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Title	Agricultural decline, 1860-1914
Authors(s)	Ó Gráda, Cormac
Publication date	1981
Publication information	Floud, Roderick and McCloskey, Donald (ed.). The economic history of Britain since 1700: Vol. 2, 1860 to the 1970s.
Publisher	Cambridge University Press
Item record/more information	http://hdl.handle.net/10197/378

Downloaded 2021-02-27T00:57:00Z

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Agricultural decline 1860-1914

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The share of agriculture in the gross national product of Great Britain dropped from about twenty per cent in 1860 to less than seven per cent in 1913 (Feinstein 1972: T4, T60), as the absolute level of agricultural output, measured in real terms, failed to register any sustained increase. This need not signify 'decline' in any pejorative sense, since the change could have resulted simply from greater specialisation in international trade. Indeed, though Britain had long been an importer of some foodstuffs, such as cheese from Holland and live cattle and grain from Ireland, her dependence on food imports grew rapidly after mid-century. The opening up of the vast American prairies for grain production, the improvements in long-distance transport technology both on land and on sea, and the massive increase in the output of dairy products in parts of the European Continent, were important developments for the British economy. Moreover, the substantial rise in imports during these years – a fourfold increase in wheat, a fivefold increase in butter imports, for example – was accompanied by a sharp drop in the relative price of foodstuffs.

Nevertheless, the period is often regarded as one of agricultural 'decline' in a less trivial sense. As R. E. Prothero (Lord Ernle) wrote in 1912, 'Since 1862 the tide of agricultural prosperity ceased to flow: after 1874 it turned, and rapidly ebbed' (Ernle 1912: 377). Since he wrote, the widening gap between agricultural and non-agricultural incomes has been a recurring theme. A relative fall in landlord incomes at the time is understandable, since (following Ricardo) rent levels might be expected to bear the main brunt of free trade; however, similar trends in farmers' and farm workers' incomes, if they are substantiated, need to be explained. The alleged failure of British agriculture to respond to the challenge of foreign competition and the opportunities presented by the shifting patterns of consumer demand is the explanation most often given.

Despite auspicious beginnings, it would seem that 'high farming' along lines advocated by publicity-seekers such as Alderman Mechi or journalists like James Caird was not enough (see volume 1, chapter 10). As Kindleberger (1964: 243) has put it, 'it was left for Denmark, the Netherlands and New Zealand to provide the bacon, eggs, ham and cheese in which the British worker and middle class member chose to take such a large proportion of their increased productivity. These countries did transform under the pressure of British

demand. The question is why it was they and not the more strategically placed British agriculture?' By and large, the farmer and the landlord have been given low marks for adaptability and initiative in the mid- and late-Victorian era.

Income and productivity

But did rural incomes really fall behind? A variety of evidence, ranging from cartoons in *Punch* to doleful data on bankrupt farmers, would suggest a decline even in absolute terms from the early 1870s down to the end of the century. A recent survey, which relies heavily on such information, dwells at length on the 'deteriorating economic and social position' of the landed proprietors, and the 'falling' income of farmers, while conceding that labourers did not fare so badly (Perry 1974: 91, 92, 126). For the 1880s and the 1890s the evidence presented to the Royal Commission on the Depressed Condition of Agricultural Interests (1880-82) and the Royal Commission on the Agricultural Depression (1894-97) is almost uniformly pessimistic (Fletcher 1961a). Reliable accounts of the overall movement in incomes, needed to clinch the issue, are scarce, however, and not easy to construct. Table 8.1 attempts merely to provide a very approximate guide to the course of incomes adjusted for the change in the cost of living between 1861 and 1911. Since per capita real income equals

$$\frac{(\text{output}) \times (\text{agricultural price index})}{(\text{numbers employed in agriculture})} \times (\text{consumer price index})$$

calculation of the standard-of-living index in column 5 of table 8.1 is straightforward.

The figures imply that 1870/72-1880/82 and 1890/92-1900/02 were the most depressed decades as regards incomes. This is in line with more impressionistic accounts. Besides, the former period includes 1878-81, years of dismally bad harvests and low prices, and the latter those years when agricultural prices reached their nadir. But table 8.1 also suggests that mean income rose by over a third during the half-century (from 100 to 136), and by about a tenth during 1870/72-1900/02. It is true that average real income is a somewhat elusive average, which is bound to conceal interesting variations across regions and classes. Regional differences, which have received increasing attention in recent years from historians, are briefly discussed on pp. 192-4 below. Meanwhile estimates of factor shares in agriculture in table 8.1, combined with census information on occupational structure, permit some broad generalisations on the incomes from the land of farmers, farm workers and landed proprietors over the five decades. This tripartite division, though hardly relevant for the whole of Great Britain, offers a useful means of presenting data. For example, the number of farmers in Great Britain decreased from 312000 in 1861 to 280000

Table 8.1. *The trend in agricultural output and incomes 1860-1914*

Period	Agricultural output (1)	Agricultural prices (2)	Cost of living (3)	Population working in agriculture (4)	Average real income from agriculture (5)	Class shares (%)		
						Landlords (6)	Labourers (7)	Farmers (8)
1860/62	100.3	118.3	112	100	100	22	43	35
1870/72	104.9	120	115.3	88.9	115.9	23	43	34
1880/82	99.7	107	106	78.9	120.4	27	51	22
1890/92	105.6	90	91.7	75.0	130.4	23	49	28
1900/02	97.4	86	90	69.2	127.0	19	49	32
1910/12	103.0	98.3	97.3	72.2	136.0	18	47	35

Sources: Output, Feinstein (1972: T 118); prices, Mitchell & Deane (1962: 472-3, 343-5); labour force, Orwin & Whetham (1964: 342), with the following adjustment: 50000 was added to Orwin and Whetham's total for 1861 to allow for seasonal labour inputs, declining by 10000 each decade; class shares from Bellerby (1968: 268), Feinstein (1972: T 60). Average real income from agriculture for 1860/62 was set equal to 100

in 1911 (Orwin and Whetham 1971: 342); table 8.1, then, assumes that farmers' incomes rose on average by

$$\frac{(1911 \text{ output}) \times (\text{farmers' share})}{(1861 \text{ output}) \times (\text{farmers' share})} \div \frac{(\text{number of farmers in 1911})}{(\text{number of farmers in 1861})}$$

$$\text{i.e. } \frac{(103.0)(35)}{(100.3)(35)} \div \frac{280000}{312000} = \frac{1.03}{0.90} = 1.14$$

or by 14 per cent. By the same token, since the number of landed proprietors hardly changed, their average income from the land fell by about thirty per cent between 1880/82 and 1900/02, while the huge decline in the agricultural proletariat – from over 1.4 million in 1861 to 0.9–1.0 million in 1911 – ensured those remaining on the land an average increase in incomes of over one half.

