Food Research Collaboration

Agricultural labour in the UK[1]

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Summary

The UK's agricultural workforce has always been on the frontline of change. As an industrialising country the UK went through the world's first technology-driven economic transition, and in the present day a further wave of innovation in agri-tech looks poised to decimate the workforce once again. This trend will continue to be reinforced by the government's policy of promoting agri-technology and encouraging trade patterns that tend to import high-labour products and export low-labour products.

At the same time, market conditions and policy changes have made the life of farmers and farm workers more insecure, with increasing pressure from market-dominating supermarkets pushing down on the profitability of farming and workers' protections disappearing along with the Agricultural Wages Board. Over time the composition of the workforce has changed, towards a more flexible labour force with many more casual or seasonal workers employed, often from abroad. Any change in Britain's economic relationships with the EU and the rest of the world may affect who can and will take up these casual positions.

Based on current trends the agricultural workforce of the future will be smaller but more highly skilled. This is largely a result of expected changes in technology, but changes in technology are themselves driven by economic pressures to reduce labour inputs. With a widely perceived public image problem and a labour force that is currently dominated by men over 55 years of age, attracting talented and passionate people to the sector could be a challenge. On the other hand various initiatives on the ground across the UK are providing opportunities for enthusiastic starters to access land and learn agricultural skills and increasing numbers are taking up further education and apprenticeships in the sector.

Most of these trends are indifferent to the environmental and public health challenges that our farming system must face up to in the coming years. Public policy will be essential both to shift towards healthier diets and to mitigate agriculture's significant contribution to climate change by changing what we produce and how. On both environmental and public health grounds the required interventions – from reducing meat consumption to more environmentally sensitive production methods – will tend to require more labour input compared to the baseline trend.

Farming communities have always been the first to feel the consequences of technological change and global economic forces. The coming decades will be no exception.

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1. Introduction and Motivation

'*England … pursues essentially industrial and commercial activities, and only slight agricultural ones*'

General Charles de Gaulle (*1*)

A constellation of questions motivates this briefing. What is the size and nature of the current agricultural labour market and what's it like to be a part of it? What have been the most important factors in the decline of agricultural labour? What does business as usual look like for the agricultural labour market? Is it desirable to get more people back on the land? What would that mean for productivity, wages, food prices, the balance of trade, and regional economies? Do more people actually want to farm? Are there non-economic reasons (e.g. concerns for the environment or human wellbeing) to pursue a revival of agricultural labour? Is it feasible in an open economy like the UK?

The answers to these questions are partly rooted in the history of the UK's agricultural labour markets up to now, and partly in conjecture about the trends and events of the future. As such, they are not fully answerable; however, some progress can and should be made on understanding the prospects for jobs in the UK farming sector. Therefore, this briefing aims to equip the reader with a grasp of some of the contours of the current agricultural labour market and an understanding of the forces that underlie the changes we have seen and expect to see.

The briefing is broadly separated into these two lines of enquiry. Firstly, Section 2 summarises the available information, quantitative and qualitative, about the current state of the UK's agricultural labour market. Section 3 identifies four key factors that are responsible for determining past and future developments in that market.

2. The current state of UK agricultural labour

UK labour market statistics in general are among the most rigorous and regular in the world. For the agricultural sector in particular, a number of data collection surveys give us a relatively good quantitative grasp of the scale and nature of employment in the sector. These surveys include the annual Farm Business Survey (*2*)and the Farm Structure Survey (which becomes a full census on every tenth year)

(*3*). The data from these surveys feed into a range of official statistics listed on governmental websites, including Defra and Eurostat.

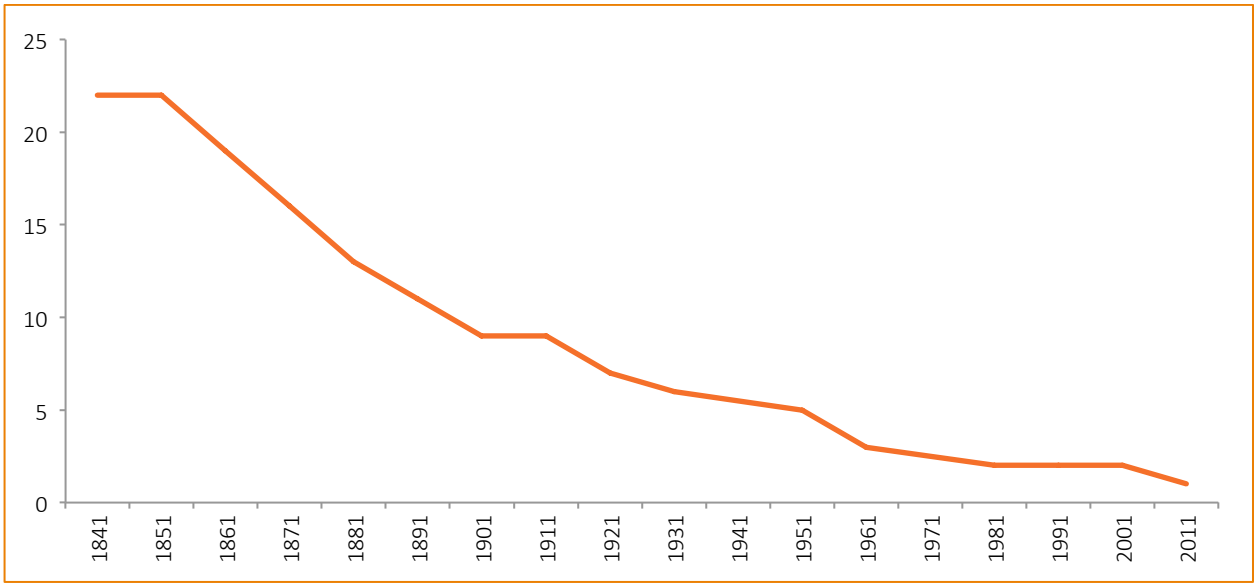
On the other hand, more so than many other economic sectors, these official data may fail to reflect the significant levels of unpaid, undocumented or illegal labour in food production in the UK. They also fail to capture very small holdings (typically anything less than 5 hectares) that are not eligible for direct subsidies under the EU Common Agricultural Policy.

Qualitative sources of information are less regular and systematic, yet they permit the few glimpses we have into the world of illegal and undocumented farm labour. Survey information also provides valuable information on the sentiments of farm workers and the general public.

2.1 Employment numbers

In terms of numbers of people employed, the agricultural sector in the UK has experienced a very long-term and persistent decline (see Figure 1). Less than 1% of the UK's working population are employed in agriculture and this has continued to gradually decline over the past decade. Even in 1841 fewer than 1 in 4 workers were in agriculture, which was very low by international standards.

Figure 1: Percentage of working people employed in agriculture and fishing in the UK: 1841-2011



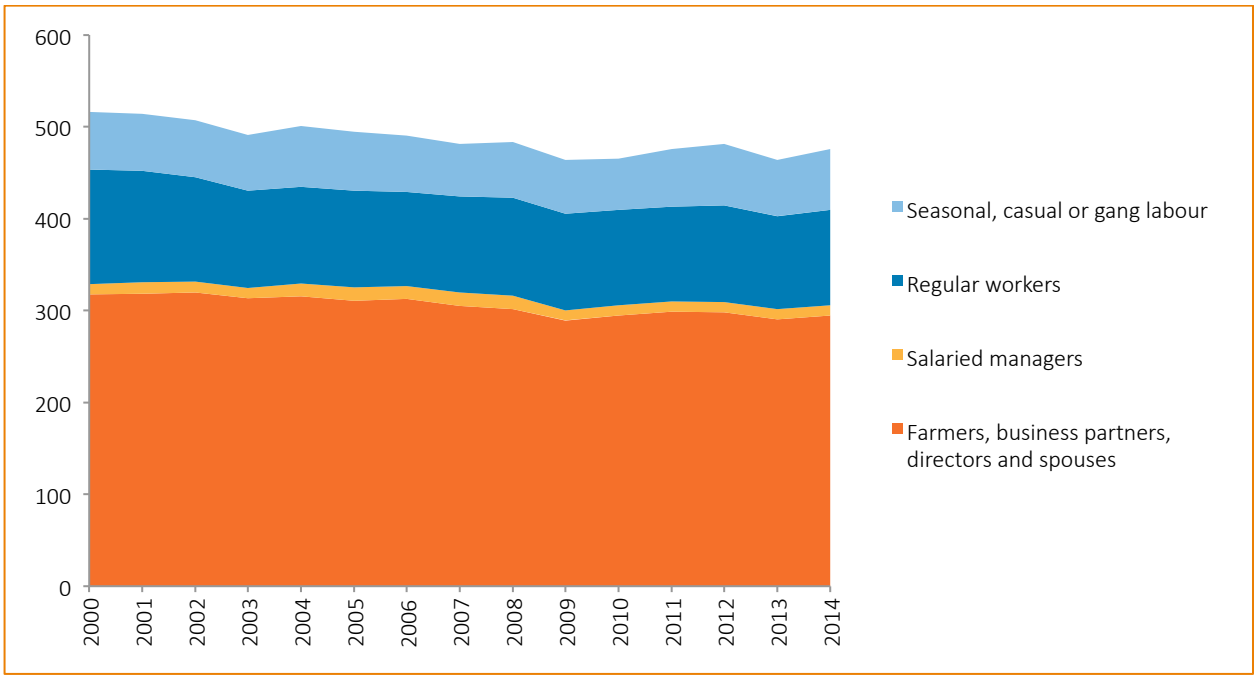
Source: UK Census data (*4*)

Figure 2 illustrates the recent decline in total agricultural labour and the split between different types of employment. Around 60% of total labour on farms is accounted for by the farmers themselves and those with whom they have an immediate family or business relationship. A further 20% are workers under regular employment by those farmers and around 15% are casual (non-regular) workers. This makes agriculture peculiar compared to other sectors in that the business owners also comprise the majority of the workforce.

On 87% of farms the holder (i.e. the occupant) is also the manager; on a further 7% of holdings the manager is a family member or spouse of the holder; only 5% of holdings are managed by a non-family member or by an organisation (*5*). In other words, it is very rare for a farm to be managed by anyone other than the owner or lease-holder of the land.

The split between these types of jobs has been fairly constant over the past decade. The biggest decrease had been for regular workers – a fall of 17% between 2000 and 2014.

