1: Evolution**, the impact on FBI is proportional to farm size because there is no change in Pillar I or II support and no change to labour availability or regulatory costs.

With respect to farm performance groups, all scenarios result in decreases in FBI for all groups, which makes FBI increasingly negative for low-performance farms when moving across from Scenario 1 to 3.

However, medium- and high-performance farms retain positive FBI under **Scenario 1: Evolution**, and high-performance farms retain positive FBI under all scenarios. In all cases, FBI falls furthest under **Scenario 3: Fortress UK**. It should be noted that baseline FBI is negative for the low-performance group. It is possible for negative FBI to be sustained due to off-farm income earned by the farmer, spouse and/or other family members, which is not included within the FBI calculation.



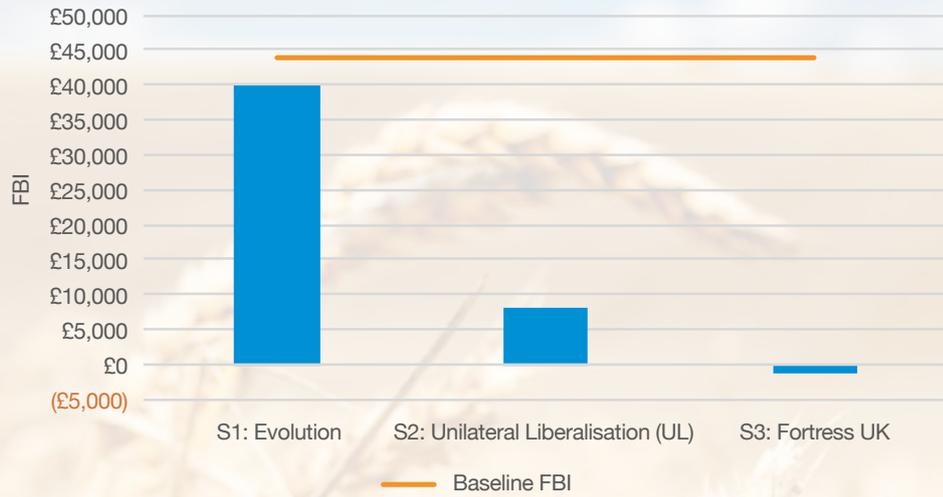


Figure 4. Impact of the scenarios on FBI: Cereals

Note: results for processing potatoes are based on enterprise rather than farm level.

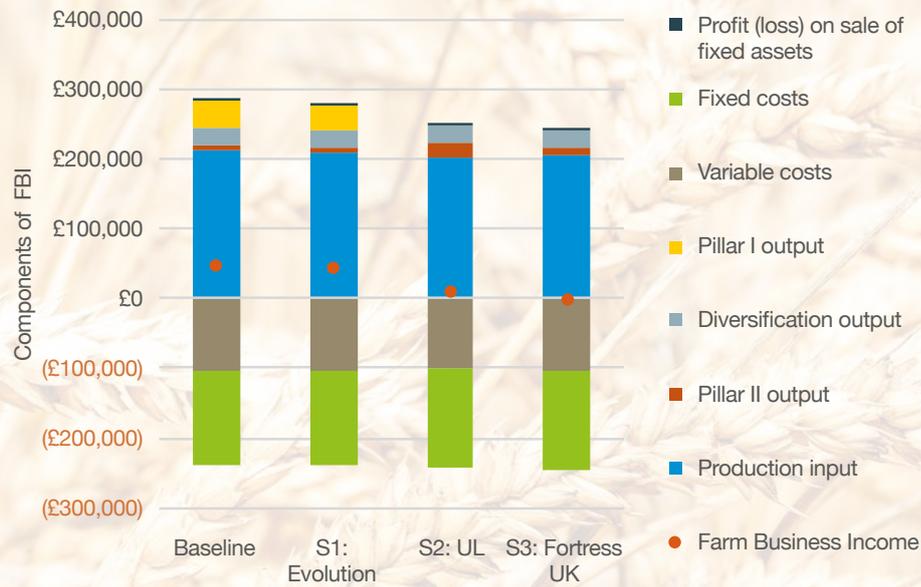


Figure 5. Impact of the scenarios on components of FBI: Cereals

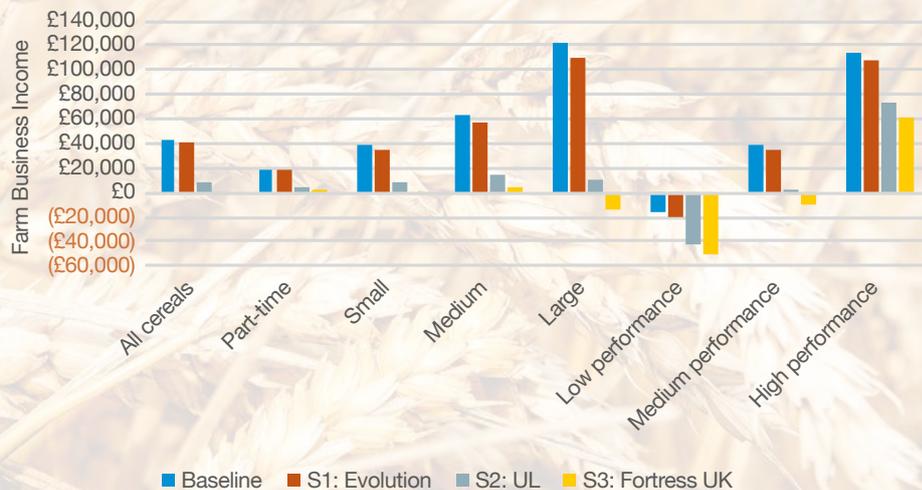


Figure 6. FBI by farm size and performance level: Cereals

General Cropping

Initial Impact

Figure 7 shows that the baseline FBI for general cropping farms² is £61,231. Under **Scenario 1: Evolution**, FBI rises marginally but FBI falls to around one-third of this level under **Scenario 2: Unilateral Liberalisation**. FBI also declines under **Scenario 3: Fortress UK** but only to £24,710.

Components of FBI under the three scenarios and the baseline (current situation) are shown in Figure 8 and it is instructive to compare them (and the data behind them).



- There will be little change in FBI under **Scenario 1: Evolution** and as such, there is likely to be a continuation of existing consolidation. A shift in production is to be expected, away from barley and oilseed rape towards wheat and crops such as potatoes and sugar beet where this is agronomically possible. The processed potato sector will become more profitable
- The main driver of the 70% decrease in FBI under **Scenario 2: Unilateral Liberalisation** is the loss of Pillar I payments (£39,084), even though this is mitigated by increased payments under Pillar II; increased regular labour costs also have an impact, as do reductions in regulatory costs in the other direction. The profitability of processed potatoes is likely to be little changed, with higher prices offset by higher paid-labour costs. There will be increased pressure on less efficient farmers and there may be some downward pressure on farm size in order to keep paid labour costs under control
- FBI under **Scenario 3: Fortress UK** is reduced by the loss of Pillar I support and the lower level of replacement under Pillar II, although the value of production output increases slightly, offsetting this to some extent; higher prices for processed potatoes offset high paid-labour costs to result in substantially higher FBI. Additional casual and regular labour costs also contribute to the 60% decrease in FBI. There is likely to be some pressure on less efficient farmers and some adjustment of cropping patterns, with areas of potatoes and sugar beet likely to increase on average

Figure 9 shows the impact of the scenarios on FBI broken down by farm size and performance level. FBI remains positive for all farm size groupings, although larger farms maintain higher FBIs than smaller farms under all scenarios. The difference in FBI under **Scenario 1: Evolution** and the other two scenarios is magnified substantially within the large size group as a result of the increases in regular labour costs.

In terms of performance groups, FBI is negative in the baseline and under all three scenarios for the low performers. However, FBI remains positive under all scenarios for the high performers. There is also less difference between FBI under **Scenario 1: Evolution** and the other two scenarios for the high performance group where the ratio of outputs to inputs is more favourable. FBI becomes marginally negative for the medium-performance group under **Scenario 2: Unilateral Liberalisation** and is only marginally positive under **Scenario 3: Fortress UK**.

² Holdings on which arable crops (including field-scale vegetables) account for more than two-thirds of their total standard output (SO), excluding holdings classified as cereals; holdings on which a mixture of arable and horticultural crops account for more than two-thirds of their total SO, excluding holdings classified as horticulture and holdings on which arable crops account for more than one-third of their total SO and no other grouping accounts for more than one-third.