The growth of average real incomes in agriculture did not match the growth of average incomes in other sectors (chapters 1 and 6). However, a relative decline in per capita average income does not necessarily imply that resources were misallocated to agriculture; efficiency requires, in economic theory, the equalisation between sectors of the economy of marginal returns, not of average returns which are measured by average real incomes. In addition, table 8.1 suggests that there was a sharp rise in output per worker, which is often taken as a sign of increased efficiency. Labour productivity alone, however, may be a misleading guide to economic performance; the movement in total factor productivity, if it can be measured, provides a better guide of overall 'progress' or 'decline'. Total factor productivity may be defined as a ratio of output to inputs, the latter weighted by their respective shares of output. As explained in chapter 1, its measurement is fraught with difficulties, both conceptual and practical. However, an increase in its size over time may be interpreted, though loosely, as a move towards greater efficiency in resource use, provided all inputs are included and properly weighted and measured. Accurate measurement is often impossible, but the direction of the bias may be controlled.

In the present context, since agriculture is on trial for sluggish response, the input measures should, if anything, favour the null hypothesis of 'not guilty'. For this reason the indices have not been adjusted to allow for improvement in quality. The results, which are presented in table 8.2, suggest an annual productivity growth rate of 0.3 per cent between 1871 and 1911. While a positive growth rate may seem reassuring, in fact 0.3 per cent is far from impressive. For instance, productivity growth rates up to 1 per cent have been reported for Japanese and American agriculture in the pre First World War period (Kelley & Williamson 1974: 164–96; Kendrick 1961: 362–4). The British data are admittedly less precise, but refinement would probably reduce estimated British

Table 8.2. *Total factor productivity change in British agriculture 1871-1911*

Period	Inputs			Factor shares (%)			Output (7)	Total factor productivity (1870/72 = 100) (8)
	Land (1)	Labour (2)	Capital (3)	Land (4)	Labour (5)	Capital (6)		
1870/72	100	100	100	23	63	13	104.9	100
1880/82	100	87.7	101.4	27	59	14	99.7	102.3
1890/92	100	84.3	114.9	23	64	13	105.6	109.6
1900/02	100	77.9	114.9	19	69	12	97.4	106.9
1910/12	100	81.2	108.3	18	69	12	103.0	112.9

Sources: Labour (col. 2), as in table 8.1; capital (col. 3), Bellerby and Boreham (1953), adjusted for use by Statist-Sauerbeck overall index in Mitchell and Deane (1962: 474-5); factor shares, Bellerby (1968: 264). For the share of labour (col. 5), the share of 'wages' and 'farmers' and relatives' incentive income' were added together

productivity growth. In addition the estimate for agriculture is also considerably below that for the economy as a whole over the period (see table 1.6). The result might thus be taken as evidence that this was indeed a period of 'decline' in British agriculture. But it does not explain the decline. There are a number of possible explanations, to which we now turn.

The farmer: supply responsiveness

As regards supply responsiveness, it is possible, in the first place, that British agriculture was hoarding resources in 1871-1911 which would have been more productive in other sectors of the economy. The argument that farmers and landed proprietors might forgo income in order to remain within agriculture at a time of adversity is an old one (Bellerby 1956). Alternatively, agriculturalists may have generated a low output simply because they switched inadequately into those farm commodities yielding the best returns at any one time.

British farmers, landlords, and labourers have all been blamed, though not with equal conviction, for British agriculture's allegedly weak performance. Taking the farmer first, the case for sluggish response, for the presumed 'appalling obstinacy of the British farmer', has yet to be cogently made. Admittedly, examples of behaviour which at first sight imply low allocative ability are numerous. R. H. Rew guessed that the refusal of livestock farmers to use the newly-developed weighbridge cost them as much as £7 million in 1888 alone, but this is an extreme case (Perry 1974: 64): £7 million was six per cent of agricultural output in that dismal year. In the same vein, *The Daily News* complained in 1879 that 'as to the ability of the English farmer to take out of

Table 8.3. *Gross agricultural output of Great Britain 1870-76 and 1904-10*

	1870-76		1904-10	
	£m	(%)	£m	(%)
Crops	80.9	(41.4)	44.2	(28.5)
Animal products	114.3	(58.6)	111.0	(71.5)
Total	195.2	(100.0)	155.2	(100.0)
Some individual items:				
Wheat	26.6	(13.6)	8.4	(5.4)
All grains	49.8	(25.5)	20.1	(13.0)
Beef	34.8	(17.8)	29.4	(18.9)
Milk	27.0	(13.8)	36.5	(23.5)

Source: Ojala (1952: 210-11); Ojala's calculations for the United Kingdom have been adjusted by using (with slight corrections) the estimates for Ireland presented in *Irish Agricultural Output 1908* (Dublin, 1912) and Solow (1971: 17)

the hand of foreigners the trade in butter, no one doubts that they might have kept in the country most part of the £10000000 which was paid for imported butter in 1878'. Other more mundane examples illustrate the alleged delay in switching resources to 'safer and more promising openings' such as horticulture and dairying, in using the advantages of agricultural co-operation in production and marketing, and in applying cost-saving process innovations.

The list of seeming error and inertia is impressive. Nevertheless, to argue by example is a gambit to be indulged in only as a last resort - particularly since the documentation is not all negative, and some of it is open to different interpretations. Presumably farmer intelligence was distributed among the farm population around some average, as among the population as a whole: if so, individual examples might come from the upper or lower end of the distribution.

The agricultural and price statistics of the period, supported by background data on technical and institutional factors, permit a different approach. A broader focus raises its own problems, however. How slow is sluggish? 'The British farmer,' we are told, 'does not act precipitatedly, but gradually alters his method over long periods of time' (Wrightson 1890: 281). Yes, but where is the dividing line between caution, impetuosity, and sheer pigheadedness? A comparative approach to the problem at hand, drawing on evidence from other countries, may help. But before turning to direct measures of supply response, let us examine briefly the change in the composition of agricultural output over the period.

Table 8.3 presents a picture of substantial shift in the composition of output between the 1870s and the 1900s. Most notable are the decline in the relative importance of grain and the increase in milk production. Moreover, the figures conceal further shifts within these sectors. Thus during the period both oats and

barley acreage overtook that under wheat, while within dairying butter and cheese gave way more and more to the production of liquid milk.

The fall in the acreage under grain, which probably began before 1860, is perhaps the best known aspect of British agricultural transformation during this period. In retrospect the development within dairying, though less emphasised by economic historians, seems equally radical. It too took place against a background of increasing intrusion from foreign producers, from Continental Europe at first and from New Zealand after 1880. At a rough guess, between the 1860s and the First World War British butter and cheese production declined by forty per cent, but liquid milk output more than quadrupled and milk consumption per capita doubled (Taylor 1976). The rise in imports of dairy products shocked jingoistic contemporaries, and the notion grew – and has persisted – that British dairying ‘failed’ in its struggle (Haggard 1911: 248–76; Kindleberger 1964: 243).