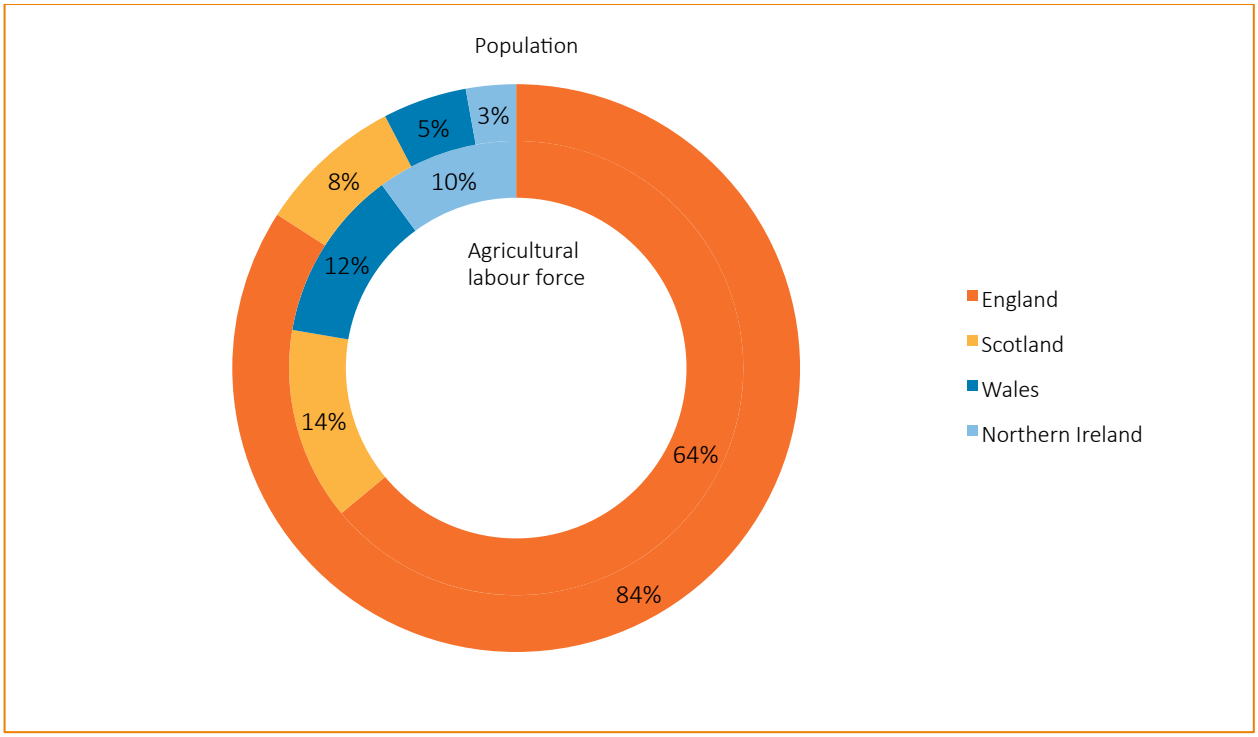
Figure 2: Number of people working on commercial agricultural holdings by employment status



Source: UK Agriculture departments June Survey/Census of Agriculture (*6*)

Figure 3 illustrates the distribution of agricultural labour between the four constituent nations of the UK. The shares of labour employed in Scotland, Wales and Northern Ireland are much greater than their share of the whole population, reflecting the greater relative importance of agriculture to those economies.

Figure 3: Geographical distribution of agricultural workers (2015)



Source: UK Agriculture departments June Survey/Census of Agriculture (*6*) and ONS (*7*)

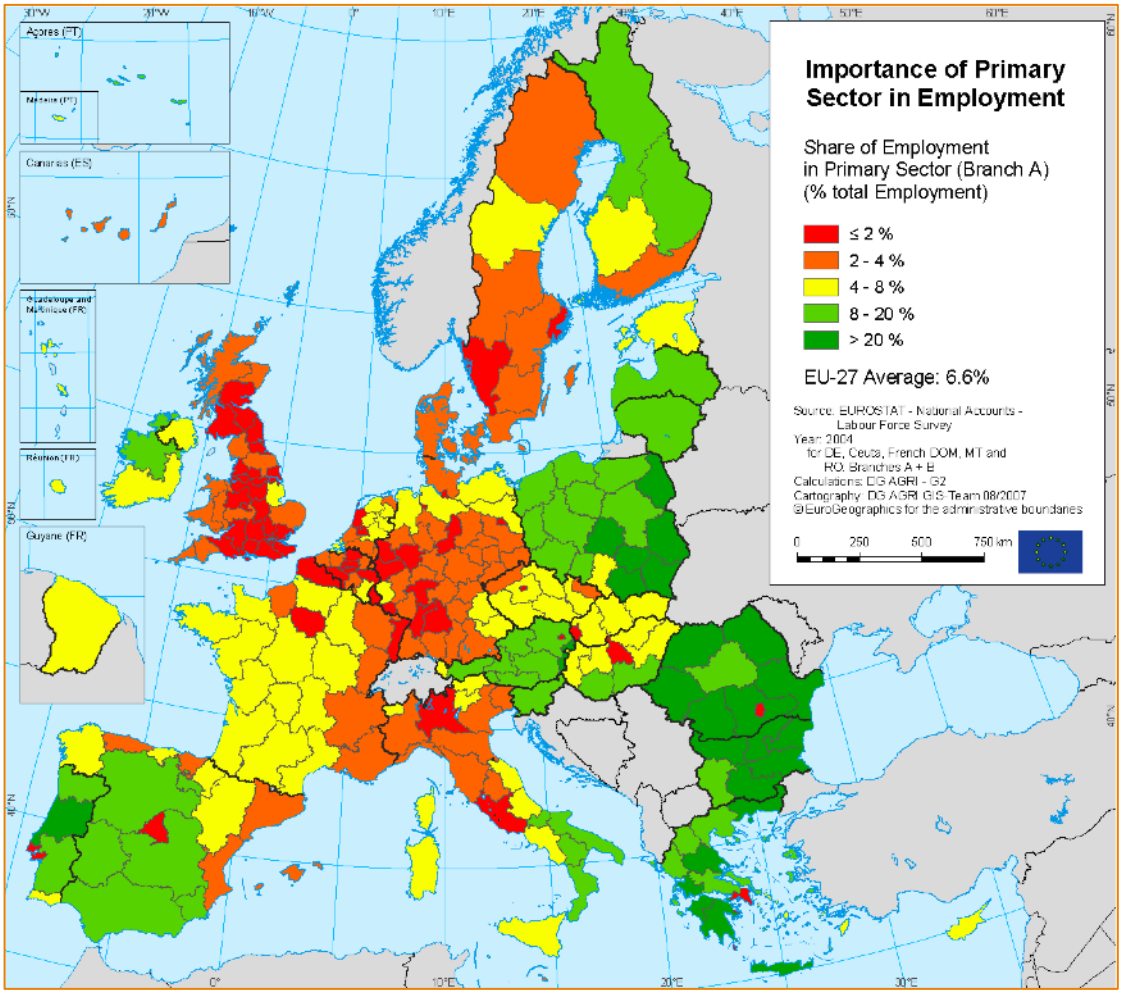
However, as Figure 5 makes clear there are few regions of the UK other than Northern Ireland that depend on agriculture as an important source of employment compared to the rest of the EU. UK farms are also the least labour intensive, employing fewer people per unit of land than other EU countries (see Figure 4), largely due to differences in types of farming (i.e. large amounts of pasture farming

in the UK). In most European countries, including the UK, the labour intensity of farming continues to decline over time.

Figure 4: Employment per unit area on EU farm holdings

Source: Eurostat (*8*)

Figure 5: Importance of primary sector in employment, by European region



Source: European Commission (*9*)

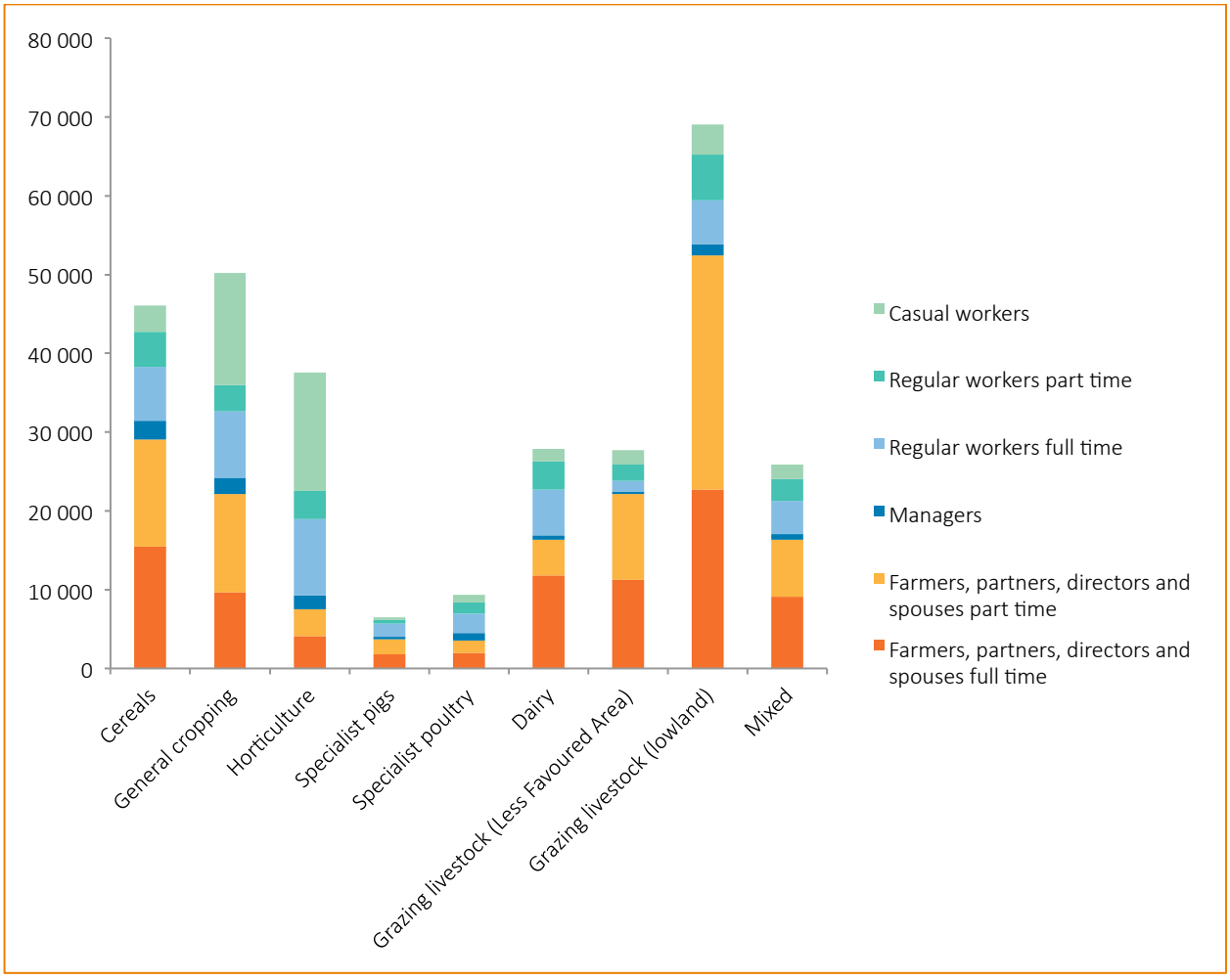
2.2 Workforce characteristics

Figure 6 illustrates the breakdown of employment numbers by farm and employment type. This reveals the greatest absolute contributors to employment to be the grazing livestock and arable (cereals and general cropping) sectors. It also shows that different types of employment are important across farm types – casual labour is most important in horticulture and general cropping, while grazing livestock relies predominantly on the farmers' own labour.

The evidence suggests that there has been a long-term increase in seasonal and casual labour as a proportion of the agricultural workforce. In 1980 this proportion was around 5%, rising to 7% in the mid-1990s (*10*); by 2014 the proportion was around 14% (*11*).