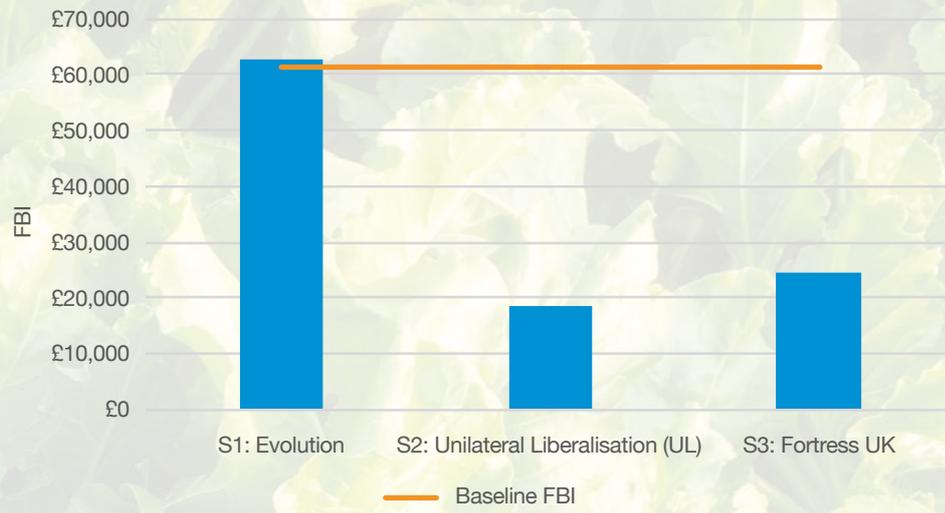


Figure 7. Impact of the scenarios on FBI: General cropping

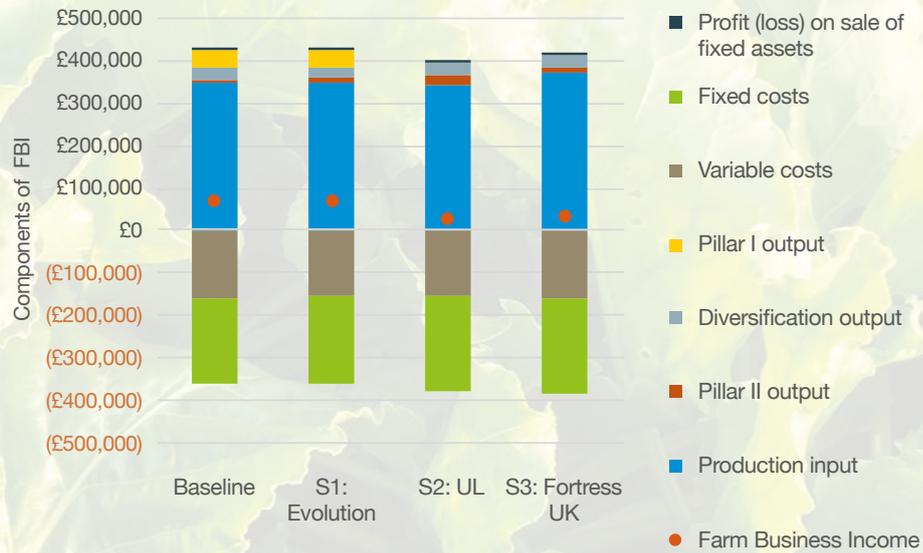


Figure 8. Impact of the scenarios on components of FBI: General cropping

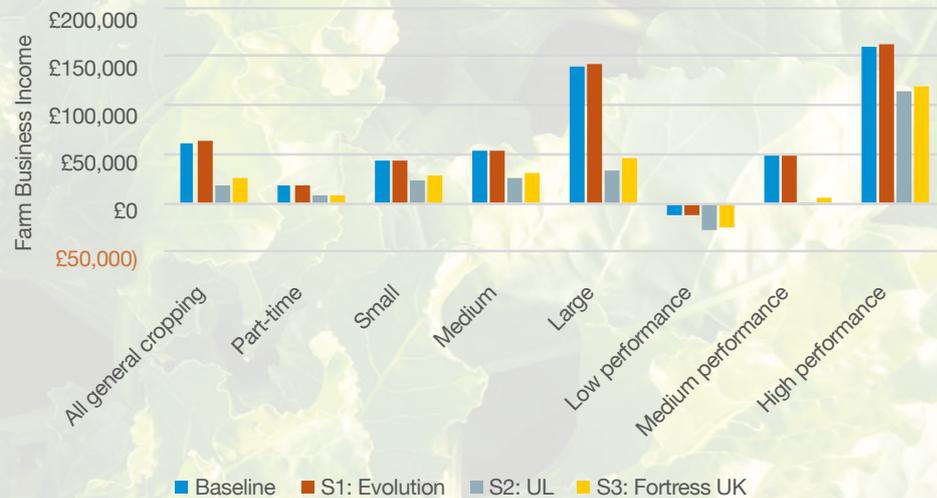


Figure 9. FBI by farm size and performance level: General cropping

Focus on the processed potato sector

Because potatoes are not well represented within any of the farm types defined by the FBS, and 'potato farms' are not a specific group, a separate exercise was carried out using data made available by the AHDB from its Arable Benchmark Model. This data allowed the synthesis of a model on a per hectare basis, ie this model differs from the others in that it represents the potato enterprise rather than a specific farm type. Data not in the AHDB source, but necessary to allow the scenarios to be constructed, was estimated using the 'general cropping' FBS data as follows:

- **Pillar I and Pillar II payments:** a value for revenue and associated costs per hectare was calculated by dividing total Pillar I/Pillar II payments/cost elements by Utilised Agricultural Area
- **Casual labour:** the data provided by the AHDB did not separately distinguish casual labour within total variable costs. The ratio of casual labour to total variable costs in the general cropping model was used to estimate the cost of casual labour in the potato model to allow the change in this to be modelled under Scenario 3
- **Costs of complying with regulations:** the cost reduction was based on all variable costs after the removal of casual labour; the AHDB data did not disaggregate variable costs

The baseline synthesised FBI for potatoes is £639 per hectare (Figure 10). Under **Scenario 1: Evolution**, this increases to £973 per hectare and to £1,400 per hectare under **Scenario 3: Fortress UK**. Under **Scenario 2: Unilateral Liberalisation**, FBI remains virtually unchanged at £636 per hectare.

Figure 11 shows the changes in the components of synthesised FBI under the three scenarios. Pillar I and Pillar II payments are relatively insignificant and changes in these make little difference to FBI under any of the scenarios. The main change in a positive direction comes from production output where trade friction costs and WTO tariffs under **Scenario 3: Fortress UK** cause UK prices for processing potatoes to rise. This increase is mitigated to some extent by increases in the cost of regular labour under Scenarios 2 and 3 and, in the latter, also by increases in the cost of casual labour. Variable costs are reduced slightly under **Scenario 2: Unilateral Liberalisation** as the costs of complying with regulation are reduced.