In fact, though, for most British farmers the specialisation in liquid milk production made perfect sense under free trade conditions. Transport costs and the problem of quick spoilage ensured that British producers had a monopoly in the home market, and farmers who were suitably located could make almost twice as much from their liquid milk, sold fresh, as from butter. Not surprisingly it was only in remote areas, removed both from the railway network and centres of consumption, that farmers persisted with cheese and butter production on a large scale. The bulk of British butter and cheese was being produced in the south-west of England and in Wales by 1914. Nearer London and Manchester the proportion of dairy produce being sold in liquid form reached nine tenths, but in Wales only slightly exceeded one half. The regional variation was due to locational constraints, not to differences in commercial acumen. Indeed, in the worst-endowed parts of the periphery, just as in parts of Ireland, not only were farmers in no position to get the high prices for liquid milk; the advantages of the centrifugal separator, available in theory from the early 1880s, eluded them as well (Hall 1913: 325–7).

Detailed studies by agricultural economists over the last two decades or so have confirmed what many had long suspected, that farmers generally tend as a group to respond positively to market forces. The British farmer of the late Victorian and Edwardian years was presumably no exception: at least, that is what table 8.3 suggests. Still, because what is at stake is an inadequate rather than a zero response to prices, a more exact notion of price responsiveness is required. We shall therefore examine the supply elasticity – the response of supply to a change in price – of one category of agricultural output, cereals, in more detail. Cereals, ‘the besetting temptation of British agriculture’ according to Brodrick (1881: 296), were chosen because they have been the focus of much previous writing and – as we have seen above – contributed significantly to agricultural output. Reliable acreage and price data are available from the early

1870s (J. T. Coppock 1956) and can be used to obtain the supply elasticities shown below for Great Britain over the period 1874–1914:

Crop	Short-run elasticity	Long-run elasticity
Wheat	0.63	1.11
Barley	0.35	0.76
Oats	0.26	1.63

Note: The structure estimated was that used by Fisher and Temin (1970) and by DeCanio (1974: 243–61). Data from Mitchell and Deane (1962: 78–9, 488–9). For a somewhat different approach, though giving similar results, see Olson and Harris (1959). See also Nerlove (1958).

Perhaps in themselves the results are unimpressive. They show, for example, that on average a 1 per cent fall in the price of wheat produced a fall of 0.63 per cent in output in the short run, and of 1.11 per cent in the long run: still, they compare favourably with elasticities calculated for nineteenth century agriculture elsewhere. The same estimation technique gives short-run elasticities of 0.07–0.61 for the same grain crops in neighbouring Ireland over the same period; state-wide estimates in the United States give the ranges of 0.08–0.38 and 0.10–0.28 for wheat and cotton; elasticities of 0.08–0.38 and 0.18–0.69 have been calculated for Hungarian wheat and rye over 1892–1911 (Fisher and Temin, 1970; DeCanio, 1974; Eddie, 1971). It seems unfair then, on this evidence to blame the British farmer for cereal ‘over-production’. Indeed, because there were important cost-saving innovations in cereal production during these decades – see pp. 182–6 below – the response of farmers to changes in relative prices (the figures estimated here) must have been less than their response to changes in net revenue per unit output. If, as frequently suggested, cereal farmers were likely to be the least responsive group, that creates a strong presumption that response in other sections within British agriculture was ‘adequate’ at the time.

The farmer and technical change: the reaping machine

Even if farmers were producing the right crops, it is possible that they were not using the best methods, and in particular the best machinery. The mechanisation of British agriculture began before this period. Mid-century farming manuals, such as Henry Stephens’ *Book of the Farm* or J. C. Morton’s *Cyclopedia of Agriculture*, contain descriptions of much of the machinery in use thirty or even fifty years later (Thompson 1968: 65–6). However, the post-1860 period saw the widespread diffusion and refinement of a few which showed earlier promise. The failures included the steam plough, the successes the threshing machine, the horse hoe, and the chaff machine (Walton 1973; Collins 1972). In this section, though, we concentrate on the most documented and perhaps most important instance, the reaping machine.

The American reapers exhibited at the Crystal Palace Exhibition of 1851 were

a great attraction, but British farmers were slow to adopt the new techniques at harvest time. While mechanisation of reaping in the American mid-west proceeded quite rapidly from the mid 1850s, in Britain the 1850s and 1860s saw only modest diffusion. A recent estimate suggests that almost four fifths of American small grain acreage was being cut mechanically by 1869-70, while the proportion in Great Britain was still less than half in 1874 (David 1969: table 2.4). Was the delay simply another instance of British farmers' lethargy? The timing of the reaper's diffusion is a puzzle which still awaits an agreed explanation. A number of competing hypotheses have been put forward, but none have been generally accepted; the paucity and uncertainty of evidence on the temporal and spatial diffusion of machines and grain acreage, and on the regional differences in the wages of harvest labourers, leaves much room for argument.

It seems unlikely that either the organised hostility of agricultural labourers or the paternalism of farmers, who might have retained labourers when it was no longer strictly economic to do so, were significant factors in preventing diffusion in the second half of the nineteenth century. The most obvious explanation is that the speed of diffusion was a response to the relative costs and prices of the old and the new methods. The reaper was a classic example of labour-saving machinery (Wilson 1864: 149; McConnell 1906: 237), and it has been suggested that the state of the labour market was an important determinant of reaper diffusion. Until mid-century and later the British farm population - with considerable help, it should be added, from Irish seasonal migrants - was adequate to cope with harvest demands at low wages. Given the fixed cost involved in buying a reaper, diffusion was delayed by the relative cheapness of farm labour (Habakkuk 1962a: 199).

However, the price of harvest labour relative to capital is not, by itself, sufficient to explain the speed of diffusion. Another possibility is that the smaller farmer, for whom buying a reaper would have meant incurring a higher fixed cost per acre of grain, might have been less likely to adopt the new technique. This consideration has prompted the use of the concept of 'threshold acreage' (David 1975: 195-217). Income-maximising farmers with an acreage above the threshold would buy a reaper, while others would cling to traditional methods. According to this interpretation the size distribution of farms is a crucial determinant of the spread of mechanisation. Its usefulness as an explanation hinges largely, however, on whether the option of renting a machine, rather than buying outright, existed for the smaller farmer; if it did, then small size should not preclude use of a reaper.

Thirdly, it has been argued that the farming landscape in Britain was an added consideration: smaller fields, the use of open furrows for drainage, and blade-breaking stones, in practice meant an additional fixed cost element in preparing arable land for the reaper: 'Mechanisation of the corn harvest would have been

a profitable undertaking on a great part of Britain's cereal acreage even at the beginning of the 1850's supposing only that the more serious among the terrain problems... could have been first removed' (David 1975: 244). In other words, the use of the machine required a complementary third factor – proper terrain – whose improvement was more expensive in Britain than in America.