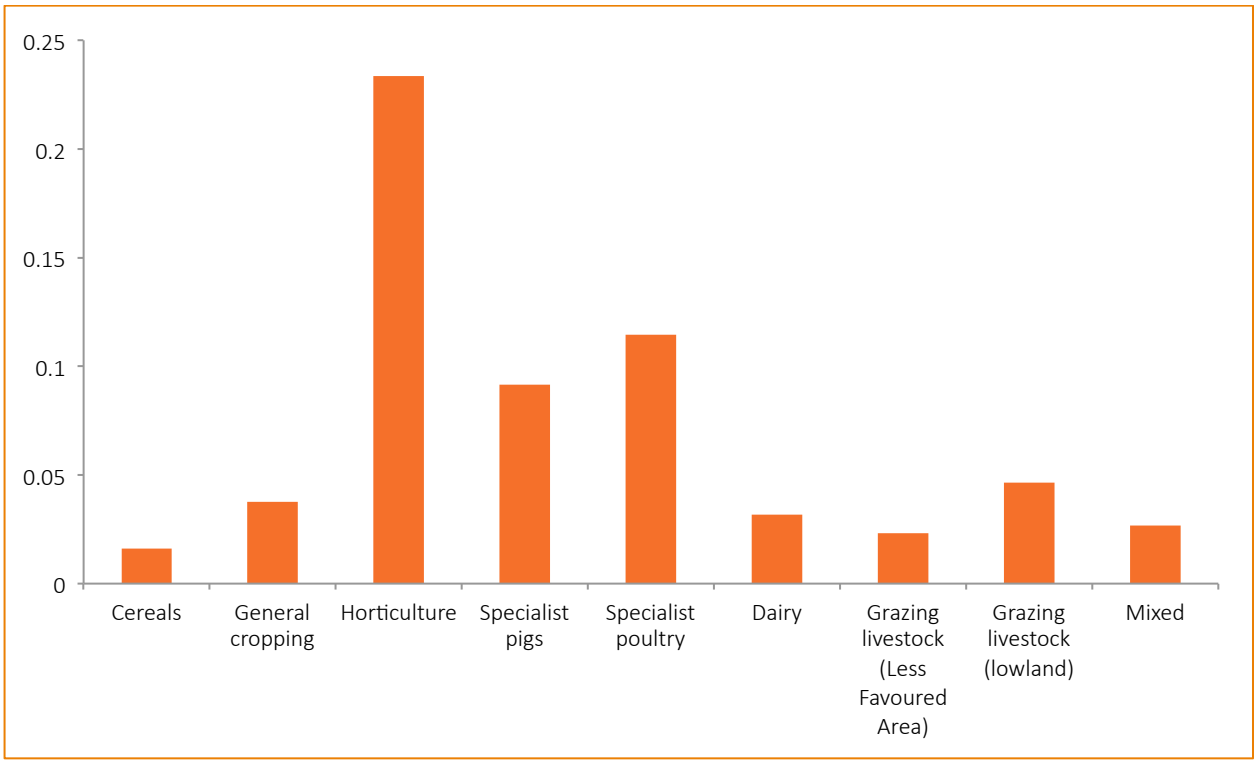
In contrast to absolute levels of employment, the farm types with the highest level of labour employed per unit of land are horticulture, pigs and poultry, while grazing livestock, cereals and general cropping farms have a very low labour intensity (see Figure 7).

Figure 6: Number of people working on commercial agricultural holdings in England by farm type and employment status



Source: UK Agriculture departments June Survey/Census of Agriculture (*6*)

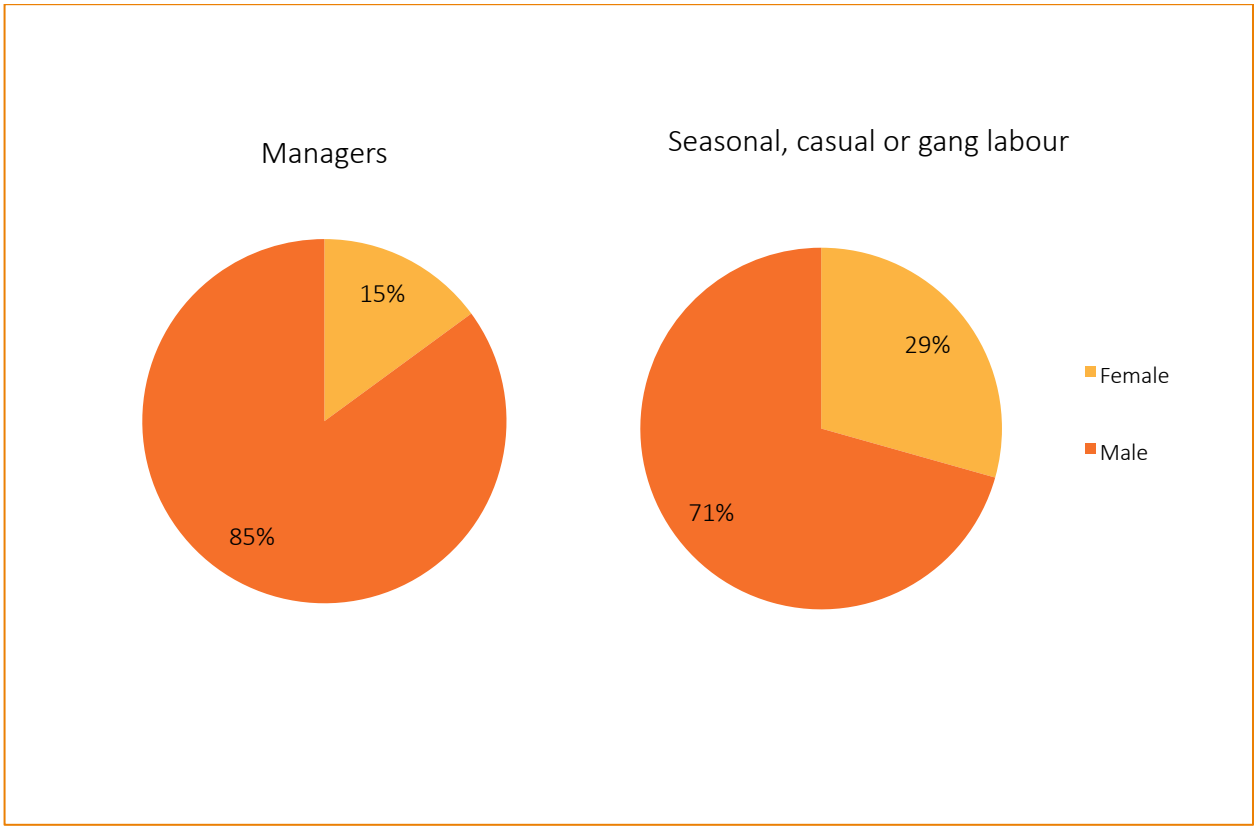
Figure 7: Labour intensity of different farm types (number of jobs per hectare)



Source: UK Agriculture departments June Survey/Census of Agriculture (*6*)

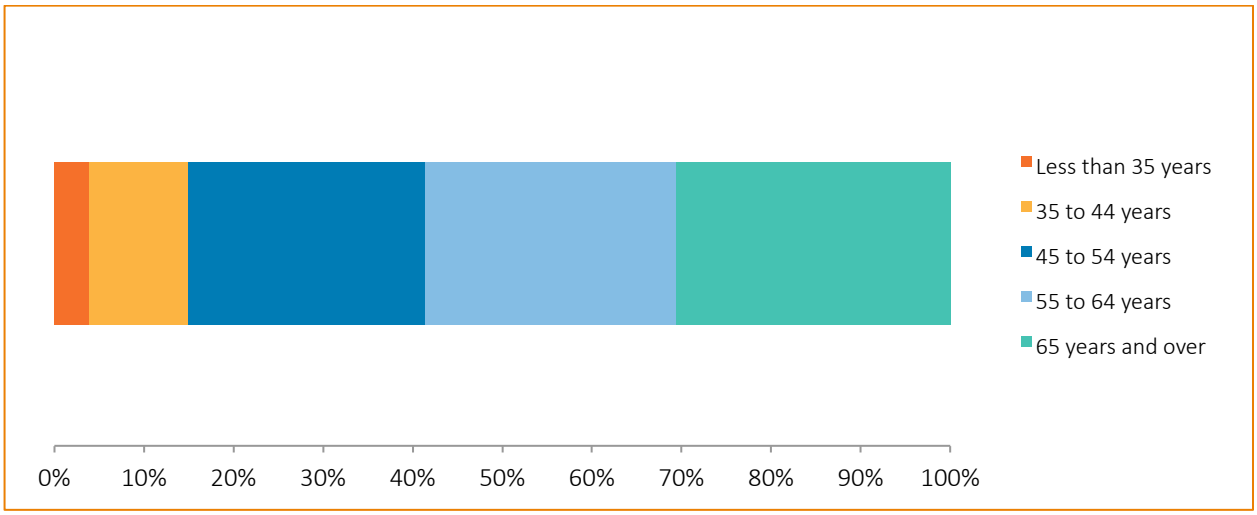
Surveys find that the agricultural workforce, especially farm managers (which in most cases is the same person as the farm holder), is overwhelmingly male and old (see Figures 8 and 9).

Figure 8: Gender of farm managers (2013) and seasonal, casual or gang labour (2014)



Source: Farm Structure Survey 2013 (*5*), Agriculture in the United Kingdom 2014 (*11*)

Figure 9: **Age of farm managers (2013)**



Source: Farm Structure Survey 2013 (*5*)

2.3 Wage levels

There is a long history of interest in the wages of agricultural workers. In 1903 A. Wilson Fox published a comprehensive survey of agricultural wages for the preceding 50 years (*12*), noting that the agricultural worker's lot had greatly improved over that period due to increased wages and the alleviating effect of machinery on the job's physical demands.

The 1948 Agricultural Wages Act established the Agricultural Wages Board (AWB) that set minimum wages for farm workers, a privilege not universally enjoyed until 1998. In 2013 the UK government abolished the Agricultural Wages Board for England and Wales, though any agricultural workers who were employed before this point retain the right to the Agricultural Minimum Wage if their contract stipulates it. This change removed a number of entitlements for agricultural workers, including higher minimum wages for particular grades and higher pay for overtime. Scotland and Northern Ireland retained their wages boards, while Wales has established its own organisation, leaving England as the only UK nation without collective bargaining for agricultural workers. The decision to retain the Scottish AWB was influenced by evidence suggesting that its abolition would contribute to increased levels of poverty (*13*). Unions have argued that collective bargaining is particularly important in agriculture due to the isolated and disconnected nature of the work (*14*), and many argue that the AWB should be re-established (*15*). Unionisation in general may have a positive effect on the macroeconomy (*16*).

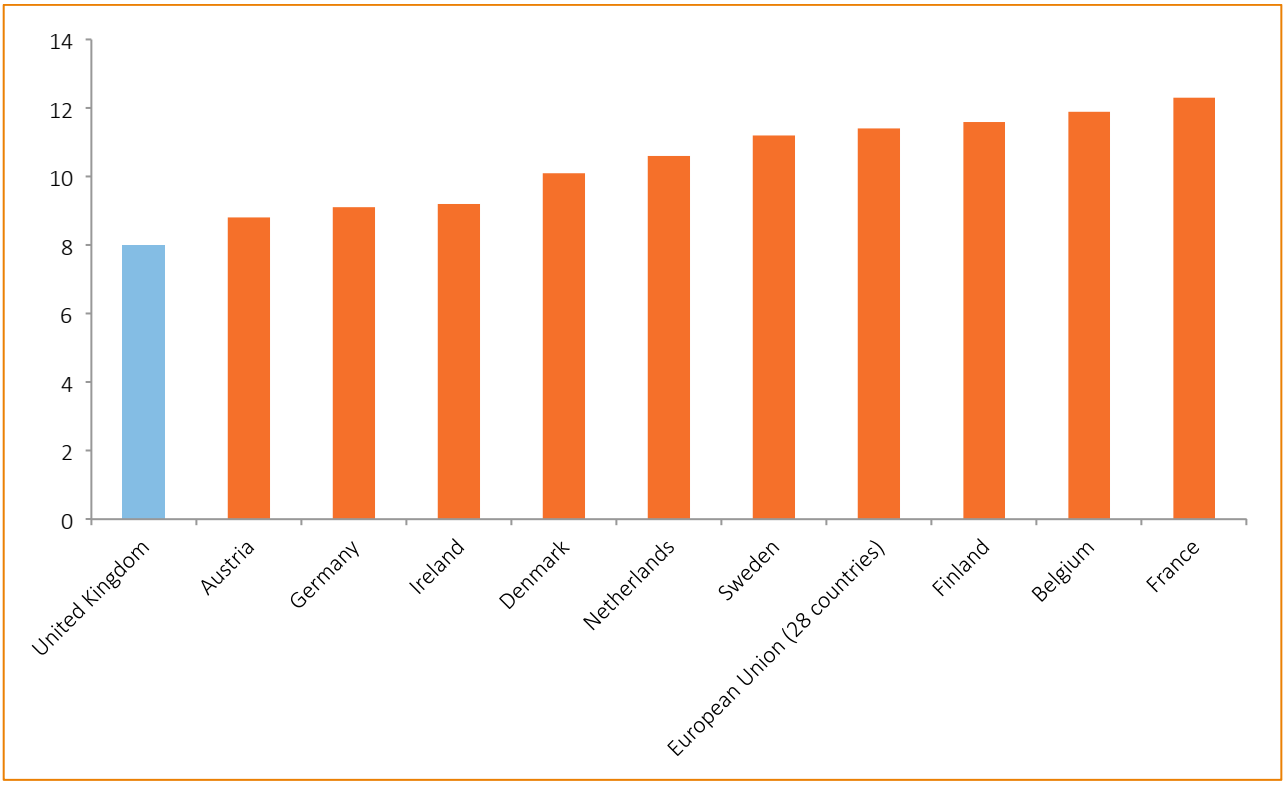
In Northern Ireland the Agricultural Wages Board stipulates a minimum hourly wage of £6.63 for the first 40 weeks of employment and £6.91 thereafter (*17*); the Scottish Agricultural Wages Board requires minimum hourly rates of £6.70 for the first 26 weeks of employment and £7.24 thereafter (*18*); the Welsh minimum rate is £6.72 (*19*). From April 2016 the new National Living Wage of £7.20 per hour will apply to all agricultural workers aged 25 or over (*20*). This will represent a significant wage increase for many agricultural workers and has been met with some concern by the National Farmers Union who argue that it will threaten the profitability of horticulture in particular since that sector relies heavily on low wage labour (*21*). Proponents of a living wage argue that sustainable business models cannot rely on paying wages that are too low to live on. The new National Living Wage is, in fact, lower than the living wage and it is not calculated based on the cost of living – in this sense it is not, in fact, a 'living wage' (*22*). In addition to an hourly rate, some workers, particularly migrant workers in horticulture, may have some component of their wage that depends on their output (i.e. how much fruit they pick) (*23*).