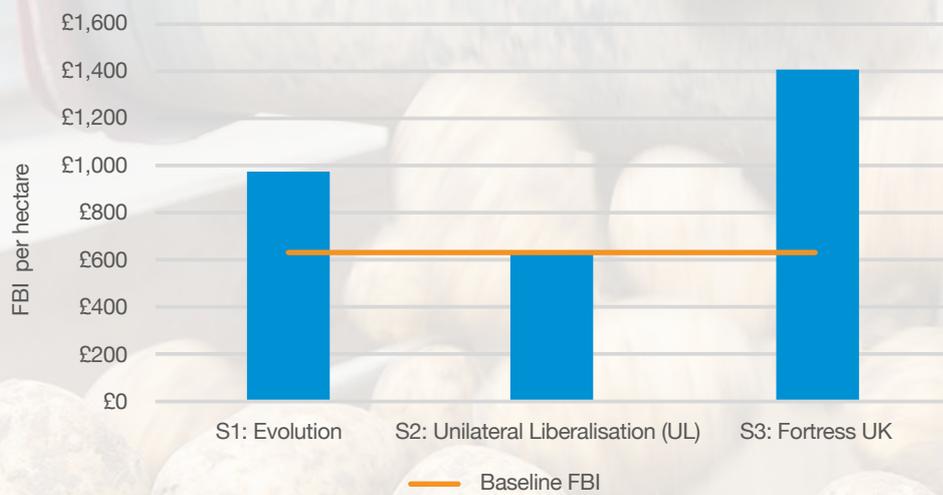


Figure 10. Impact of the scenarios on FBI: Potatoes

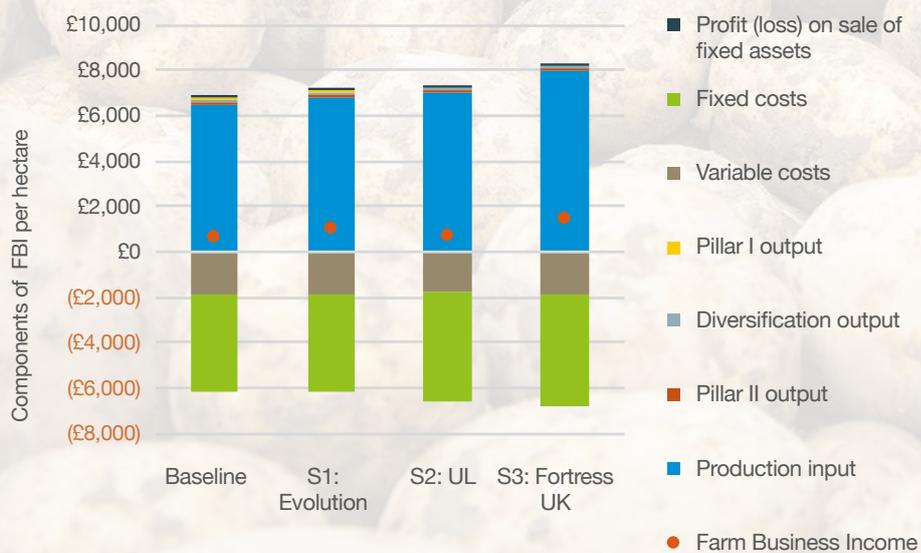


Figure 11. Impact of the scenarios on components of FBI: Potatoes

Horticulture

Initial Impact

The horticulture classification includes a broad remit. We have, therefore, chosen specific crops as representative of the sector, including onions, tomatoes and strawberries. Full details of our methodology for modelling crops where data was limited may be found in the technical report. Figure 12 compares the baseline FBI (£33,517) to that under the three scenarios. FBI increases by approximately £15,000 under **Scenario 1: Evolution** but falls under both **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** to £29,632 and £30,890, respectively.

Figure 13 shows the components of FBI under the three scenarios and the baseline.

- Public support under the CAP does not form an important component of total output in the horticulture sector, so the loss of Pillar I makes little impact. All three scenarios feature an increase in the value of production output, although FBI only increases under **Scenario 1: Evolution** (by 42%), which would appear to be a positive outcome for the horticultural sector
- Under **Scenario 2: Unilateral Liberalisation**, FBI declines by 12% as the increase in production is offset by increases in the cost of regular labour, despite a reduction in the costs of regulatory compliance. This scenario presents a number of major challenges to the horticultural sector, the most important of which will be finding a solution to the issue of labour availability and cost
- Under **Scenario 3: Fortress UK**, the 8% decrease in FBI results primarily from the increased cost of labour, which includes in this scenario not only regular workers but the extra cost of casual labour too.

This scenario is likely to be challenging for horticulture, especially for low and medium performers. Labour is the key issue to contend with. Being a large-scale growing operation will not be enough, being best in class and a high performer will be the key, regardless of operational scale

- This might provide opportunities at a certain level for smaller and even some part-time farms but the real challenge will be how the larger-scale, more commercial units solve the issues related to labour. Automation of picking and packing operations is clearly one way forward but there will need to be a wider supply chain view of the future taken. Just solving the labour issue on its own might not be enough

The impact of the scenarios by farm size and performance level is shown in Figure 14. FBI remains positive for all farm size groupings, except the largest farms where the greater use of hired labour results in a negative FBI under **Scenario 2: Unilateral Liberalisation** and a substantial negative FBI under **Scenario 3: Fortress UK**.

In terms of performance groups, FBI is positive under the baseline and **Scenario 1: Evolution** for all groups, although only just for the low performers. FBI under **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** is negative for the low- and medium-performance groups, more so in the latter category where hired labour costs are higher. FBI is positive under the baseline and all scenarios for the high-performance group, although the difference between Scenarios 2 and 3 and the baseline and the first scenario is exacerbated compared with the all-farms group due to the importance of the cost of hired labour.



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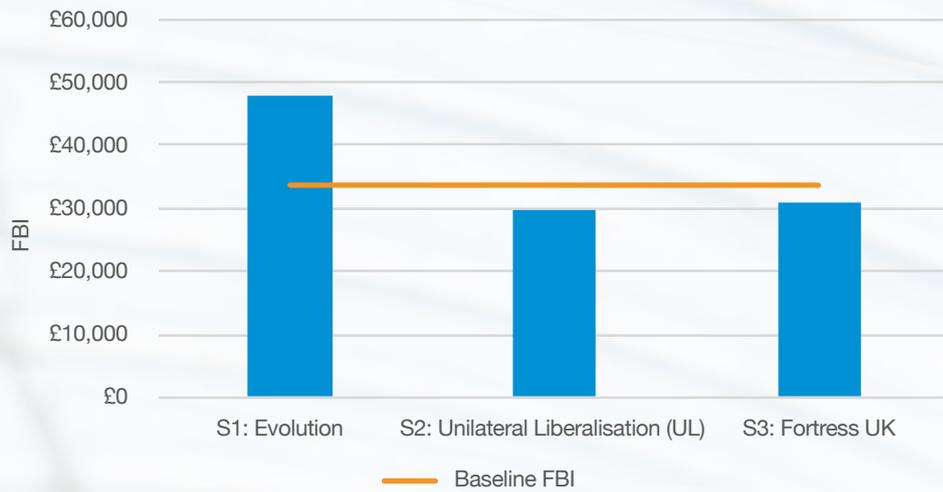