That does not exhaust the list of possibilities. A fourth was the change in the productivity of reaping machines themselves over time. While harvesting techniques remained constrained by hand-tool methods, the scope for productivity increase was rather limited: as soon as cutting became what Marx called 'the mechanism of an implement' this was no longer so (see volume 1, chapter 10 above). Though the machines on show at the Crystal Palace had tremendous curiosity value, they were unwieldy for British use, liable to break down under British conditions, and difficult to service. They were intended for the American prairies, which were flat, had few hedges and fences and whose crops were much less heavy. But after 1851 refinements continued apace both in Britain and in the United States, as the patent records testify – almost three hundred reaper patents were taken out in Britain alone in 1850–70 – and competition between manufacturers was intense. Fourteen years after the Exhibition an observer could state of earlier superseded models that 'they now rot in corners looking in comparison to modern reapers, like skeletons of the Mammoth and the Mastodon among recent animals'. Moreover, though the reliability and performance of the machines improved, price did not increase between 1851 and 1914.

Which of these interpretations best fit the available evidence? As for the threshold model, there is only limited evidence for a market in reaper hiring and the informal sharing of reapers. Even if reaper hiring existed, the smaller farmer may still have been in less of a position to switch techniques, since there could also have been a threshold – though a lower one – for hiring. More serious, though, for the argument that a threshold was a constraining factor, is the objection that in mid-century most of Britain's small grains were grown on acreages exceeding the average utilisation level of early reaping machines, if not their cutting capacity. The size distribution of farms is fundamental, since we are less interested in the number of farmers adopting the reaper than in the total grain acreage cut by it. David (1969: 30–1) has suggested fifty acres as the average annual use per reaper in 1850–70, so the threshold model's main relevance is limited to grain acreages under fifty, where one would not expect to find a reaper being used. A farmer with more acres, say 70, could be expected to use a combination of a reaper and hand labour.

The threshold model may thus help to explain the diffusion lags in Ross and Cromarty or Inverness, where the average cereal acreage was about seven in the early 1870s; it is certainly of less help in the case of the Midlands or East Anglia, where the average in mid-century probably approached fifty. Indeed, it is arguable that the model's potential coverage extends to only a quarter or even

a fifth of Britain's grain acreage at the time, since the vast bulk of the crops were being grown on large farms. For example, average farm size in Hertfordshire in 1870 was eighty-one acres, but eighty-one per cent of the land was on farms exceeding one hundred acres. The average size of those large holdings, in turn, was over 250 acres.

Contemporary cost comparisons of hand and machine methods – of which there are several – must be treated with care. However, a number of them, such as Jacob Wilson's careful and detailed study of the early 1860s, imply that the reaper was then a marginal proposition even in areas where harvest wages were relatively high. According to Wilson's calculations for Midlothian in Scotland the saving per acre on labour was about five shillings. But the average acreage cut in a season by Wilson's sample of 160 machines was less than fifty, and depreciation on a £30–40 machine with a five year life – considered usual at the time – would thus have accounted for about three shillings per acre. Nor does it take into account the extra outgoings on horses and oil associated with the new technique, items which might easily account for a few shillings per acre. Problems of terrain apart, then, Wilson's data are consistent with slow diffusion being the sensible option for Britain (Wilson 1864).

The available figures therefore make the coexistence of hand-tools and machines quite plausible, particularly since the regional variation in harvest earnings was substantial in mid-century. Moreover, literary evidence seems to imply that the reaper came into use first in those areas where harvest earnings were highest, so the Habakkuk hypothesis of the importance of the relative costs of capital and labour to mechanisation has a bearing on the problem. As emigration and urban employment tended to reduce the supply of seasonal workers in the 1860s – parliamentary returns suggest a twenty per cent rise in weekly earnings by task work during the 1860s – reapers became increasingly viable.

Improvements in the machines themselves provided an added spur. The earliest McCormick model was pulled by one horse, which also had to carry the driver, while another worker raked the cut crop from the machine as he walked alongside. The model exhibited in England in 1851 had a second seat, but was still very heavy, and tough on the horses. In the late 1850s 'the attainment of a completely effective reaping machine [was] an object yet to be sought for' (Slight and Scott Burn 1858: 343). Yet within a few years several companies were producing a working model which could be operated by one man, and delivered the cut crop in sheaves. In addition, changing the reaper was to a considerable extent a substitute for changing the landscape. Smaller and lighter machines were developed, which could more easily negotiate the furrows and enclosures which created problems for the earliest reapers. The late 1870s finally witnessed the introduction of a successful reaper-and-binder, the last word within a horse-drawn technology. By the end of the period, the cost of harvesting on all but the most

intractable fields was four to six shillings per acre, while hand methods would have cost three to four times that much (Wrightson 1906: 99–106). Labour abundance considerations were no longer relevant, and the vast bulk of the grain was mechanically harvested.

The reaper-and-binder, unlike its predecessors, would have paid even at the wage level of the 1850s. In the event, its arrival on the scene at the onset of the collapse in corn prices was a godsend to hardpressed farmers. It lessened the blow of the price slump, and limited the reduction in corn acreage, making it worthwhile to grow wheat at thirty shillings a quarter, 'though no one will grow rich at the job' (McConnell 1906: 238). In sum, the pace of reaper diffusion is no argument against the British farmer: at an aggregate level, it would seem to have followed economic logic.

The landowners

The distribution of landed property in nineteenth century Britain was notoriously unequal. Using official data, Bateman estimated that less than 1700 'peers' and 'great landowners' owned two fifths of the total area of England and Wales in the 1870s (Brodrick 1881: 152–87). Yet relatively few people within British agricultural thought of a radical redistribution of landed wealth as a formula for agriculture recovery and progress. Such a plan was firmly ruled out by Gladstone at the onset of the depression: almost twenty years later, a disillusioned member of the Royal Commission of 1894–97 found that body's majority report 'vigorous and uncompromising only in its defence of the existing land system' (Gladstone 1879: 106; Channing 1897: ix). There was no revolution in landed property at the time; the proportions of land under tenancy and owner-occupancy hardly changed.

Nevertheless, criticism of landlords after the middle of the century was widespread, though more restrained than in neighbouring Ireland. Landlords were accused, for instance, of giving tenants no security of tenure and, on top of that, of refusing them compensation for unexhausted improvements which they had made. The landlords were also blamed for unreasonably delaying rent reductions, and for refusing tenants permission to convert arable land to pasture, when tillage became unremunerative. In such ways, landlords were thought to be responsible for not helping to give tenants 'a fair field' in their struggle against foreign competition.