A *Farmers Weekly* survey of 1,300 agricultural workers in 2013 found that the average hourly wage was £8.74, a third less than the overall UK average wage. The same survey found that the average yearly income for salaried farm workers was £25,578, close to the UK overall average salary, with females earning significantly less than males (*24*). Provisional results of the 2015 ONS Annual Survey of Hours and Earnings indicate an average annual salary for 'skilled agricultural and related trades' of just under £19,000 but with significant variance – the bottom 10% of that group earned nearly half as much (*25*).

Overall, wages in the agricultural sector are low relative to other economic sectors and the little protection they did enjoy is under threat, particularly in England. Low labour input costs certainly contribute to the fact that UK households spend less of their income on food compared to other European countries with similar or higher levels of GDP per capita (see Figure 10).

It is important to recognise that the wages of farm workers are determined by the entire food supply chain, and not just the supply and demand for agricultural labour. Price wars in the retail sector, where incumbents are being challenged by low-cost rivals, will feed through the supply chain and exert continuing pressure for farms to cut costs, including supressing wages or employing fewer workers.

Figure 10: Household food expenditure as percentage of total expenditure (2013)



Source: Eurostat (*26*)

2.4 Working conditions

Due to its physical nature farm work is particularly demanding and special care must be taken to ensure the safety and health of all workers. In part, the Agricultural Wages Board would have ensured some minimum standards. Since the weakening of that body the principal protection comes from the EU Working Time Directive, which sets standards on the length of the working day.

These are legal standards, but much of the concern in the farming sector arises due to illegal activity. A report for the Joseph Rowntree Foundation uncovered a distressing degree of exploitation and forced labour in the farming sector and food sector more widely. The victims are predominantly low-paid migrants from Europe

and elsewhere and the most common experiences include deception, non-payment or underpayment of wages, fear and psychological harm, and inhumane living conditions (*27*). Guardian journalist Felicity Lawrence has recently documented poor working conditions for migrants in UK food production, exposing practices of debt bondage, intimidation and violence (*28*).

A survey of 1,300 farm workers did find that over three quarters would recommend their career to others (*24*). However, it's unlikely that a web-based survey was able to capture a representative group of farm workers and this certainly doesn't capture workers that are illegal or undocumented.

Poor working conditions are the result of an economic imperative – to keep costs low and compete with other producers – that will always exist in a profit-driven farming system. The disparate nature of farming labour, being scattered across the country, makes illegal activity more difficult to detect and, therefore, more likely to emerge. Strong, clear and enforceable regulation will always be required if we are to prevent these practices.

2.5 Business conditions

As noted above, unlike most economic sectors agriculture has a very large overlap between business owners and workers. In this sense, unlike other sectors, what is good for business and what is good for workers will often coincide, particularly for farms with very few employees. It is relevant, therefore, to understand some of the factors that affect business and trading conditions more generally as well as labour market conditions specifically.

The current business conditions for farmers are very challenging on a number of fronts.

Farmgate prices. The price obtained for the main agricultural commodities – milk, lamb, pork, etc. – is currently at very low levels and, in some cases, even below the cost of production. Perhaps more importantly, the long term trend is one of high volatility, with these commodities following a classic 'hog cycle' of boom and bust (*29*). These swings are caused by the imperfect and delayed adjustment of supply and demand relative to one another – a process that may increase in severity as markets become ever more global. A recent parliamentary inquiry into farmgate prices found that this volatility was now considered the norm (*30*). The consequences for farmers and workers include an environment of uncertainty, difficulties with planning future investment and business activity, and periodically low income. The report of the parliamentary inquiry into farmgate prices emphasised the impotency of government in the face of global markets, though this is disputed by some (*31*), and proposed a number of market-oriented solutions including reducing regulation, establishing more futures markets and driving export growth.

Abuse of market power. In the groceries retail sector there is currently a high degree of horizontal price competition (i.e. between supermarkets) stoked in large part by the entry of low cost retailers such as Lidl and Aldi. On the other hand, vertical competition (i.e. between different stages of the supply chain) is highly unbalanced, with large retailers and processers using their concentrated economic power to the detriment of their smaller suppliers. The consequences of horizontal price competition can, therefore, be passed on to suppliers and farmers and this may be an important determinant of the currently low farmgate prices. The Groceries Code Adjudicator (GCA) was established to monitor the behaviour of retailers with respect to their suppliers. A recent GCA report on the conduct of Tesco found an array of exploitative practices, including withholding and delaying payment (*32*), but the GCA has no power to recommend an appropriate or fair price for suppliers and has no remit over stages in the supply chain beyond the immediate supplier. The effect is that farmers and workers have little power to influence the terms of their trading or the share of the final retail price that accrues to them. It

may be particularly difficult for farmers that choose to bear the cost of higher environmental, labour or animal welfare standards to recoup those costs and enjoy a sustainable livelihood.

Rent and insecure tenancies. The average price of farmland in the UK has increased more than threefold in the past decade (*33*) and agricultural rents are on an upwards trajectory as well (*34*). The Tenant Farmers Association has expressed concern about the short length of many tenancies and the ability of landowners to divert financial resources intended for land managers towards themselves, for example by increasing rental prices in line with subsidies from the Common Agricultural Policy (*31*, *35*). These conditions are a significant barrier for new farmers to enter the industry (either through renting or purchasing land) and create ongoing financial pressure on those already renting agricultural land.

2.6 Summary

The current agricultural labour market in the UK is small compared to other European countries, in absolute and relative terms, and very small compared to other economic sectors. It is split between two characteristic groups: old, male farm managers that are averagely paid and younger farm workers that are often badly paid and foreign. The exploitative conditions experienced by some vulnerable workers are particularly concerning. There are significant differences between different types of farming in terms of the type and amount of labour employed.

It is a particularly "flexible" labour market, with high levels of precarious, short-term employment, and significant market power exerted by employers and the wider supply chain. Cost pressures are pushed down through the supply chain from a competitive consumer retail sector. The weakening or abolition of Agricultural Wages Boards will only exacerbate this "flexibility".

In the many cases where the workers are also the business owners, the precarious conditions in domestic and international markets for agricultural products create significant uncertainty and volatility of income for workers.

Agriculture is an important sector of the UK economy, not least because it supplies the large manufacturing, processing, retail and catering sectors. But primary production alone is not a significant component of the UK labour market.

3. Past and future developments in the UK agricultural labour market

This section focuses on the causes of change in the UK's agricultural labour market over time and explores some expectations about future changes. In particular, four areas are considered:

- the impact of technology and changes in the productivity of labour;
- the effect of skills shortages and public perceptions about farming on recruitment to the industry;
- the consequences of changing economic relationships with the EU and the rest of the world;
- and changes that are caused or required by environmental or public health concerns.

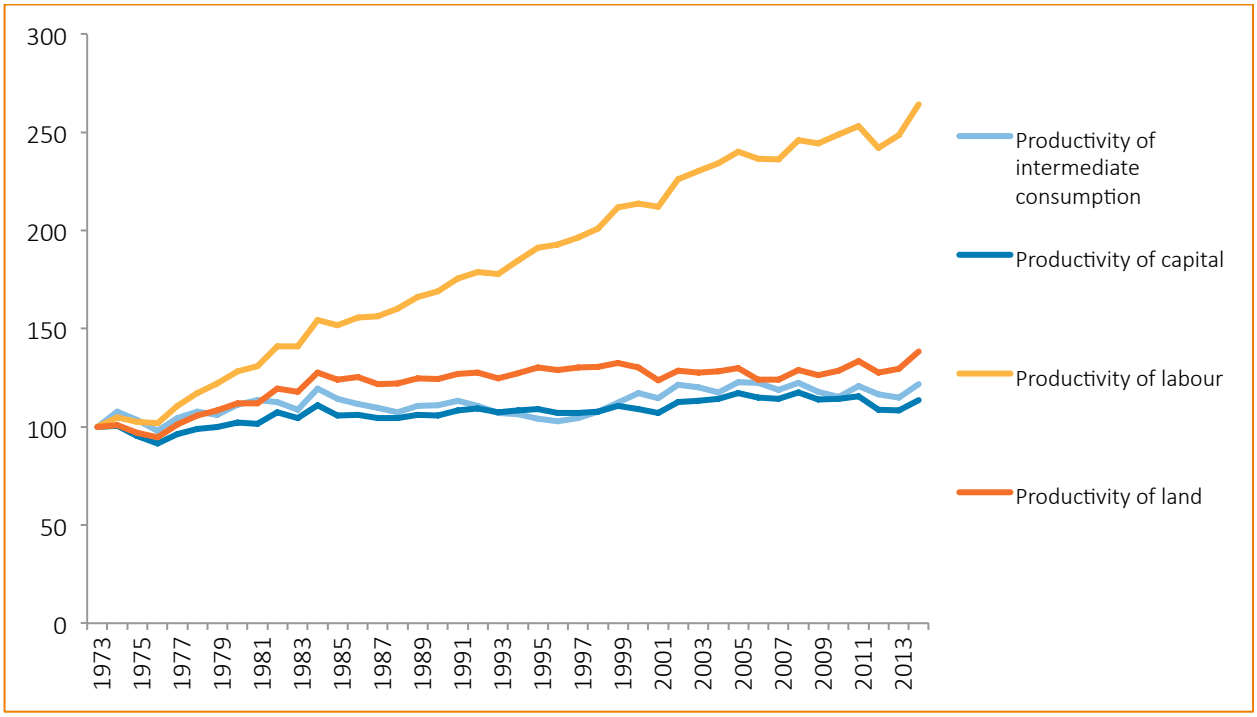
3.1 Productivity and technology

The classic model of economic development favoured by many economists, namely the Clark-Fisher model (*36*), observes that countries often follow a particular pattern of labour distribution between sectors as they develop over time.

Increases in the productivity of labour, defined as the ratio of output volumes produced to labour hours employed, are the main driving forces for these changes. Increasing labour productivity in agriculture (which initially dominates an emergent economy) decreases the labour requirement per unit of food. Since the total amount of food required by an economy does not vary substantially, except due to population growth, the result is that fewer people can produce the same amount of food and many workers are "freed up" to enter other sectors of the economy.

UK data shows that (at least for the past 40 years) the productivity of agricultural labour has increased dramatically, while other factors of agricultural production such as capital and land have increased in productivity only slightly in comparison (see Figure 11). By 2014 less than half the amount of labour was required to produce the same amount of food compared to 1973.