Figure 12. Impact of the scenarios on FBI: Horticulture

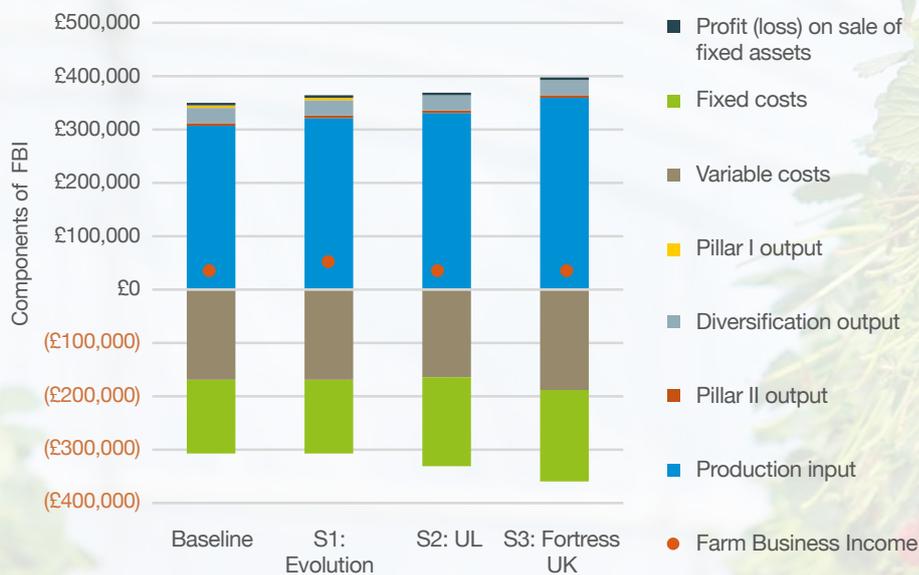


Figure 13. Impact of the scenarios on components of FBI: Horticulture

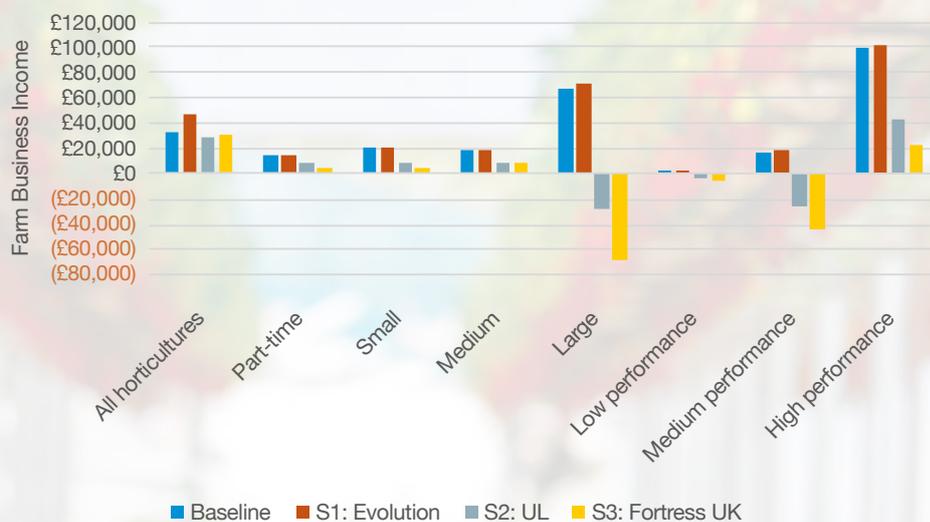


Figure 14. FBI by farm size and performance level: Horticulture

Less favoured area (LFA) sheep and beef

Initial impact

The baseline FBI for LFA sheep and beef farms is £16,166 (Figure 15). FBI is virtually unchanged under **Scenario 1: Evolution** but it falls by half under **Scenario 2: Unilateral Liberalisation**. Under **Scenario 3: Fortress UK**, FBI becomes negative (-£1,409). Figure 16 shows the changes in the composition of FBI under each scenario.

LFA sheep and beef farms

- Changes in the value of beef and sheep output offset one another under **Scenario 1: Evolution**. There is likely to be little change to LFA sheep and beef farms, although some rebalancing away from sheep and towards beef is likely where this is technically possible
- The loss of Pillar I payments (£19,482) under **Scenario 2: Unilateral Liberalisation** is almost entirely compensated by increases in Pillar II support. The key explanation for the 51% reduction in FBI here is the lower value of production driven by substantially lower sheep prices and fractionally lower beef prices. Higher regular labour costs have a larger negative impact on FBI than savings in regulatory compliance costs. This will result in marginal producers either leaving the sector or relying on off-farm income and Pillar II-type support. Sheep enterprises will be under the greatest pressure
- Under **Scenario 3: Fortress UK**, FBI falls by 109% and becomes negative due to the inability of marginally increased Pillar II payments to compensate for the loss of Pillar I support. A decrease in the value of sheep production is offset by an increase in the value of beef production. The future prospects for the sheep and beef LFA producers look especially challenging under this scenario; only the most efficient producers will be economically viable without off-farm income

The impact on FBI of the scenarios by farm size and performance level is shown in Figure 17. FBI under **Scenario 3: Fortress UK**, is slightly negative for the part-time and medium groupings, but is more so in the other groups. The difference between **Scenario 1: Evolution** and **Scenario 2: Unilateral Liberalisation** is most pronounced in the large-size group, and reflects the greater proportion of their revenue coming from the market compared to that from Pillar II payments.

FBI is negative for the low-performance group under the baseline and each scenario, but for the high-performance group is positive for the baseline and under all scenarios. FBI under **Scenario 1: Evolution** and **Scenario 2: Unilateral Liberalisation** is similar for the high-performance group, where output from Pillar II payments is relatively high (this is a key difference between the high-performance group and the large farm group). The medium-performance group retains positive FBI under the first two scenarios, but FBI becomes negative under **Scenario 3: Fortress UK**.



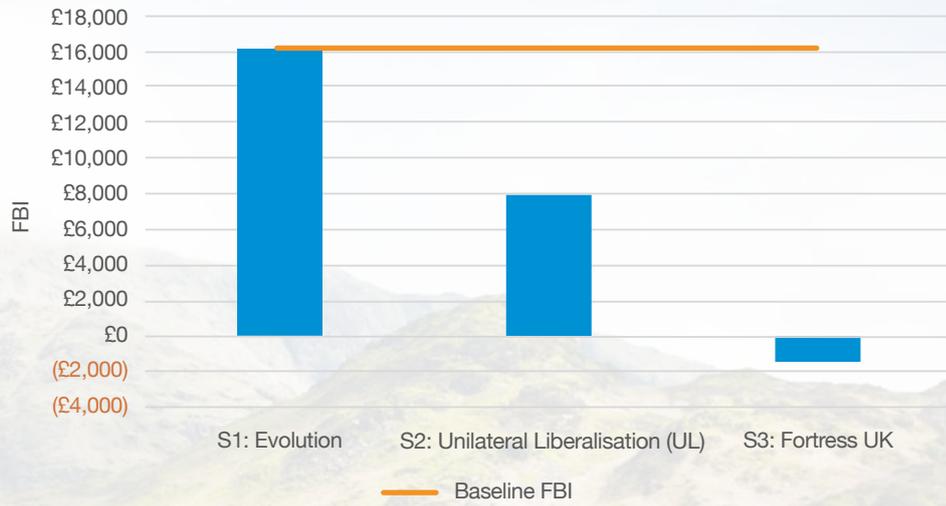


Figure 15. Impact of the scenarios on FBI: LFA sheep and beef

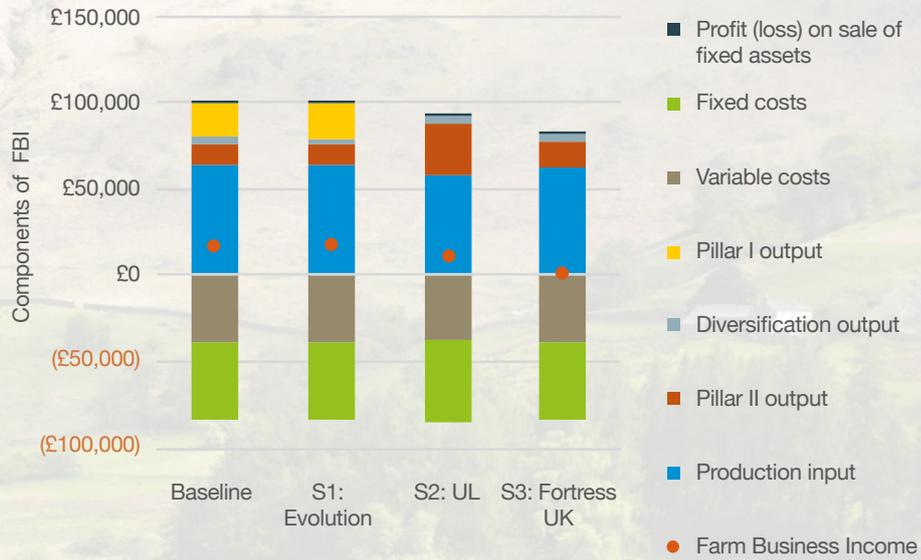


Figure 16. Impact of the scenarios on components of FBI: LFA sheep and beef

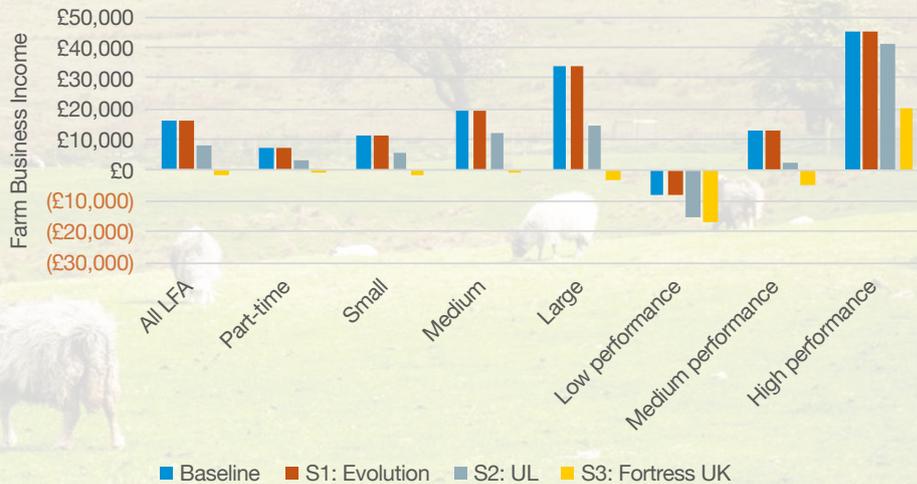


Figure 17. FBI by farm size and performance level: LFA beef and sheep

Lowland sheep and beef

Initial impact

Figure 18 shows that the baseline FBI for lowland beef and sheep farms is £15,188. **Under Scenario 1: Evolution**, this increases slightly to just over £16,000. FBI under **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** would fall considerably to £2,849 and £3,461, respectively.