While many examples may be found to support these criticisms, their overall importance has almost certainly been exaggerated. Initial landlord reluctance to permit the conversion of tilled fields to grass, and to reduce rent claims was normally short-lived. It would have been too much to hope that landlord expectations about future prices would adjust overnight after decades of relative price buoyancy: indeed, neither landlord nor tenant thought at the outset that the fall in prices would last. But surviving estate accounts suggest that most of

the decline in 'rent received' was rather quickly reflected in the 'rent demanded' column (Rhee 1949). Even where cuts were delayed, there was usually a liberal attitude to arrears. While a small minority of landlords in the areas of the Celtic fringe - Wales and Scotland - still evicted for political reasons, such behaviour was atavistic by late nineteenth century British standards; it was almost unheard of for a landlord to evict for the non-payment of rent during a crisis year. The absence of litigation about 'tumbled-down' land, and of convincing statistical evidence, make it unlikely that landlords prevented tenants from adjusting land-use in response to the changes in relative prices.

It is true that conflicting claims about rents, from interested parties, in newspapers and in oral evidence to Royal Commissions, pose a problem of interpretation. What is most significant, though, is the existence 'in nearly every county [of] a competition for farms' as late as the mid 1890s (Parliamentary Papers 1897: xv, 213). Such excess demand implies either very foolhardy tenants or, which seems more likely, attractive rent levels. A pro-tenant Royal Commissioner, in desperation, rationalised that 'with most commodities, the supply tends to equal the demand: but the area of land in Great Britain is limited, and the number of land occupiers being recruited from so many sources is practically unlimited' (Parliamentary Papers 1897: *ibid.*). The dubious economics cannot conceal the apologetic nature of the argument.

In addition, although most tenants in Britain were on yearly tenancies by 1860, there is little evidence that lack of security in practice prevented them from improving their holdings (F. M. L. Thompson 1968: 76-7). This is because they were very rarely ejected and because systems of tenant right, formal and informal, were widespread at the time, and seem to have adjusted as economic conditions dictated. As free agents, tenants with cause for concern at lack of security could have insisted on special terms in their contracts; no evidence has been adduced for such pressure, nor, indeed, for any correlation between 'security' and tenants' outlays on the land. The replies to the questionnaire prepared by Assistant Commissioner Little for the Royal Commission of 1880-82 imply that those farmers in the south of England who complained loudest about insecurity were no more reluctant to spend considerable sums annually on lime and fertiliser than those who had tenant right written into their covenants (Parliamentary Papers 1882: xv, 200-27). The same source suggests that despite legal changes, tenancies typically stayed for several decades within the same family. Finally, there is no sign that the land system materially hindered the development of fruit farming and market gardening at this time, though these involved considerable fixed outlays on the part of the tenant.

The traditional view, long associated in particular with Arthur Young and James Caird, that long leases were essential if tenants were to improve the land, therefore does not fit the facts of nineteenth century British agriculture. Tenancy-at-will provided greater flexibility in the face of fluctuating prices; indeed, the widespread use of long leases would have made adjustment during

the depression itself more costly. Whether tenancy-at-will promoted efficiency by keeping tenants on their toes – a point suggested by some economists, notably Nassau Senior – is not clear, since the sanction of eviction was hardly ever applied. Individual proprietors, besides, had nothing to fear from a system such as tenant right in its English form, whereby farmers simply recouped the value of their fixed investment in the land.

In many of its aspects, therefore, landlordism did not act as a brake on agricultural adjustment during this period. The story does not end there, however. It has been suggested that the crisis after the late 1870s was exacerbated by landlord economies in the area of landlord improvement. As a recent writer has plausibly put it, 'Successful adaptation . . . required from the landowner a certain level of expenditure, both on land and on farm buildings. . . [since] increased livestock numbers usually implied heavier expenditure on new buildings to house them, especially if the farmer concentrated on stall- or yard-feeding' (Perren 1970: 110, 111). The claim that landlord investment influenced rent buoyancy after 1879 – a minimal claim, since in theory landlords could have bankrupted themselves in marginally improving their rental receipts – may be tested with some statistical evidence presented to the Royal Commission of 1894–97. In the course of their inquiries the Commissioners approached several landed proprietors for information on the finances of their estates during the previous two decades and secured some quite useful data. The data tell a somewhat surprising tale; the evidence of almost forty estates in Britain between 1882 and 1892 shows that the correlation between rent change per acre and improvement outlay per acre, though positive, was statistically insignificant. In other words, investment was hardly related to subsequent changes in rent. It is even possible that the realised rate of return on land investment in agriculture was negative at the time (Ó Gráda 1979). This makes it unlikely that landlords were investing too little. It is conceivable that all or part of the return on the landlords' investments were accruing to the farmers, because landlords were not charging economic rents, but a more plausible interpretation is that proprietors, caught in a futile attempt at bailing out hard-hit tenants, were simply throwing good money after bad. This would be in the spirit of recent allegations about landlord investment behaviour during the decades of 'high farming' and earlier: it has been argued that much of their investment before the depression never paid and resulted in an over-capitalised agriculture (Chambers and Mingay 1966: 175–7).

If landowners are to be criticised for inefficiency, it must therefore be largely because they channelled funds into agriculture which would have yielded a higher return in other sectors of the economy at the time. Since this represented a subsidy to farmers, their action must also have reduced the flight of farmers from the land.

The labourers

Between 1860 and 1914, Britain's farm population dropped by about one quarter, and the number of labourers by one third. The fall was accompanied, as already explained, by an increase in earnings of over a half over these years; it also brought a marked decline in interregional wage variations.

Wage payments to labourers differed greatly between counties in mid-century, as the Scottish agricultural expert James Caird noted on his famous tour (1852: 510–19). Caird was surprised to find regular weekly wages for agricultural workers as low as seven shillings in Wiltshire and Gloucestershire, half what a labourer in Lancashire or the West Riding was paid. To some extent the gap may have been offset by the greater prevalence of task-work in the low wage areas during the summer months, but this is debatable; the semi-official returns collected in 1860 and 1870 suggest a strong positive correlation between regular wages and task-work rates. Caird's wage data imply a coefficient of variation by county of 0.20 for England: a recent study by Hunt implies a coefficient of 0.26 for Great Britain in 1867–70 (Hunt 1973: 64). Caird's explanation for this phenomenon was the low mobility of rural workers, a reason supported by Clapham, though in less prosaic language: 'the men of Surrey may be pictured moving easily over their suburban sands; those of Essex, stuck beyond East London in deep clays or hidden in the folds of their north-western chalk', and so on for Buckinghamshire and Oxfordshire (Clapham 1938: 89–90). Others who took a less idyllic view of social relations in the countryside argued that the ignorance of their labourers left farmers in an enviable monopsony position, which the latter exploited to the full (see e.g. Parliamentary Papers 1893–94: xxxvi, 17).