Figure 11: Partial factor productivity indicators for UK agriculture (1973 = 100)



Source: Defra (*11*)

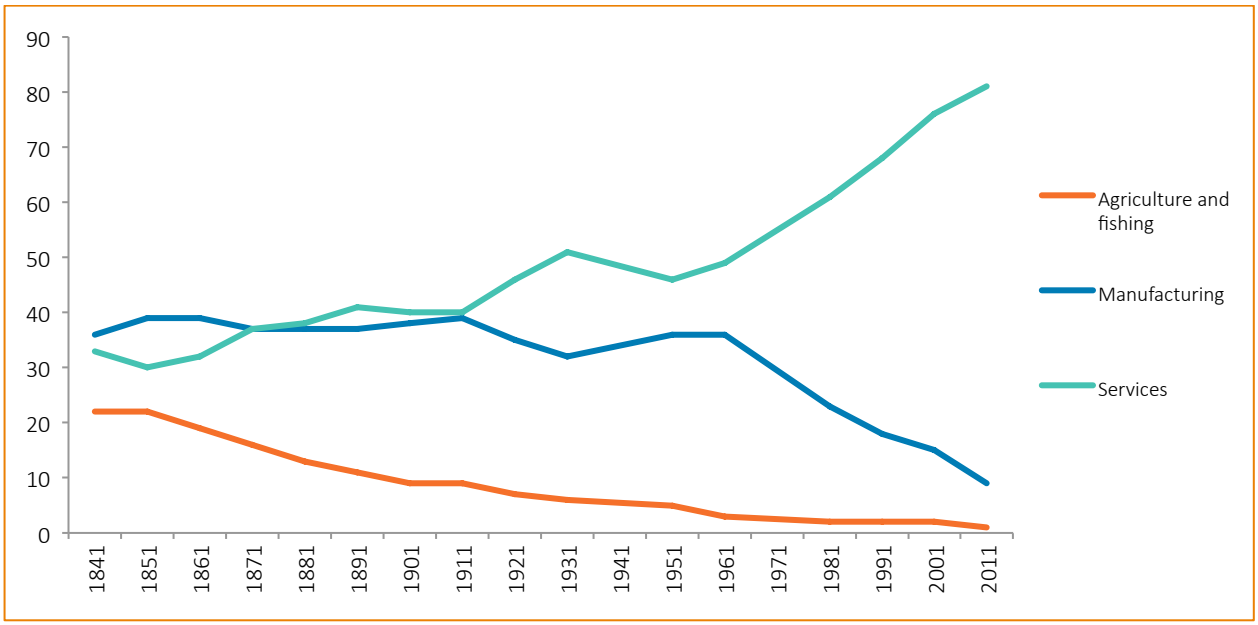
In the Clark-Fisher model most labour ultimately ends up in the service sector, in which, supposedly, productivity is not subject to significant advances – the typical example cited is orchestra players who cannot produce output (i.e. symphonies) any faster. This assumption is now being challenged by many analysts (*37*).

Thus, the final state of a developed economy is for the labour force to be primarily devoted to producing services, while agriculture and manufactures become ever less labour intensive as productivity increases. This is typically seen or implied to be an inevitable process of development from a 'primitive' to 'advanced' economic macro-structure (though General de Gaulle's tone in this paper's opening quote suggests he may disagree).

There are many criticisms of this model, particularly pointing to countries that seem to have skipped out the manufacturing stage of development. Nonetheless, the predictions of the model clearly describe the trajectory of sectoral employment in the UK (see Figure 12).

In this view, the fundamental cause of the decline of agricultural labour, and indeed the overall development of economies, is technological progress in agriculture (*38*). Such progress is, in turn, the outcome of a dynamic process of cost optimisation, i.e. finding the lowest cost combination of capital and labour inputs.

Figure 12: Percentage of working people employed in each UK industry group, 1841 to 2011

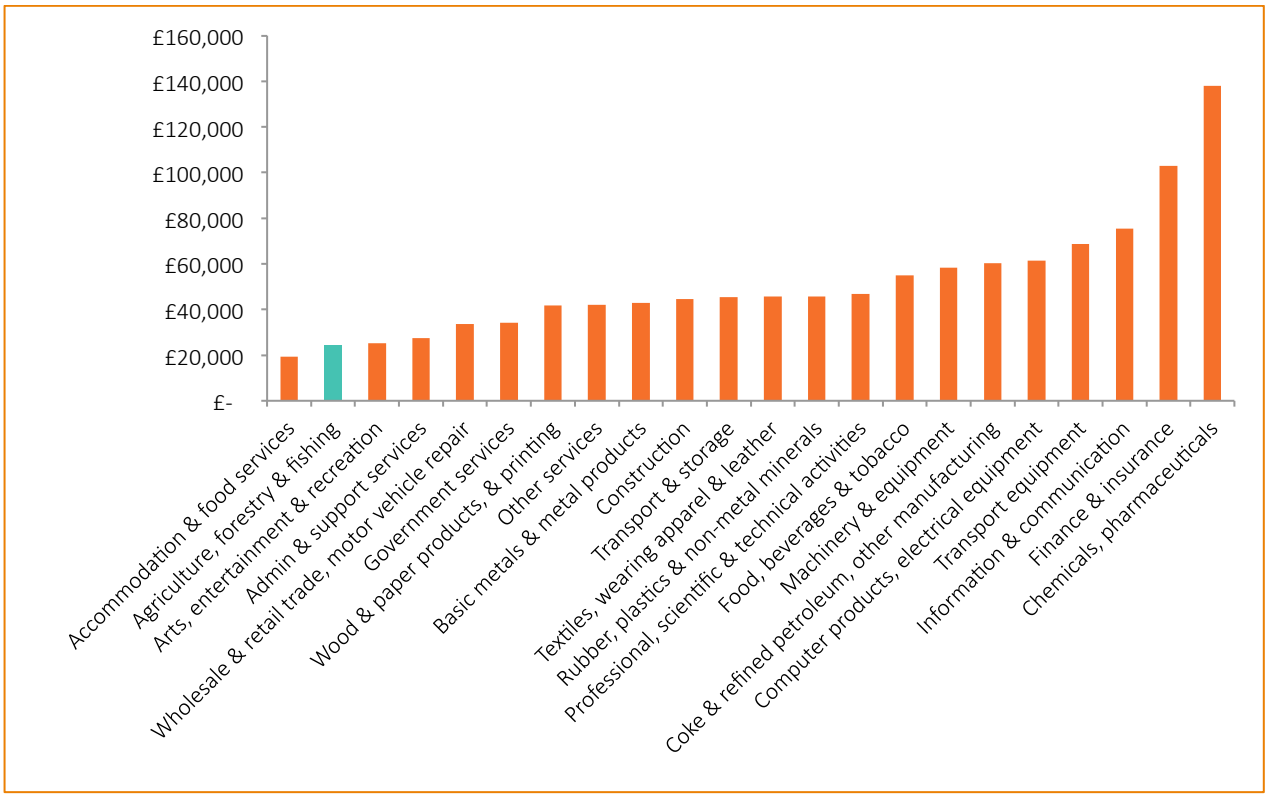


Source: UK Census data (*4*)

What can we infer from this model concerning the future of the remaining agricultural labour force?

This key question is whether or not we can expect further productivity-enhancing technological change in the agricultural sector. Data for the UK shows that, despite substantial growth, labour productivity in the agricultural sector is one of the lowest (see Figure 13), suggesting further increases are not inconceivable. Indeed, the UK government published an agricultural technologies (agri-tech) strategy for the first time in 2013, with the stated ambition of increasing productivity, and backed by £130 million of public funding (*39*).

Figure 13: Output per job (productivity), by economic sector (Q3 2015)



Source: Office for National Statistics (*40*)

As in various economic sectors, many analysts expect a wave of new robotic and automated technologies, from precision irrigation to agri-drones, to have a marked effect on agriculture in the near future. Some new technologies are already having an impact. The Silent Herdsman system, which emerged from research in Scotland, monitors cows' behaviour and health through a collar-mounted sensor that the farmer can observe from a mobile application, thereby 'eliminating the need for costly human observations or the use of labour intensive alternatives' (*41*). In early 2016 a Japanese company announced it will soon open the world's first fully automated farm producing lettuce, with 'robots handling almost every step of the process' (*42*). Some predict that part of this trend is an increasing conversion of farming to an indoor factory-like process (*43*). Since agricultural businesses have typically been slow to take up new technologies compared to other sectors, there is potential for a particularly stark process of catch up in the agricultural sector (*44*).

Many are optimistic about the impact of these new technologies; for example, recent work by Nesta on the potential of agri-tech acknowledges the likelihood of job losses but emphasises the increased quality of the jobs that will remain (*45*). Increasing tech-intensity creates a need for high-skill workers and may transform the public image of the agricultural profession, they argue. A recent Deloitte report insists that technological progress will continue to create net employment on an economy-wide basis, despite losses in certain sectors, and should therefore be celebrated, though this somewhat glosses over the distributional consequences of such transitions (*46*).

Others are more pessimistic. Author and tech entrepreneur Martin Ford has recently described the new technologies that will make the remaining agricultural tasks requiring human hands, such as fruit-picking, susceptible to automation and the data-based techniques ("precision agriculture") that could drastically increase resource efficiency (*37*). The pessimism comes from the long-term prospects for workers ejected from agriculture. In Ford's view, the future will not be like the past, in terms of the service sector simply absorbing surplus workers. A degree of such pessimism is increasingly common, and can be seen in new voices speaking out, such as the bank UBS, which warns of a polarised workforce and increasing inequality (*47*), to increasingly radical policy demands, such as a Universal Basic Income (*48*).

A potential cause and consequence of the increased use of agricultural robotics could be a reduction in unskilled migrant labour. These workers are potentially the most easily substitutable for machines (*45*) and, in the context of potential restrictions on immigration in a post-EU Britain, perhaps also the positions that will become increasingly difficult to fill. One American agri-robotics company explicitly cites tightening US immigration policy as the motivation for their technologies (*49*).

What do these trends imply about the potential to expand jobs in agriculture? First, it's important to note just how long-term and unidirectional the macroeconomic trends in agricultural employment and productivity have been. This is true *structural* change that has been accompanied by corresponding changes to patterns of urban settlement, transport infrastructure and cultural attitudes that have their own inertia. Second, if expanding jobs in agriculture primarily involved displacing workers from other sectors then such a move would imply a diminished overall level of labour productivity in the UK (since agriculture is unproductive compared to other sectors in financial terms); however, this need not be a concern if previously inactive workers (either by choice or through unemployment) or migrants were the source of new employment. On the other hand, the financial productivity of labour is a limited lens through which to look. An increasingly large literature argues that a strategy of maximising gross domestic product (GDP), which would suggest allocating labour to sectors that are more productive than agriculture, is a misguided approach to policymaking (*50*). Subsequent sections will examine non-economic reasons for encouraging jobs in agriculture.

3.2 Skills, training and public perception

The previous section concerned changes in technical requirements for labour; this section explores the extent to which those requirements have and will be easily met. In other words, rather than demand for agricultural labour, what has influenced its supply? There are two key aspects to this question.