Figure 19 presents the change in the components of FBI by scenario.

Lowland sheep and beef farms

- The 7% increase in FBI under **Scenario 1: Evolution** is the result of decreases in the value of output from sheep being countered by a slightly larger increase in the value of output from beef. This scenario implies little change for lowland sheep and beef farmers, although there may be an increase in beef production as sheep production declines
- Under **Scenario 2: Unilateral Liberalisation**, FBI decreases by 81% as the loss of Pillar I payments (£15,963) is partially compensated by increases in Pillar II payments, but production output decreases as output from the sheep enterprise falls considerably. Variable costs decrease slightly due to the reduction in the cost of complying with regulations, while fixed costs increase slightly as labour costs go up.

An acceleration of restructuring is probable, with the least efficient farms coming under increasing economic pressure. There is also likely to be a switch away from sheep and beef towards other sectors, especially dairy, where this is possible

- Under **Scenario 3: Fortress UK**, FBI decreases by 77% as the loss of Pillar I payments is mitigated by an increase in the value of beef output, which offsets the lower value of sheep output. Adjustments can be expected to be similar, though less extreme, to those under the second scenario

Figure 20 shows the impact of the scenarios by farm size and performance level. Generally, FBI increases with scale under each scenario. However, **Scenario 2: Unilateral Liberalisation**, is an exception where FBI is lower for large farms than it is for medium-sized farms. This reflects a greater share of output from Pillar II support and diversification; with large farms deriving proportionally more of their output from the market and are thus more exposed to price movements.

As is often the case, FBI is negative under the baseline and all scenarios for the low-performance group. FBI is also negative under **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** for the medium-performance group. FBI remains positive under all scenarios for the high-performance group.



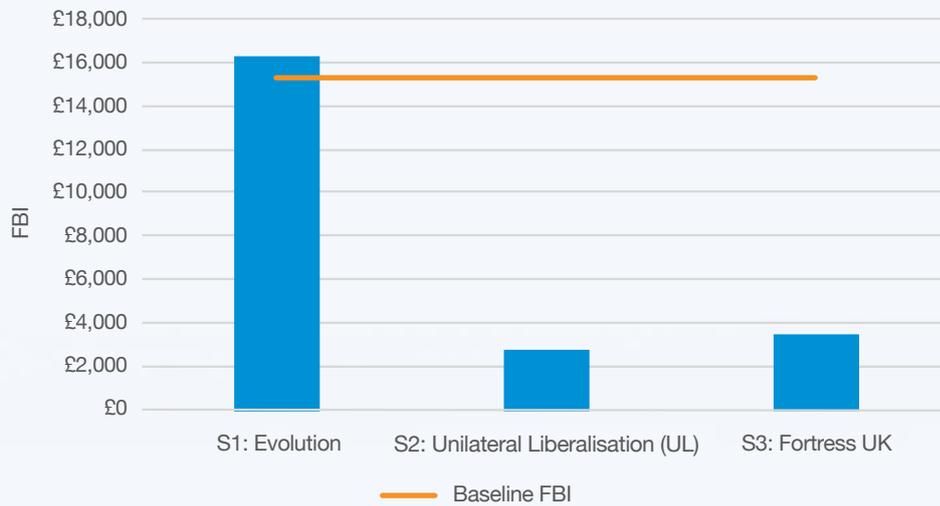


Figure 18. Impact of the scenarios on FBI: Lowland sheep and beef

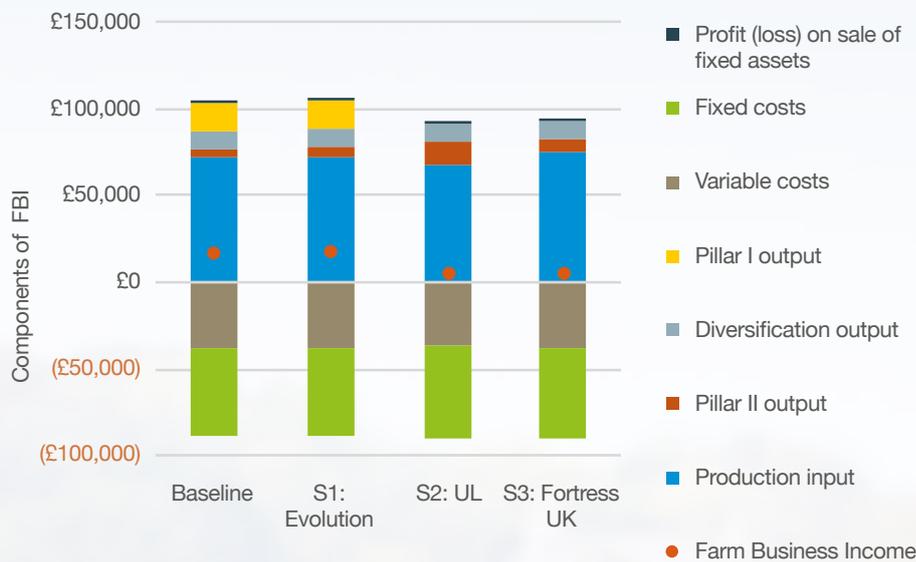


Figure 19. Impact of the scenarios on components of FBI: Lowland sheep and beef

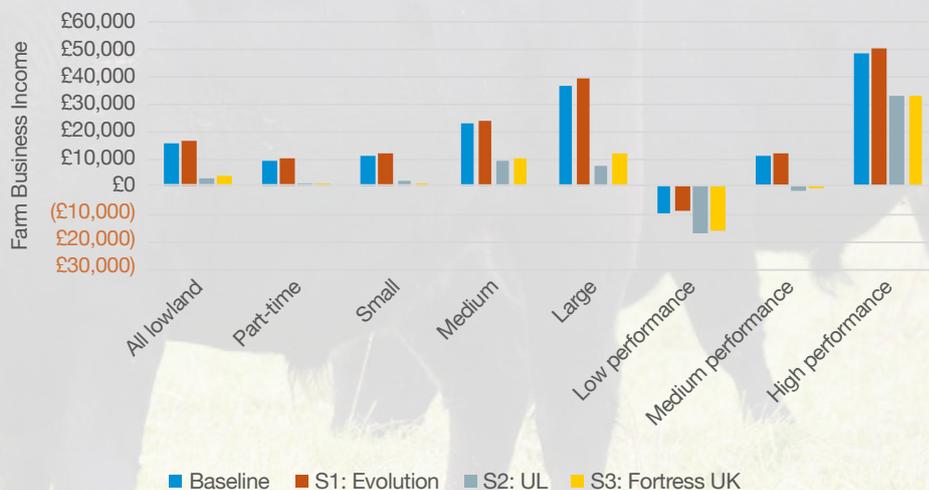


Figure 20. FBI by farm size and performance level: Lowland sheep and beef

Dairy

Initial impact

The baseline FBI for dairy farms is £72,482 (Figure 21). This increases to £93,853 under **Scenario 1: Evolution** and to £96,629 under **Scenario 3: Fortress UK**. However, FBI falls to £47,116 under **Scenario 2: Unilateral Liberalisation**.

- The 29% increase in FBI under **Scenario 1: Evolution** is driven by an increase in the value of production output as imports of dairy products become more expensive outside the single market, allowing the domestic milk price to rise. This scenario is likely to lead to a generally positive environment for the dairy sector in the UK. Structural changes can be expected to be cushioned compared with the baseline of the current CAP
- FBI falls by 35% under **Scenario 2: Unilateral Liberalisation** as there is virtually no change in the domestic milk price and hence only a very marginal change in the value of production output. Though Pillar I payments form only a relatively small proportion of the value of total output for dairy farms (£24,870), their removal accounts for the difference in FBI compared to the baseline. Variable costs are lower under this scenario as a result of the savings in regulatory compliance costs and lower livestock feed costs, but fixed costs are higher due to the increase in the cost of regular paid labour. This scenario presents a very challenging outcome for the dairy sector, which could lead to a permanent adjustment in its structure

- Under **Scenario 3: Fortress UK**, FBI increases by 33% because the value of production rises further as all imports are faced with WTO MFN tariffs, providing further protection for UK production and leading to even higher domestic prices. This increase in the value of production is sufficient to compensate for an increase in fixed costs as the cost of regular paid labour increases. This scenario is generally encouraging for the UK dairy farming sector, but may be less so for the UK consumer faced by higher prices

The impact of the scenarios on FBI by farm size is similar (Figure 23). However, in terms of performance levels, FBI is negative under the baseline and **Scenario 2: Unilateral Liberalisation**, and is only just positive under **Scenario 1: Evolution** and **Scenario 3: Fortress UK** as higher domestic milk prices are possible. FBI under the three scenarios for medium and high-performance dairy farms follows the same pattern as seen for all dairy farms.