There is an alternative interpretation for this wage variation, which is that statistics such as Caird's merely reflect productivity differences from county to county. This was sometimes suggested by contemporary observers, in the spirit of 'a Lancashire workman at half-a-crown a day is not dearer than most Welsh labourers at a shilling'. It is difficult to prove, given the variety of work carried out by farm workers. Harvest earnings arguably provide a possible clue, since the scytheman's work was similarly carried out in different areas. Reports that it cost only 7s 6d to mow an acre of wheat in the North Riding in 1860, while it cost 12s in Surrey may seem strong support for the Caird–Clapham view that there were persistent imperfections in the labour market. In fact, the story is less simple since crop yields as a rule were higher in Surrey, and thus demanded more work (David 1970; Hunt 1970). If it is assumed that labour input was proportional to yield per acre – a generous assumption, since one might expect increasing returns to higher yields – then a perfect labour market would imply harvest piece rates varying in line with yields. Thus a crude test of the Caird–Clapham hypothesis might be: did the variability of piece rates exceed

Table 8.4. *The mean cost of reaping grain and mean yield per acre in 1850–51 and 1860–61*

County	Mean cost per acre of mowing grain:	Mean yield (bushels per acre)
	(A) 1850–51	
1. Yorks., East Riding	7s 6d	27.36
2. Lincs.	9s 0d	32.85
3. Durham	6s 0d	23.78
4. Warwicks.	9s 6d	26.90
5. Berks.	8s 6d	27.41
6. Wilts.	9s 0d	28.53
7. Gloucs.	9s 6d	27.19
8. Cumberland	7s 6d	25.51
Coefficient of variation	0.138	0.089
	(B) 1860–61	
1. Surrey	12s 0d	28.00
2. Kent	10s 0d	29.61
3. Berks.	11s 0d	28.53
4. Lincs.	8s 6d	32.85
5. Notts.	10s 0d	29.27
6. Yorks., North Riding	7s 6d	26.38
Coefficient of variation	0.152	0.068

Sources: The cost data are derived from David (1970: 510); D. H. Morgan (1975: 40); *Return of the Earnings of Agricultural Labourers*, Parliamentary Papers (1861: (L), Obs. 45, 74, 122, 431, 442, 526); Bravendar (1850: 141, 150); Dickinson (1852: 233); Spearing (1860: 43). The yield data are those reported as the 'estimated ordinary average' for wheat in *Agricultural Statistics for Great Britain*, 1894, Parliamentary Papers (1894 (XCIII): 150). The coefficient of variation is the standard deviation divided by the mean

that of grain yields? In the absence of comprehensive county data on the piece rates, the partial data in table 8.4 provide some limited guide. The figures are no doubt imprecise, and harvest earnings contributed only a small part of the annual pay of labourers: still, the hint of market imperfections here is suggestive. But the figures certainly do not confirm the productivity argument as the sole explanation for variations around mid-century.

In emphasising the productivity argument, Wilson Fox argued that the men of the north of England constituted 'a finer race, physically and intellectually, than the Southerner. . . because good feeding for generations has done much for them in body and in brain' (1903: 168–9). There is, indeed, persuasive evidence that labourers in low-wage areas in the south were earning less than the minimum amount needed to keep themselves and their families at full physical efficiency, even as late as the 1910s (Heath 1874: chs. 1 and 2; Rowntree and Kendall 1913). It does not follow, however, that it would have profited farmers to pay such workers more, a point sometimes urged by reformers. The farmers

Table 8.5. *The age structure of agricultural workers*

Year	Percentage of male agricultural workers aged over 45	Percentage of all males over ten years aged over 45
1871	31.7	25.6
1891	30.1	24.2
1911	30.7	28.9

Year	Median age of agricultural workers	Median age of all males over ten in population
1871	28.6	27.6
1891	27.8	27.3
1911	28.8	29.3

Source: *Census Reports of Great Britain*

were probably being maximisers in paying less than a 'living wage' (Pigou 1913), because the effort supplied by labour may have been inelastic with respect to the wage rate. The coefficient of variation of earnings for regions in Great Britain dropped to 0.076 in 1898 and 0.059 in 1907 (Hunt 1973: 64), implying that wages in the initially poorest areas increased more than the average. Still, Caird's distinction between a northern high-wage and a southern low-wage area had some relevance even on the eve of the First World War.

The release of labour into the industrial sector is one of agriculture's contributions to economic development. In nineteenth century Britain, though, the flight from the land gave rise to shrill complaints and polemics from interested parties. It was frequently suggested that agriculture after the depression was the refuge of aged and inferior workmen. The point is familiar in other contexts: those with initiative and drive leave, and the employers must manage with a lazier, older, and duller workforce. Contemporaries such as Rider Haggard saw this trend as one of the reasons for agricultural decline: in more polemical vein, he and others argued that it represented a long-term security risk, since agricultural labourers had traditionally been the best soldiers in the realm. But those labourers who remained on the land must not be blamed for the farmers' and landlords' problems simply on the basis of anecdotal evidence from their bosses. The Census data shown in table 8.5 lend no support, for example, to the view that the labourers were an ageing class over the period. Moreover, if the intellectual capacity of agricultural workers is a relevant input to agriculture – a point frequently suggested in the modern literature (Schultz 1964: 175–206) – then British workers of the 1910s were far better endowed with it than

those of half a century earlier. The literacy rate of the agricultural labour force grew from about two thirds in mid-century to well over ninety-five per cent on the eve of the First World War.

Supply and demand factors both contributed to the reduction in the rural proletariat from 1.4 million in 1860 to less than a million in 1914. On the demand side the relative importance of mechanisation and the shift from tillage to pasture are difficult to gauge, because of poor data on machine diffusion and the labour requirements of machines of different vintages. Nevertheless, two labour-saving developments stand out. The reaping machine (volume 1, chapter 10, and pp. 182–6 above) in its reaper-and-binder version saved two to three worker days per acre over traditional methods, meaning several hundred thousand harvest workers at full diffusion. Most immediately affected were Irish and urban seasonal harvesters, but the machine also undoubtedly allowed the farmers to reallocate work and therefore reduce their regular workforce. The threshing machine, which came into its own after mid-century, may have involved even greater savings. While a man with a flail might manage six to nine bushels daily with difficulty, the contemporary threshing machine increased his output four- or fivefold (Collins 1972; Fenton 1976: 79–93). If one assumes that half the grain in Britain was still being threshed manually in 1860, then mechanisation of threshing would account for the loss of winter work for as many as two hundred thousand workers. Thus these two innovations alone could explain one half of the decline in the labour force. This finding emphasises the extraordinary labour intensity of traditional British agriculture and its handtool technology. By comparison the ‘tumbling down’ of arable land was less important: accepting the rule-of-thumb calculations of contemporaries, the conversion of three million acres between 1880 and 1914 could have meant one hundred thousand less jobs. However, there is no clear correlation in the county data between decline in acreage under grain and decline in the agricultural labour force; fruit growing and dairying, which came to the rescue in some of the arable areas, could be more labour-intensive than grain-growing.