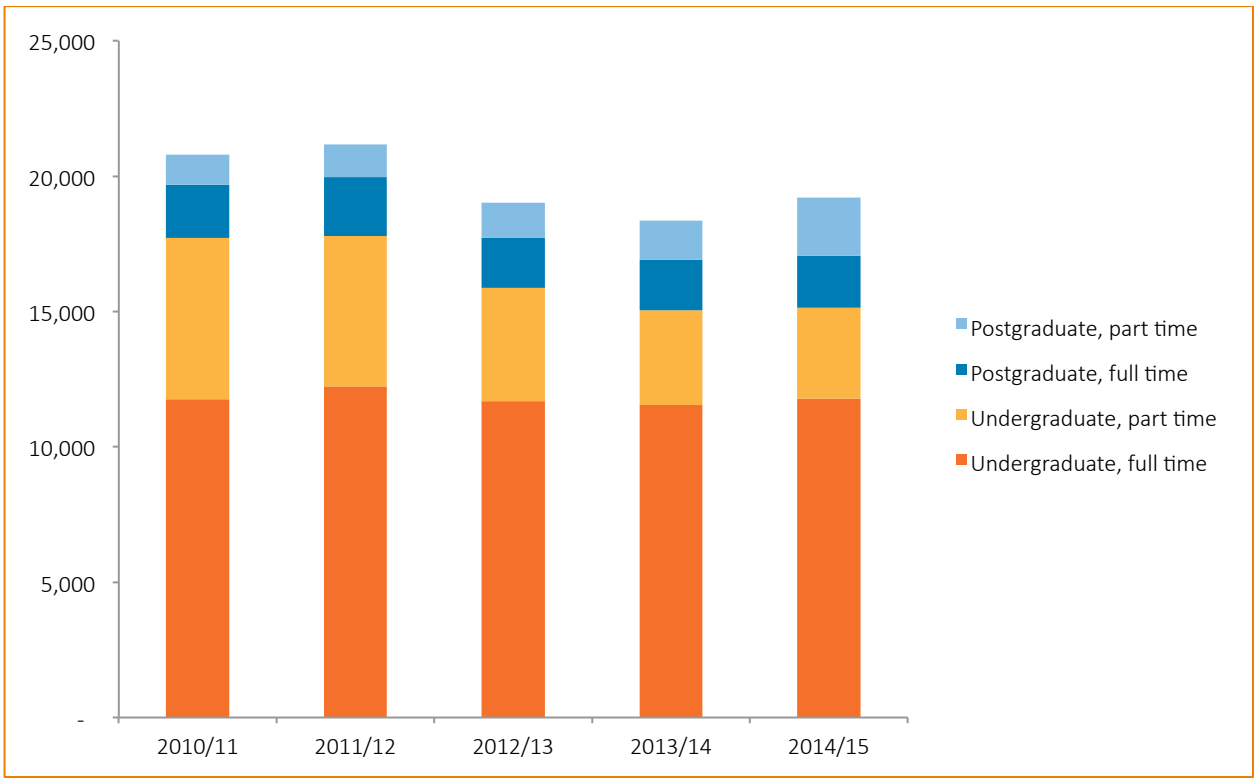
1. Are we training enough people to enter the industry?
2. How do people perceive farming? Do they *want* to become farmers?

The UK has a long history of agricultural research and training, which has been exhaustively documented (*51*), and it has been estimated that £365 million was spent on agricultural R&D in 2010 (*52*).

In the higher education sector (universities), agricultural courses have experienced relatively small changes in recent years:

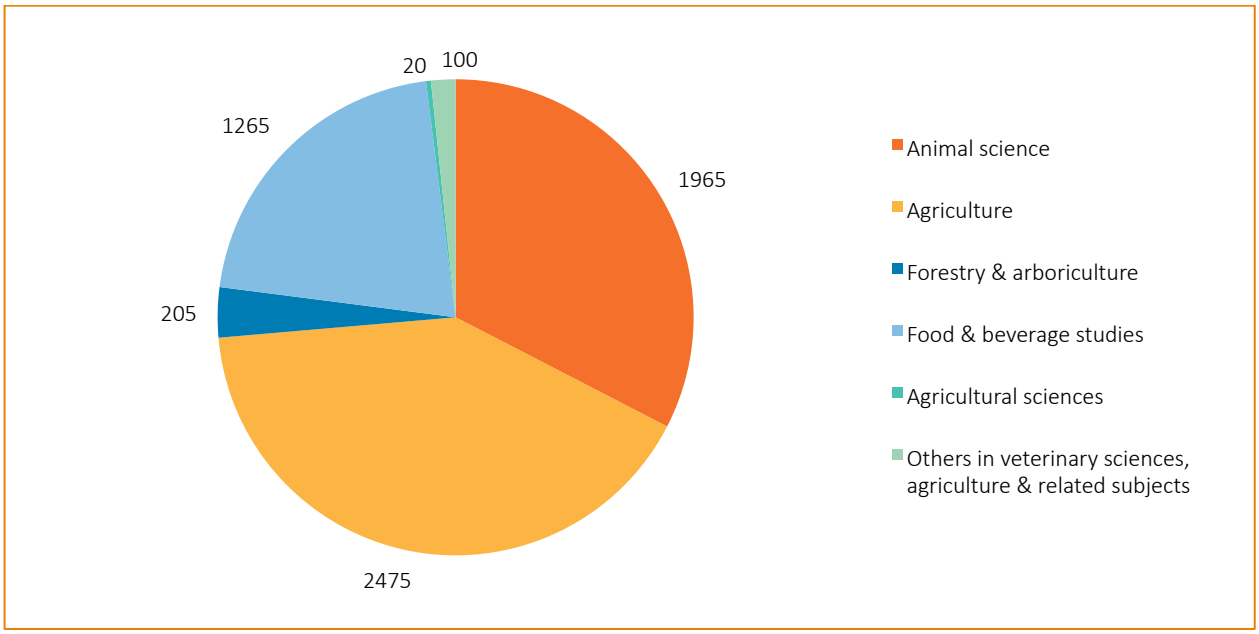
- A Universities UK report shows that between 2002/03 and 2010/11 there was a small increase in students enrolled in higher education agricultural and related subjects, though most other subject areas experienced a much larger increase (*53*). Figure 14 shows that since 2010/11 enrolment numbers have fallen slightly again.
- Between 2002/03 and 2010/11 there was a 5% decrease in academic staff in agriculture (*53*).
- Around three quarters of students in 2014/15 were studying either agriculture or animal science, and a fifth were enrolled in food and beverage studies (see Figure 15).

Figure 14: Higher education student enrolments in agriculture and related subjects



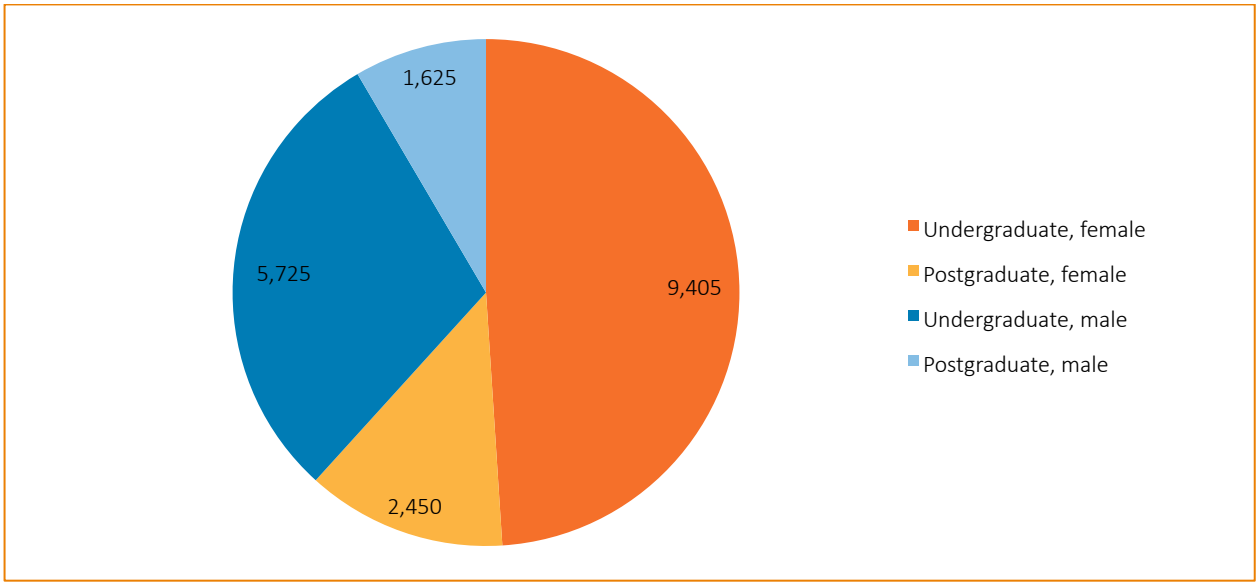
Source: Higher Education Statistics Agency (*54*)

Figure 15: Higher education qualifications obtained by subject of study (2014/15)



Source: Higher Education Statistics Agency (*54*)

Figure 16: Higher education student enrolments in agriculture and related subjects, by gender (2014/15)



Source: Higher Education Statistics Agency (*54*)

In terms of the type of people enrolling on these courses:

- 89% of entrants to higher education agricultural courses come from state schools, which is similar to the average for all subjects (90%) (*54*)
- 37% of entrants to higher education agricultural courses are from lower socioeconomic classes, compared to an average of 33% for all courses on average – only computer sciences and education/teaching have a higher proportion than agriculture (*54*)
- In contrast to the male-dominated agricultural labour market (see Figure 8), over 50% of the students in the pipeline are female (see Figure 16).

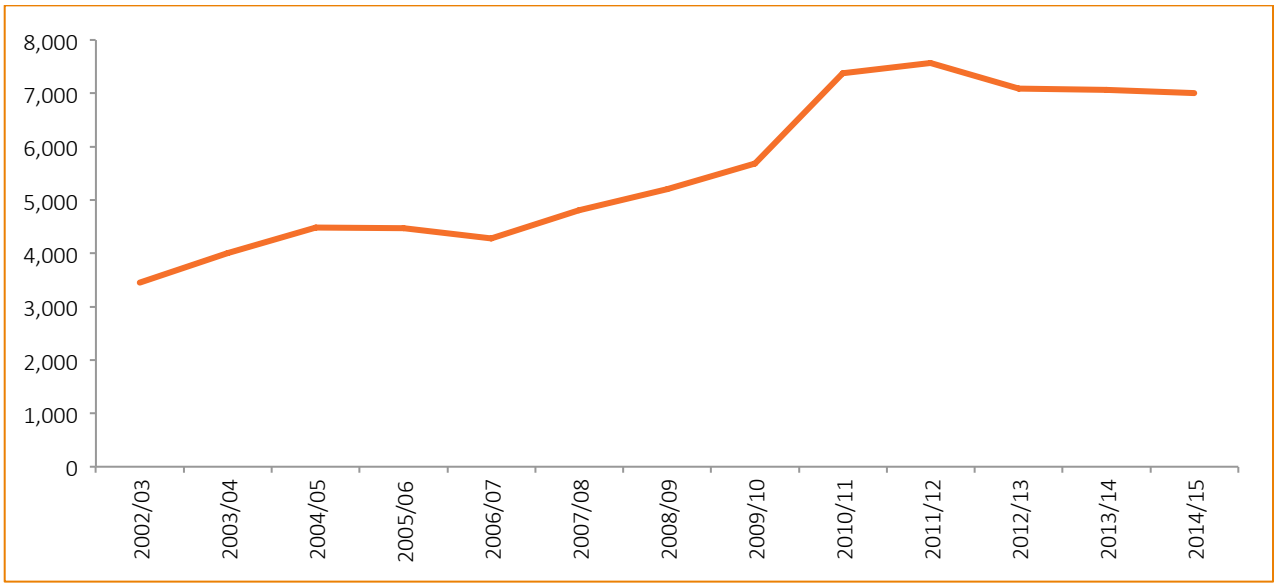
In the further education sector (college courses, work-based learning, apprenticeships) there have been much more substantial changes in recent years:

- The number of people starting apprenticeship programmes in agriculture, horticulture and animal care more than doubled between 2002/03 and 2011/12, though it has fallen back slightly since then (see Figure 17). This may reflect strong government ambitions to increase the overall number of apprenticeships in the UK. The government has indicated that it plans to treble the number of apprenticeships in the food sector more widely (*55*)

- Figure 18 shows the trend in further education learners. The blue line shows the total number of new learners in each year, while the orange areas represent the number of learning aims (i.e. specific qualifications) – each learner may have more than one aim. The overall picture indicates a U-shaped pattern with a general decline until around 2008/09 which has subsequently been reversed.