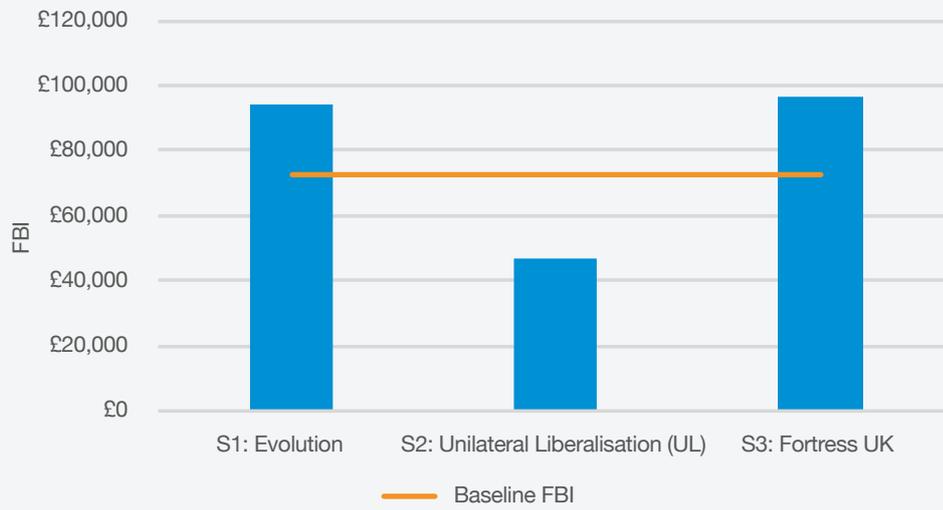


Figure 21. Impact of the scenarios on FBI: Dairy

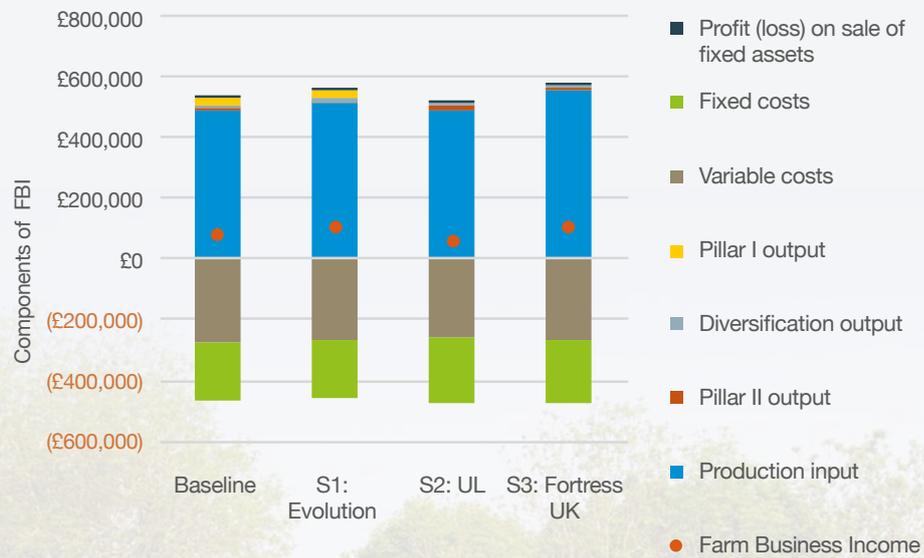


Figure 22. Impact of the scenarios on components of FBI: Dairy

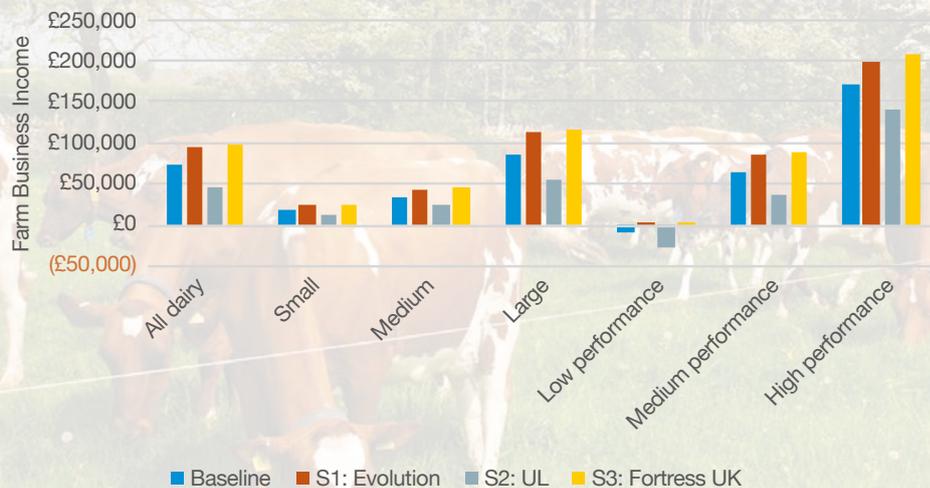


Figure 23. FBI by farm size and performance level: Dairy

Pigs

Initial impact

Figure 24 shows that the baseline FBI for pig farms is £46,067. This increases under all three scenarios to £68,708 under **Scenario 1: Evolution**, £57,418 under **Scenario 2: Unilateral Liberalisation** and £205,354 under **Scenario 3: Fortress UK**.

Figure 25 shows that the increases in FBI are driven mainly by increases in the value of production output, which results from higher UK market prices caused by the additional costs of imports. The role of public support under Pillar I and Pillar II is not an important factor in the pig sector, although of course the loss of £9,229 in Pillar I support should not be ignored. There are reductions in variable costs under **Scenario 2: Unilateral Liberalisation** from the lower burden of compliance with regulation and from smaller costs of livestock feed. Under **Scenario 3: Fortress UK**, there is a minor increase in the cost of casual labour, but this is less than the reduction in livestock feed costs. There is an increase in the cost of regular labour under Scenarios 2 and 3, which contributes to higher fixed costs.

The substantial rise in FBI under **Scenario 3: Fortress UK** is the result of a substantial increase the value of production output as prices rise behind the protection of WTO MFN tariffs. However, this initial outcome is before longer-term adjustments by pig producers can take place; furthermore, they would need to find a market for cuts not in demand in the UK, and this will place downward pressure on carcass prices. In other words, while consumers might be faced with substantially higher pork prices for cuts for which there is high demand, farmers may find that the higher prices for these cuts are offset by an inability to attract reasonable prices for cuts for which there is little or no domestic demand.

The FBS data only permits an examination of large pig farms against all pig farms and of only medium and high performers (Figure 26).

Pig farms

- FBI increases under all scenarios, driven by increases in the value of production output, which results from higher UK market prices caused by the additional costs of imports. The role of public support under Pillar I and Pillar II is not an important factor in the pig sector
- Overall, **Scenario 1: Evolution** will see increases in production, but this will be limited by a lack of labour and advanced managerial skills
- Changes in variable and fixed costs under **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** approximately cancel each other out

It should be noted that the carcass balancing trade is very important in the pig sector, and while higher prices are likely to be possible for cuts in demand, an inability to extract value from cuts for which there is no domestic demand would mean that the price rises seen here, and the consequential large increases in FBI, would be reduced, possibly considerably.