Regional aspects

Agricultural practice and specialisation differed markedly between regions of Great Britain. While comfortable farmers in the Lothians and East Anglia discussed the virtues of steam ploughing, liquid manure, or the cost of labour, one might still find in the Highlands or Western Isles of Scotland ‘the smaller and poorer crofters...[with] their families sitting around the fire...a whole winter picking the corn from the straw and chaff’, or hacking away at stony soils with *caschroms* (MacDonald 1972: 18). Such practices, even if the objects of outsiders’ derision, were a sensible answer – short of emigration – to a miserable land-labour ratio.

Farm output too was subject to marked regional variation. The southern and eastern counties, for example, were the main cereal-producing area throughout the period; the South-West had most orchards; Lancashire and Cheshire specialised most intensely in dairying. Since the price slump after the mid 1870s was confined largely, though by no means entirely, to grain prices, it is not surprising that a minority of the Royal Commissioners of 1894-97 felt obliged to point out that 'the depression has been and still is far more serious in the southern and eastern counties of the United Kingdom'. One fair indication of spatial spread is the fall in assessments of land value. In ten counties - Berkshire, Cambridge, Essex, Huntingdon, Kent, Norfolk, Northampton, Oxford, Suffolk, Wiltshire - assessments declined by over thirty per cent between 1879/80 and 1894/95, while in Cheshire and in Cornwall the decline was less than ten per cent over the same period (Parliamentary Papers 1897: xv, 10).

When wheat prices fell, farmers in the south and the east reduced their acreage more slowly than elsewhere, and much of the reallocation that did take place was through 'tumbling down', i.e. disinvestment in the land, or through using it for other cereal crops. As a result the ten most depressed counties listed above accounted for thirty-one per cent of the wheat acreage in Great Britain in 1874, and forty per cent in 1913. But one should not conclude that the south-eastern farmer was simply more set in his farming ways than his northern or Scottish counterpart. We must take account of the fact that the stiff clay soils of the main corn counties were costly to switch to other uses, and that lower rainfall in the south-east, while good for grain also limited the growth of grass. Nor was the slower shift out of grain in the south and east due entirely to greater adjustment costs. Since the decline in wheat acreage was accompanied by an increase in the average yield per acre, and by a tendency, though slight, for the dispersion in yields to narrow, it would seem that those counties which reduced acreage most were marginal wheat producers. So even if adjustment costs had been zero it is likely that acreage decline would have been less in the south-east.

Price trends and improving communications also affected the pattern of regional specialisation in livestock. Before steam navigation, most British cattle were brought to market by drovers, but the steamship and railway meant that animals could be sent direct to consumption points, quickly and without loss of condition. The change allowed some areas, previously too isolated, to concentrate on beef fattening (Perren 1978: chapter 2). Fattening gave way to dairying in those areas where the latter was an economic proposition, as in the south of England, though less so in Scotland and Wales (Orwin and Whetham 1971: 137, 358). Pig numbers increased by about fifteen per cent between the late 1860s and the First World War, but the increase was by no means universal. The pig population grew most in dairying and potato- and fruit-growing counties, where feed was relatively cheap and increasing in supply, but decreased markedly in most of Scotland, Wales, and the English Midlands. The result was

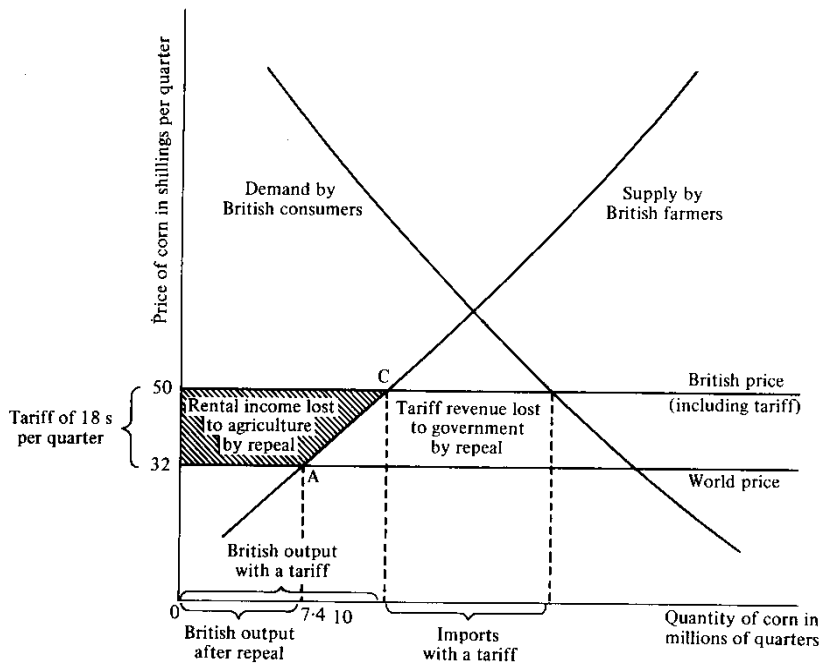
an increase in the coefficient of variation of pig numbers across counties from 0.98 in 1869/70 to 1.16 in 1909/10 – or from 0.57 to 0.71 for English counties alone. This is best interpreted as a move towards increasing specialisation by British farmers, as local markets merged into one national market.

Adjustment outside the south-east was less traumatic because soils were more adaptable. Indeed, it is likely that some mixed farming and dairying areas gained because of the decline in prices. This is because the relative fall in the cost of grain and other inputs decreased their feeding costs. Free trade and cheaper long-distance transport paradoxically improved their competitive position. Fletcher has argued that in Lancashire, milk producers could buy maize and oilcake for a third less at the end of the century than thirty years earlier, while prices of their output, milk, hardly dropped at all. The same can be said for poultry and pig farmers (Fletcher 1961b).

What of factor movements between regions? The migration of labourers has been examined in chapter 7, so only the migration of farmers is discussed here. The British land tenure system, at least in theory, encouraged an active land market and thereby mobility. A rent-maximising landlord would let to the group of tenants – presumably a shifting group – offering the highest prospective return on his property. In practice this did not generate much farmer mobility, however, particularly between regions. The post-1880 period marked the real beginning in Britain of a long-range migration of farmers within the agricultural sector. This migration was largely from the north and west to the south and east: contemporaries noted especially the influx into Essex and Suffolk from Scotland. The farmers moved largely because they were prepared to accept a lower return on their labour and capital than their southern and eastern counterparts. 'They and their families,' reported Assistant Commissioner Wilson Fox to the Royal Commission of 1894–97, 'work immensely hard. The Scotch women certainly undertake work which no Suffolk woman would dream of doing', while the men 'practically take the position of working foremen or bailiffs, being up in the morning when their men arrive and occupied with work connected with the farm after they leave at night' (Parliamentary Papers 1895: xvi, 67–8).