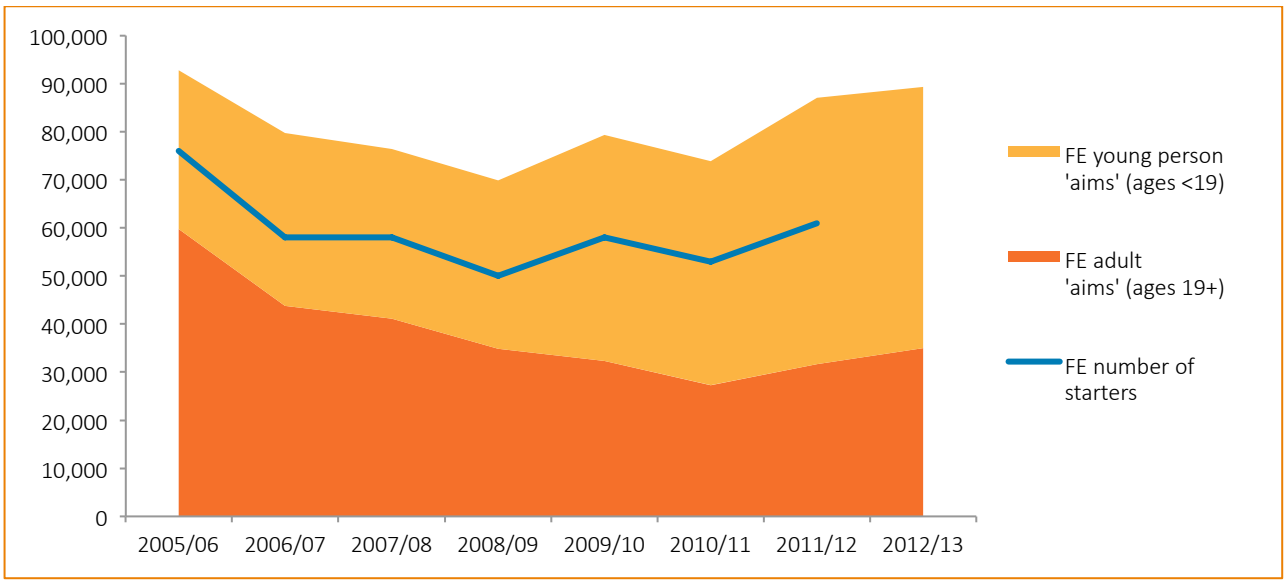
- Figure 18 also indicates that the composition of learners has shifted considerably from adult learners to young learners.

Figure 17: Apprenticeship programme starts in agriculture, horticulture and animal care



Source: Skills Funding Agency (*56*)

Figure 18: Education and training (further education) participation in agriculture, horticulture and animal care



Source: Skills Funding Agency (*57*)

As well as these formal training courses, there are a growing number of informal skills and training programmes. For example:

- The Kindling Trust's FarmStart programme gives new farmers the opportunity to try their hand at organic farming without having had to first commit financial resources to purchasing or renting land (*58*).
- Nourish Scotland offer a mentorship and peer-coaching programme for people starting up a local food enterprise (*59*).
- The Landworkers' Alliance creates opportunities for peer-to-peer support and learning among small-scale and sustainable producers (*60*).
- The WeFarm platform allows farmers around the world to crowdsource advice from other farmers via SMS (*61*).
- Hackney-based Growing Communities are sharing their knowledge and experience to help other community-led and ecological veg box schemes to get going in London, Manchester, Margate and Burnley (*62*). They are also working to establish a UK-wide Better Food Traders network to encourage collaboration, shared promotion and market data gathering between ethical and ecological food retailers.

In some ways, the informal learning and skills development that happens between producers may be the most important since those who are in the best position to advise and educate farmers may be other farmers (*63*).

In contrast to expectations of overall reductions in agricultural labour (perhaps particularly from migrant and low-skill labour), the European Centre for the Development of Vocational Training forecasts that employment of *skilled* agricultural and fishery workers will increase by 11% in the UK between 2015 and 2025 (*64*). This forecast reinforces and reflects the expected developments in technology discussed in the previous section, since such progress will undoubtedly create a bias in favour of skilled workers.

A further factor influencing the supply of agricultural labour and the choice to enrol in agricultural courses is the perception of the farming industry and the prospect of a farming career. Various sources report an overall positive public opinion of the farming sector (though this seems partly rooted in sympathy for their hardship) (*65–67*), but a far more pessimistic view of farming as a potential career for themselves (*68*, *69*). Research commissioned by the National Centre for Universities and Business uncovered a widespread view that careers in farming are boring, hard work and badly paid (*70*). This is not necessarily contradictory with the observation that enrolment in agricultural courses has increased slightly in recent years since public perceptions may have increased from an even lower base. This pessimism may be reflected among existing agricultural workers – a survey of union members in the sector found that the most common response to questions about prospects for the future was 'bleak' (*71*).

The suggestions often made for how to tackle this perception problem centre around promoting the sector as being modern and technologically advanced – in other words, marketing the farming industry to high-skilled workers (*68*, *70*). The implication of this strategy is that many unskilled farming jobs are simply not inherently desirable – people do them out of necessity rather than desire (hence the significant use of economic migrants and forced labour) and transforming their image would be a difficult task. Of course, the alternative view is that there is nothing inherent about unskilled jobs in farming that requires them to be low paid and unattractive – this is the outcome of social and economic processes.

Unlike the demand side, where there are clear indications that demand for agricultural labour will tend to fall further in the future, the supply side is less clear cut. If anything, the upturn in enrolment in agricultural course suggests a slightly expanding supply of skilled agricultural labour, but this may be balanced out by changes in supply of unskilled agricultural labour. The elasticity of labour supply is thought to be higher for unskilled workers than skilled workers (*72*). In other words, unskilled workers are more likely to exit the sector in response to a demand-induced wage decrease *and* are the most substitutable for machinery. Overall, therefore, there is a markedly different set of prospects for skilled and unskilled agricultural labour.

Total supply and demand for agricultural labour must ultimately balance. The factors considered above suggest that the overall change will be driven by demand-side factors and that adjustment on the supply side will occur primarily through the exit of unskilled workers from the sector.

Any public policy initiative aimed at expanding jobs in agriculture would have to contend with these problems. How do we transform the image of farming careers? And, given that the skilled and unskilled labour markets are quite separate, which is it that we might want to see expanded?

3.3 Globalisation, trade and the EU

How will the UK's economic relationships with the rest of the world influence the type and number of farming jobs at home? There are two key aspects:

1. What is the impact of the UK's changing relationship with the EU?

2. What is the impact of changes to the level or nature of international trade in food?

As discussed in previous sections, although the majority of the agricultural workforce consists of the farmers or landholders themselves, migrants are a significant source of labour, particularly for unskilled, casual or seasonal work. In particular, thousands of Romanian and Bulgarian workers came to the UK under the Seasonal Agricultural Workers' Scheme (SAWS), which allowed them to stay in the country for 6 months and find employment on farms only. Most of these migrants worked in horticulture, particularly fruit-picking, and often lived on-site doing physically demanding jobs (*23*). It may be the case that migrant workers are willing to work for lower wages (*73*), or are more willing to accept temporary work than domestic jobseekers (*74*). No more than a sixth of seasonal work is undertaken by British workers (*23*). The Scottish Government's agricultural wages guidance is issued in English and Polish (*75*).

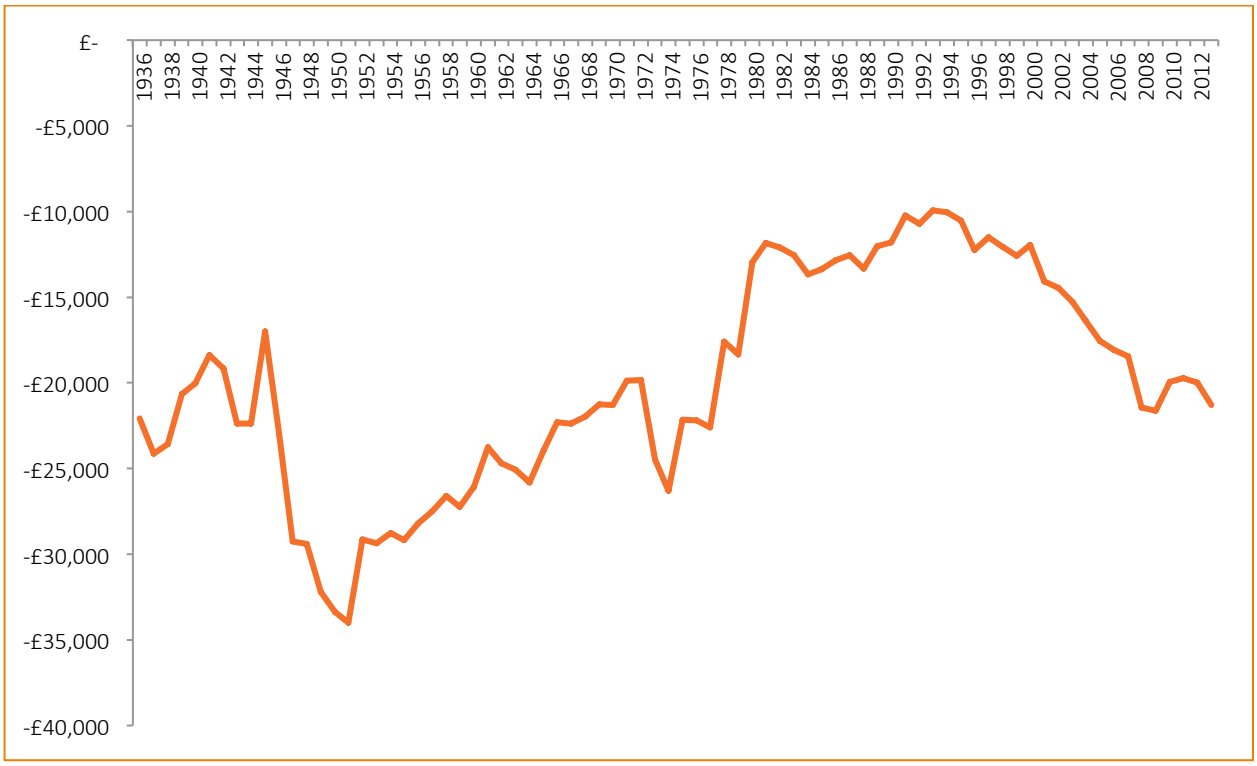
In more recent years, the UK government's curbs on immigration have caused wide concern in the farming sector over the potential loss of cheap labour from the EU and globally (*76*). The industry argues that these positions are difficult to fill with domestic workers. The debate around this subject can be particularly impassioned, with accusations from one side that domestic workers are 'lazy' (*77*) and from the other that employers don't pay enough (*78*). In the wake of a UK decision to exit the EU, these debates will surely only intensify (*79*).

There are a number of scenarios to consider for the future. On the one hand, if a post-EU Britain does impose further immigration controls there are legitimate concerns about the ability to staff our farms in the short term, given the perception of farming careers among the domestic population; in the long term these concerns may eventually be alleviated by the increased use of automation and technology – indeed, controls on immigration may hasten the rise of the agri-bots. On the other hand, in a future in which the UK maintains a strong relationship and common market with the EU any policy that seeks to increase the number of jobs in UK

agriculture may not correspond to an increase in domestic workers employed but rather an increase in migrant flows.

Beyond the EU, the UK is part of an increasingly globalised food and agricultural system. As the first industrialised nation, the UK has a long history of importing its food, and therefore embodied agricultural labour, from elsewhere (see Figure 19).