- The second scenario will see a similar outcome to that under the first scenario, although the incentive to increase production will not be so strong. The third scenario will see increases in production and new investment in the sector. Access to labour and managerial expertise will remain key barriers to growth. Further consolidation of the supply chain is expected



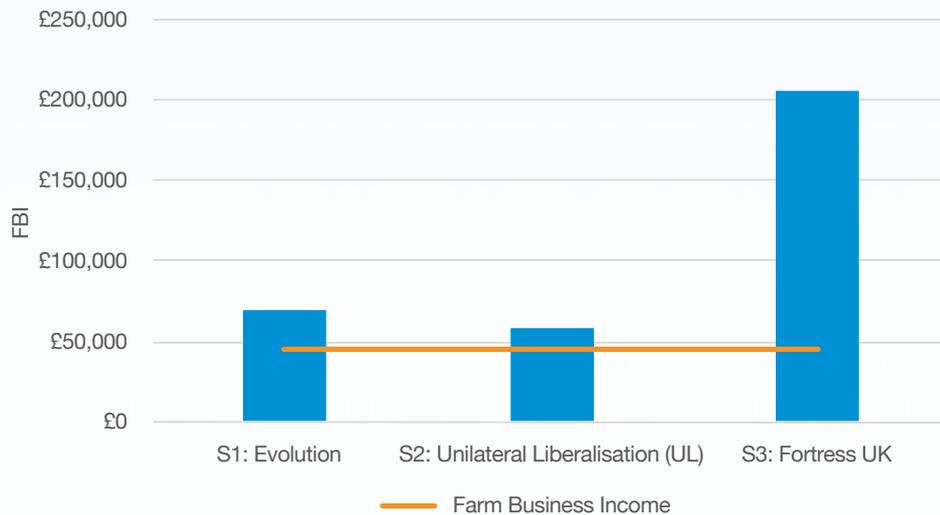


Figure 24. Impact of the scenarios on FBI: Pigs

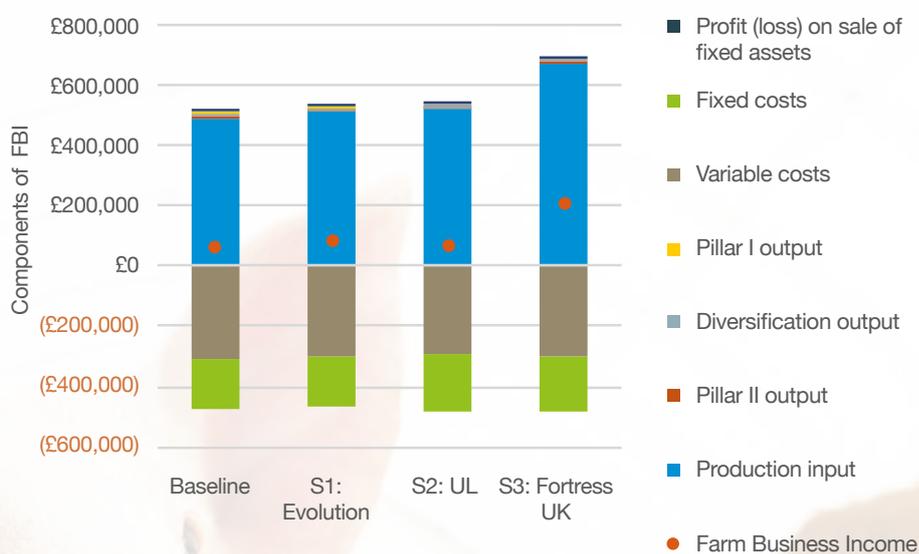


Figure 25. Impact of the scenarios on components of FBI: Pigs

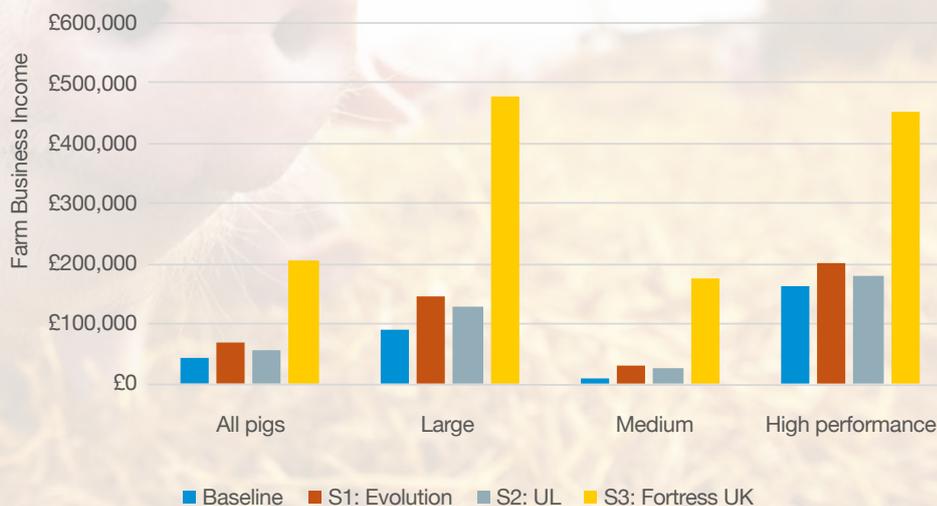


Figure 26. FBI by farm size and performance level: Pigs

All farms

Initial impact

The all-farms assessment reflects the weighted composition of the farming types already described. It is included to provide an industry-wide impression of the impact of the scenarios chosen by the AHDB on business incomes.

The baseline FBI for all farms is £38,405 (Figure 27). Under **Scenario 1: Evolution**, this increases to £41,197, but FBI falls under **Scenario 2: Unilateral Liberalisation** to £15,401 and to £20,162 under **Scenario 3: Fortress UK**.

At the all-farms level, Pillar I support is an important driver of change in FBI under the different scenarios. The removal of this £24,696 payment under **Scenario 2: Unilateral Liberalisation** is partially compensated for by an increase in support under Pillar II, but this effect is more marginal under **Scenario 3: Fortress UK**. The value of production output increases marginally at this aggregate level under **Scenario 1: Evolution** and increases more substantially under **Scenario 3: Fortress UK**. Under **Scenario 2: Unilateral Liberalisation**, there is a modest fall in the value of production output.

There is a minor decrease in variable costs under all Scenarios as a result of lower livestock feed costs; variable costs fall further under **Scenario 2: Unilateral Liberalisation** as the result of lower regulatory costs.

An increase in the cost of casual labour results in a net increase in variable costs under **Scenario 3: Fortress UK**. Increases in the cost of regular labour under **Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK** result in higher fixed costs.

The impact of the scenarios on FBI by farm size generally follows the same pattern as that of the all-farms group, with FBI increasing with scale (Figure 29). However, FBI is lowest under **Scenario 3: Fortress UK** for the part-time (very-small) and small-farm groupings, whereas in all other situations, FBI is lowest under **Scenario 2: Unilateral Liberalisation**. This is the result of the importance of Pillar II payments to these groups.

For the low-performance group, FBI is negative for the baseline and under all scenarios, while FBI is positive under all scenarios for the high-performance group. The medium-performance group experiences a negative FBI under **Scenario 2: Unilateral Liberalisation**, despite lower regulatory costs and higher Pillar II payments, and this is only just positive under **Scenario 3: Fortress UK**, as additional value of production output makes up for a smaller increase in Pillar II payments.