Free trade: agriculture and the consumer

In 1848, soon after the repeal of the Corn Laws, the free trade campaigner John Bright reminded fellow-members of the House of Commons that 'the industry of this great and growing population has escaped from the pressure of that screw, which, through the medium of the Corn Laws, you had laid upon the necessaries of life' (Bright 1869: 428). Yet the relative prosperity of the 'high farming' decades, and especially the buoyancy of corn prices, has led some to the conclusion that Corn Law repeal was of less economic than political import. Thus Kitson Clark has argued that 'the attack on the Corn Laws should not



8.1 The effects of free trade in corn

be considered for a moment as a clear demonstration of economic truth, nor even as a passionate statement of economic opinion, but more as an outpouring of social opinion, using a symbol or a myth as a catalyst' (1951: 3). The argument may be true, but the usual evidence for it is inconclusive. It neglects the unprecedented increase in corn imports that took place during the 1850s and the 1860s, a rise which the uncertainties of the 'sliding scale' and the attendant risks for corn exporters before repeal would almost certainly have made impossible. Indeed, in the decade before repeal, imports of corn accounted for only a twelfth of total consumption, while by 1869/71 they were almost half. The assertion that the price of corn would have been the same, repeal or no repeal, is therefore false (Fairlie 1969). The benefit to consumers, it is true, became more visible after 1879, when corn prices began to fall markedly. By 1888/92 domestic production of wheat had fallen to two fifths of consumption requirements: on the eve of the First World War the proportion was slightly over one fifth.

The question is, what were the quantitative effects of free trade in corn? Supply and demand curves offer a method of estimating the static gains and losses to British consumers and producers. The calculation is more limited than that of

chapter 3: there the question was the effect on the nation as a whole of free trade in all things; here it is the effect on farmers and corn consumers alone of free trade in corn, and in particular wheat. The corn market before repeal can be represented as the result of a tariff imposed on the world price of corn pushing the British price up, encouraging British farmers to supply more, and (incidentally) encouraging British consumers to demand less. This was the entire point of the tariff: to enrich agriculture at the expense of the rest of the nation.

In figure 8.1 the enrichment of agriculture is the shaded area, rental income lost (by repeal). Point *A* is the actual domestic output of wheat and its price after repeal. In 1888–92, for example, it was a quantity of 7.4 million quarters (of eight bushels each) selling for about 32 shillings a quarter. Point *C* cannot be observed from the historical data; it is the counterfactual output and price, i.e. the output and price that would have been observed had a tariff (of 18 shillings) brought the 1888–92 price back up to its pre-repeal level of about 50 shillings a quarter. We could estimate *C* if we knew the slope of the line from *A* to *C*. We do not know it, but we can make a reasonable guess (in the light of the results given above, p. 182) that it was roughly the slope corresponding to unit elasticity, i.e. that the supply curve was roughly a ray through *A* and the origin, *O*. In such a case domestic output would, under a tariff, go up in proportion to the rise in price, namely, in the proportion 50 to 32. The actual domestic output of 7.4 million quarters of wheat would therefore have been 7.4 multiplied by 50/32, or 11.6 million quarters. Now it is a simple exercise to find the area of the trapezoid: its height (18 shillings per quarter) multiplied by the average of its lengths (7.4 and 11.6 million quarters), or

$$(18 \text{ shillings per quarter}) \times \left(\frac{7.4 \times 11.6}{2} \text{ million quarters} \right) = 171 \text{ million shillings,}$$

or £8.55 millions. This figure is some 5 per cent or so of all agricultural income in 1888–92, or well below 1 per cent of national income. What producers gained, consumers lost, at least approximately – the other large element of the consumers' loss was the government's revenue from the tariff, but presumably a rise in government revenue on this account would have been offset by lower taxes imposed on consumers at some other juncture. In accord with the findings in chapter 3, the transfer to agricultural producers through the tariff seems small. The view that free trade in corn was a symbol rather than a revolution in the economic life of the nation has much to recommend it.

The transfer from consumers to producers was not the only issue in commercial policy, especially in the early years of the twentieth century. The United Kingdom became increasingly dependent on food imports after repeal. While repeal itself and population growth was largely responsible for this, the role of technical developments in transport and storage should not be forgotten. Half the price reduction in American wheat was due to lower freight charges, while new cold storage and refrigeration techniques allowed the importation of frozen meat and

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New Zealand butter from the early 1880s on. By 1910–14 consumers relied on imports for the greater part of their bread, butter, cheese, and fruit, as well as for forty per cent of their meat and a third of their eggs. Not surprisingly, agricultural protectionists increasingly returned to home truths in the style of Adam Smith about defence being of more importance than opulence. They warned against the dangers of 'a hostile combination of European nations' starving Great Britain into submission, arguing in effect that the gains from free trade were rapidly diminishing as the probability of open conflict increased. The cost of such an insurance policy of self-sufficiency in grain, however, would have been substantial. And the silliness of such a policy – plain to all except some farm lobbyists – was underlined by a member of parliament who pointed out that self-sufficiency for insurance amounted to assuming that Britain 'was going to be at war with all the nations of the world for ever' (Hansard 1902 (CI): 1160). Government policy was to rely instead on a strong navy to meet any potential blockade, and on the substitution possibilities within the economy itself to increase domestic food-supplies in the short run, if necessary. In the event, this policy was vindicated when war did come in 1914 (Olson 1963).

Conclusion

By 1914, Great Britain relied on imports for more than half its food. Its agricultural labour force, which peaked in 1861 or thereabouts, declined almost continuously after then, as did agriculture's share in GNP. No other country experienced such a transformation during the nineteenth century (chapter 1). The change was naturally not without trauma: for farmers who relied on cereals for most of their income, these were trying decades. For them there was a 'Great Depression' in terms of farm incomes, though for others the picture was much less bleak. Moreover, British agriculture performed badly in the face of foreign competition, judged at least by its very slow total factor productivity growth. We have suggested that slow responses within agriculture itself were less to blame for 'decline', than the gradualness with which the farm population reconciled itself to a reduction in numbers. Between 1860 and 1914 the number of farmers dropped by ten per cent, but all this drop occurred before 1881. Evidently for every farmer who died or moved out of agriculture, there was a son – or a Scotsman – to replace him. Contemporaries argued that many farmers 'were dipped too deep to move', while others remained on in the hope of getting 'a reasonable amount of their capital back' (Bellerby 1956: 65). A more important reason surely is that the psychic income element in British farming was large, and stemmed the outward flow before the First World War. A more substantial fall in the farm population would undoubtedly have meant lower domestic agricultural output, and probably some of the most marginal land going out of cultivation. On the other hand, it would have meant a more efficient use of resources, and therefore a higher productivity growth over the period.