Figure 19: UK balance of Trade (£ million) in food, feed and drink at 2013 Prices



Source: Defra (*80*)

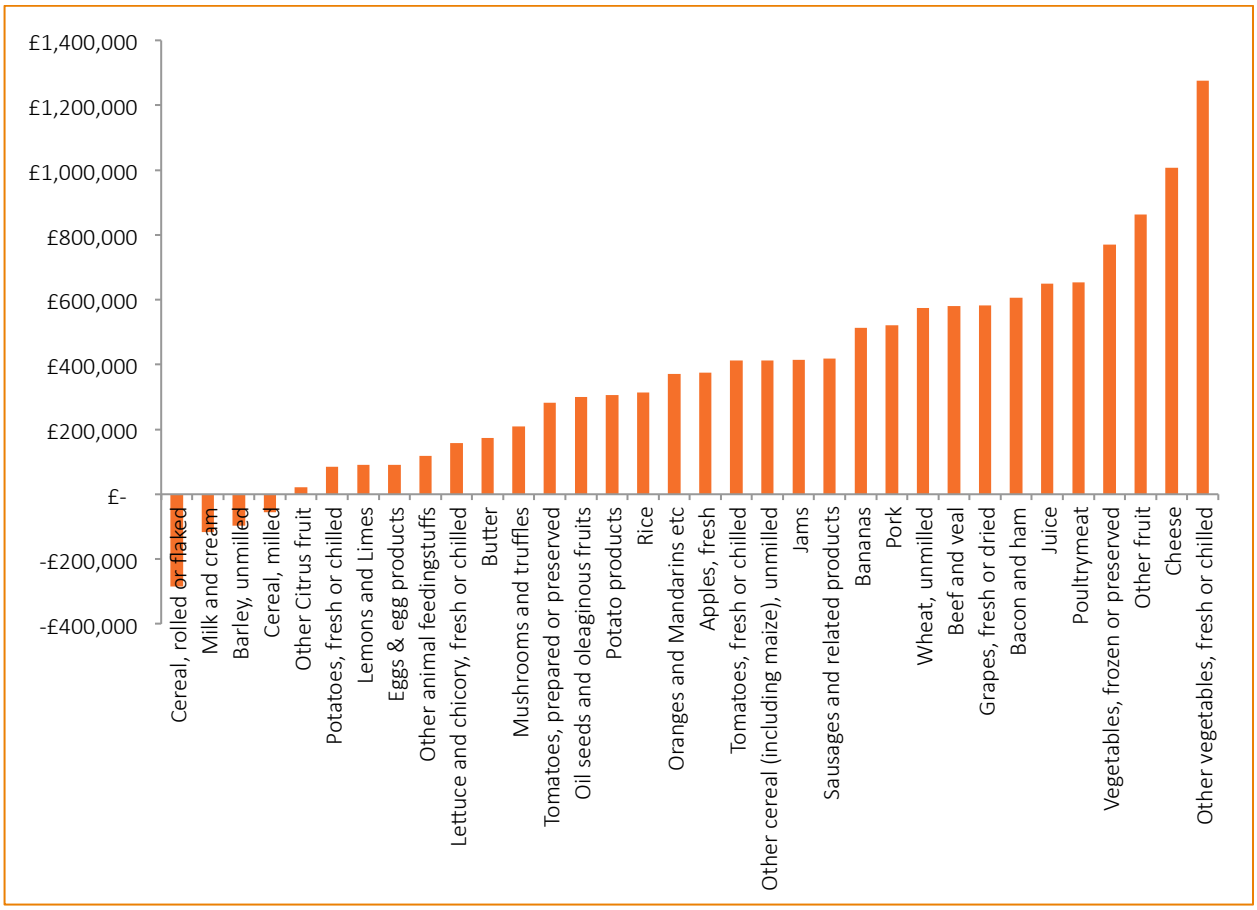
Trade data from 2013 show that many of the food groups in which the UK is a large net importer are particularly labour intensive (vegetables, fruits) and the categories in which the UK is a net exporter have relatively low labour requirements (cereals, dairy).This is no coincidence: the UK is currently unsuited to the former types of production for both economic reasons (not enough domestic workers willing to engage at the prevailing wage rate and working conditions) and geographic reasons (a climate and landscape less suited to fruit and vegetable production compared to other countries). The labour intensive production that does occur in the UK is dominated by migrant workers, as we have seen. There is, therefore, a strong interdependence between jobs in UK agriculture and the nation's trade balance.

In theory, reducing a trade deficit can be done by either increasing exports or reducing imports, or a combination of both. However, policy documents and government press releases make clear that Defra intends to focus on the former (*55*, *81*, *82*). Mostly likely this will involve growth in the UK's existing export strengths, which, as discussed above, are mainly in products such as dairy and cereals that are not labour intensive. Moreover, these are the sectors most amenable to automation. Therefore, an export growth strategy is unlikely to lead to significantly more jobs in UK agriculture; indeed, if growing our export market involves displacing other types of food production, such as horticulture, it could reduce job numbers further.

An alternative strategy for reducing the UK food and drink deficit might focus on reducing imports. Predominantly, this would involve producing more vegetables and fruit domestically and would, as a consequence, lead to an increase in the demand for agricultural labour. As previously discussed, this increase in demand would be likely to be met by migrant labour supply, unless wages and conditions can be

improved to such an extent that significant numbers of domestic workers became attracted to the sector.

Figure 20: UK net imports (£000) by category, 2013



Source: Defra (*80*) Note: some categories have been excluded to reduce complexity

3.4 Environment and public health

On top of the economic drivers of changes to farming types and production methods, there are additional non-economic reasons for changing methods of food production that will have implications for the agricultural labour force in the UK. In particular:

- Farming is a significant contributor to a range of environmental problems, including climate change. To solve these problems we will need to change the way we produce food (*83*).
- Diet-related health problems are now widely considered to be the greatest threat to public health. Dietary change will require changes in the type of food that is produced for British people (*84*).

These reasons imply changes to both the methods we use to produce the current composition of output and the types of food that we produce.

In terms of the environment, two key changes have been advocated:

1. **Less but better meat**. It is widely recognised that the production of meat, in particular red meat and grain-fed meat, is the most detrimental to the environment (*85–88*). Moving away from beef production may increase agricultural labour requirements depending on what takes its place:

poultry, pigs and horticulture are more labour intensive, while cereals are no more so than beef (see Figure 7).

2. **Environmentally beneficial production methods**. Reducing the impacts of fossil fuel intensive fertilisers and polluting pesticides, as well as the biodiversity impacts of monoculture production, will require new production techniques that make use of ecological knowledge (*83*, *89–93*). In general, the available evidence suggests that production methods that avoid artificial chemicals (e.g. organic agriculture) are more labour intensive (*94–97*). These workers may also have higher levels of wellbeing (*96*).

In terms of public health, two key changes have been advocated:

1. **Less but better meat; more fruit and vegetables**. Britons consume much more meat and much fewer fruits and vegetables than dietary advice recommends, and this is thought to have led to increased levels of obesity and other diet-related illnesses (*85–88*). Research has estimated that a reduction of meat in global diets could have a profoundly positive impact on public health and our environment (*98*). As discussed above, horticulture is the most labour intensive type of production (see Figure 7).

2. **Fewer processed and sugary foods**. New research is increasingly emphasising the negative health effects of sugar and highly processed foods, which are thought to contribute to obesity and diabetes in particular (*99–101*). In general, the agricultural requirements for sugary food products arise in countries other than the UK (e.g. sugar cane, cocoa, palm oil). Highly processed foods are produced in the UK, though we are a net importer for these products in aggregate (*80*). Reducing demand for these foods, therefore, is not likely to reduce demand for agricultural labour in the UK and, depending on what takes its place, could increase demand.

There may be further motivations for putting more people to work on the land. Some projects, such as the Growing Well initiative in the UK (*102*) and La Fageda in Spain (*83*), have shown that agriculture and food production can be effective means of rehabilitating or supporting people with mental health problems or learning disabilities. It may also be a reasonable response to the scourge of unemployment that blights many communities. In Germany, the Domäne Mechtildshausen is a farm, processor and retailer with the aim of providing employment for locals (*83*). These types of strategies may be thought of as "agriculture as social policy".

It's clear that, overall, the changes to farming that are required for environmental and public health reasons are both consistent with one another and also tend to require a greater amount of labour input compared to the alternative (at least based on current technology). These changes cannot be avoided if we are to protect our planet and citizens from serious harm. The question must then be: How will we meet the changing input requirements?

There are several countervailing factors that will determine how these requirements actually feed through to the labour market. Firstly, government must take action – these changes will not result from market forces alones. Changes to public policy that effectively protect the environment and human health from the impacts of farming will result in a greater demand for agricultural labour in the UK, as outlined above. This demand could be met by an increase in agricultural labour supply, either from increased migration or by overcoming the barriers to domestic labour supply. Alternatively, this demand could be increasingly diluted by rapid technological progress that displaces labour inputs. If public policy to limit the environmental and health impacts of farming is unilaterally imposed in the UK then this may change the relative cost of imports compared to domestic production and could lead to some substitution of the latter for the former. However, given the significant EU-wide dimension to agricultural policy, it's more likely that policy action will occur at an EU level, which significantly reduces the likelihood of these substitution effects.

4. Conclusions

The history of agricultural labour in the UK has been unambiguous and relentless, but its future is complex and uncertain.

A number of headline observations are key:

- The agricultural workforce is increasingly small and industrially weak. The abolition of the Agricultural Wages Board in England clearly exacerbates this trend and leaves those workers with little protection from the severe changes that are expected in coming years in terms of increasing automation.
- The government's strategies for increasing agricultural productivity and growing exports unambiguously reinforce the historic trends in the sector and are likely to lead to a smaller but more highly skilled agricultural workforce.
- The availability of low-wage, unskilled labour is dependent to some degree on continuing migration from the EU and elsewhere. The continuation of farming activities that are reliant on this type of labour (primarily horticulture) will require accepting migration or making those positions more attractive to domestic workers.
- Public perceptions of careers in agriculture are low, the existing stock of farm managers is increasingly old, and numbers enrolling in higher education agricultural courses are stagnant. On the bright side, enrolment in further education agricultural learning seems to be trending upwards and the new cohort of learners are predominantly young and female.
- The increasing bias towards skilled workers in the industry as a result of technological innovations and government policy will be a profound change for the workforce, which has historically been dominated by unskilled manual jobs.
- The UK's pattern of agricultural trade accentuates the low labour intensity of domestic farming by importing products with high labour requirements and exporting products with low labour requirements.

With these factors in mind, are there good reasons and practical possibilities for an increase in the UK's agricultural workforce?

Most importantly, the environmental and public health challenges we face in the UK and globally are likely to require more labour-intensive types and methods of farming, at least in the short term. In the long term, even these requirements may be dominated by labour-saving technological progress. There may be additional reasons to create jobs in agriculture, including social policy objectives such as reducing unemployment and rehabilitating people suffering from mental illness.

The more difficult question is whether or not it is practically feasible to create more jobs in UK agriculture, and whether any unintended consequences of such a policy can be avoided or mitigated.

For example, in a scenario where UK agricultural production becomes more labour intensive, or where the existing jobs in agriculture become better paid, does this necessarily imply an increase in consumer food prices? Some increase in food prices is certainly a possibility, but the picture is complicated. Cost increases can be absorbed either by consumers in the form of increased spending, or by producers in the form of reduced profits, or a combination of the both – the balance depends on how responsive consumers are to price changes (their "demand elasticity"). The full

cost of an increased labour requirement would only be passed through to consumers if it were the case that none of the stages in the food supply chain – producers, manufacturers, retailers – absorbed the cost themselves. This seems unlikely, not least due to the competitive environment between British supermarkets and the existence of imported alternatives.

On the other hand, the indirect consequences of a farming labour expansion would likely be beneficial to the UK's trade deficit, since it would most likely involve producing more of the products that we currently import.

In sum, therefore, little can be considered certain. Perhaps the biggest changes can be expected from the relentless evolution of technological innovation and its polarising implications for the workforce. But much will depend on how governments, business and civil and academic society respond.

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