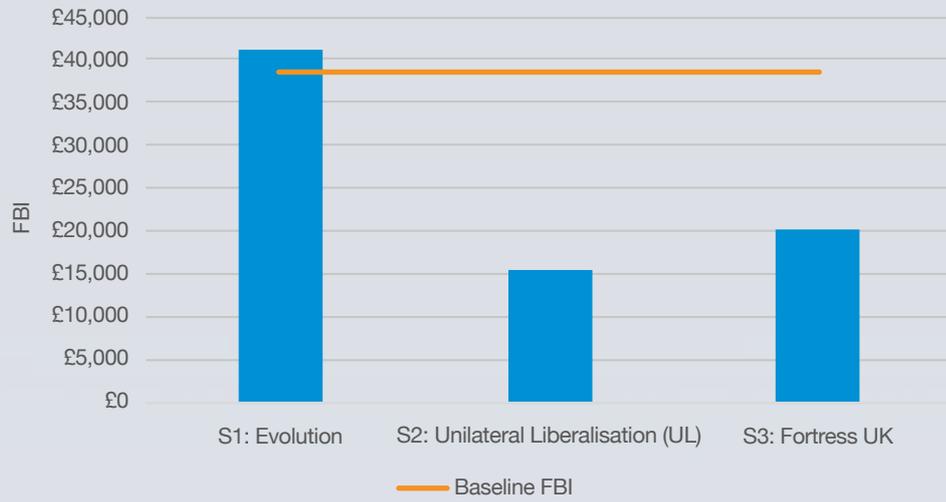


Figure 27. Impact of the scenarios on FBI: All Farms

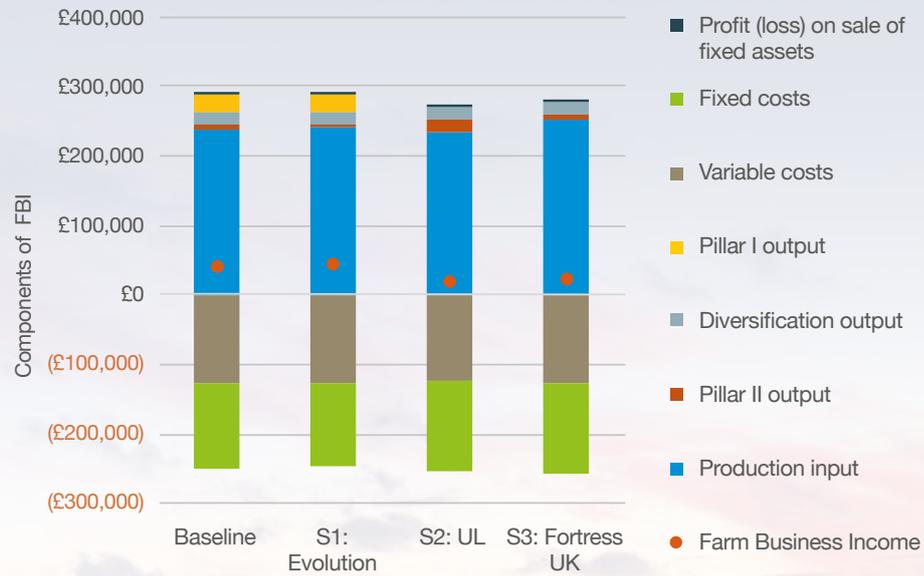


Figure 28. Impact of the scenarios on components of FBI: All farms

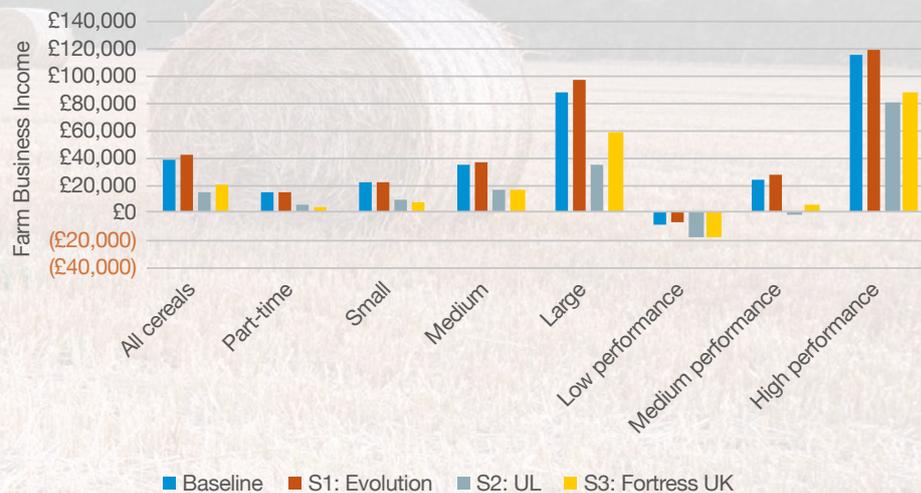


Figure 29. FBI by farm size and performance level: All farms



IMPORTANT CONSIDERATIONS

Before setting out our conclusions on the impact of the scenarios and the implications of these, the importance of the assumptions within the scenarios should be acknowledged. Where these relate to policy, there is a great deal of certainty; Pillar I payments are either made (Baseline and **Scenario 1: Evolution**) or they are not made (**Scenario 2: Unilateral Liberalisation** and **Scenario 3: Fortress UK**). There is more uncertainty with respect to the cost of labour, should access to migrant labour be restricted, and with respect to commodity prices that may result under each of the trade arrangements. AHDB intends to conduct further work on these as more information becomes available. With respect to labour, this should focus on the availability of non-migrant labour and the working conditions as well as level of wages required to attract UK workers.

With respect to prices, greater attention should be given to establishing appropriate comparators. As has been demonstrated, estimates of world beef prices (especially projections for future periods) differ widely, even between different projections produced by the same source, and this can lead to very different assessments of impacts at farm level. When newer or more robust data becomes available, this means that revisions in impact assessments are inevitable as the quality of results improve. Generally, projections of prices far into the future are likely to be less trustworthy than current observations or those relating to nearer times.

When considering likely competition from imports, where possible attention should go beyond price and consider factors such as the characteristics of commodities produced outside the UK. For instance, are they really comparable in terms of quality, production characteristics, etc? Also factors such as retailer/consumer attitude to imports from specific countries, transport requirements (port infrastructure, supply chain length, chill-chain, availability, etc), availability of greater supplies from abroad, and likely exchange rate movements, which can have a substantial impact on relative prices.

CONCLUSIONS

Perhaps the most significant message from this research for farmers is that high-performing farms are shown to be in a far stronger position to cope with the changes associated with all three scenarios. This should focus attention on farmers knowing their relative performance (such as by using benchmarking) and on pursuing practical ways of improving output and containing costs. High performance is not necessarily associated with larger farms, and there is the possibility of improving performance across the size spectrum. This is something that farmers can do now, with support from AHDB, to ensure they can get fit for the future.

Results at sector level for the various scenarios carry lessons for both UK farmers and stakeholders. There are substantial impacts on projected levels of FBI. Although these should not be interpreted as precise predictions for reasons previously explained, they are reasonable indications of where the greatest levels of financial pressure on farms will be felt, and to which farmers can be expected to respond by longer-term adjustments, such as structural change (including exiting the sector).

There are significant expected impacts from moving from the present situation, or its close approximation involving only higher trading costs (**Scenario 1: Evolution**), to the more extreme scenarios assessed here that involve both changed trading relationships and altered domestic support. While for the industry as a whole incomes can be expected to fall in these situations, there are differences between farming types.

Across UK agriculture, cereals and upland beef and sheep producers account for a large share of producers and land use. The results show that it is these producers who, on average, will be most impacted by drops to farm business income. Indeed, under **Scenario 3: Fortress UK**, these sectors see their average farm become loss-making.

Trade issues are relevant for all types (sometimes in different directions) and critical for a few. So too is the way that greater restrictions on migrant labour can be expected to affect labour costs, with the impact felt most strongly in horticulture. However, for most farming types, and thus the industry as a whole, these factors are of less immediate importance than the postulated changes in domestic support arrangements.

Another general lesson is the importance of adaptation; the literature points to the proven ability of UK farmers as a group to absorb and adjust to shocks and pressures. Again, support organisations and governments need to promote this ability by identifying and tackling constraints; knowledge exchange and skills training are likely to play prominent parts in the assistance provided to farmers.

This project is intended as a starting point. AHDB aims to evaluate and examine Brexit policy options on an ongoing basis as more information becomes available. For the last 40 years, the UK has been dependent for much of its policy and trade analysis on the EU. In a post-Brexit world, there is a clear need for a UK-specific modelling capacity that will enable robust analysis of UK agricultural trade and policy. Developing that modelling capacity is a much larger and more complex project that will take considerable time to create. This is an area AHDB is keen to explore going forwards.



WHAT DOES THIS MEAN FOR FARM BUSINESSES?

This report has looked at the sector level impact of different Brexit scenarios. The approach taken provides a framework for farmers to understand the impact of Brexit on their businesses.

As outlined in the foreword, the three scenarios examined are not a forecast of what will happen. Instead, they are three possible views of the future that focus on the core areas that will shape our farming future. They have been purposefully selected to include some the extremes of protectionist and liberal approaches to trade, changes to levels of farm support and labour availability.

AHDB has been expanding its range of information and resources to help farmers prepare for Brexit. Our work at AHDB already helps farmers in these areas.

Resources are available online at www.ahdb.org.uk/brexit. Further resources and guidance will be added on a regular basis.

Further information on the scenarios can be found in the technical report, available at www.ahdb.org.uk/brexit. This report also includes detailed information on the methodology employed and the assumptions which have been made.



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