

3 European farmers and the British 'agricultural revolution'

James Simpson

Indebted in great part to Arthur Young, the traditional view of European agriculture over the long eighteenth century sees rapid technological and institutional changes taking place in England, but stagnation on the continent. Both these views have been challenged over the past decade or two. Today the concept of an 'agricultural revolution' in England is rejected by some historians, and others have questioned the contribution to productivity growth of the well-known technical and institutional changes that took place. Likewise most French historians now reject the idea of a '*société immobile*' and argue that if change was slow, there were usually good economic reasons to continue using traditional farming systems and technology. Despite this change of emphasis, even the most revisionist historians have not challenged the idea that a significant productivity gap existed between Britain and other leading European economies in 1815.¹ This paper tries to suggest a few reasons why this gap existed. The first section examines briefly the recent literature on long-run agrarian change in several European countries. I argue that incentives for investment in British agriculture were considerably more favourable than in most other countries in the period 1650 and 1750. The rest of the paper considers a number of areas where British agriculture developed along different lines to that of two major European economies, namely France and Spain. Section 2 looks at livestock specialisation, section 3 at the opportunities for labour-intensive farming during this period of population growth, and section 4 the restrictions to changes in land use because of the nature of property ownership. I argue that population growth, urbanisation and falling transport prices encouraged farmers everywhere to increase output, but that the large, capital-intensive farms in England (and northern France) were more efficient in utilising factor inputs than either the small

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¹ Clark, for example, believes that although productivity growth in Britain was minimal in the seventeenth and eighteenth centuries, it was still a third greater than its nearest competitor in 1850. Clark, 1999: table 4.2.

family farms which were widespread in continental Europe, or the large estates in the Mediterranean.

1 Demographic change, urbanisation and agricultural specialisation

English agriculture was both distinctive and more productive than that found in other European countries. In 1815 about two-thirds of the active population was still employed in agriculture in most countries, but in England the figure was only 55 per cent in 1700 and less than 25 per cent in 1851.² Between these two dates the numbers employed in farming remained stable at about 1.5 million, although total population grew from five to almost seventeen millions.³ Farm labour was also more productive. Crafts has estimated that, whereas in England in 1840 there was no sectorial gap between agriculture and the rest of its economy, the European 'norm' at similar levels of per capita income was for farm labour productivity to be only half as productive as the rest of the economy.⁴ Although wheat yields perhaps were not significantly higher in England than elsewhere in northern Europe (Allen, 1988: 117; Allen and Ó'Gráda, 1988), table 3.1 suggests that labour productivity was at least a third greater in the early nineteenth century. Recent estimates by Allen show labour productivity in English agriculture in 1600 as being similar to other countries but, with the exception of the Netherlands, the experience over the next couple of centuries was very different (Allen, 2000: figure 1). Therefore even if growth was slow over the period 1680–1815, English agriculture performed considerably better than most other European countries.

However it would be a mistake to believe that major changes in agricultural practices or productivity growth were totally absent elsewhere. According to Hoffman's calculations, although French agriculture stagnated between 1500 and 1789, there were considerable differences across regions and over time,⁵ with labour productivity increasing during fifteen of the thirty-one periods, but declining in the rest.

² The 1700 figure is given in Wrigley, 1985: table 4 and refers to England. The 1851 figure is for Britain (Crafts, 1985: table 3.4). The Netherlands is the major exception, with 45 per cent in 1850 (de Vries and Van der Woude, 1997: 524).

³ Allen, 1994: table 5.3. Clark (1999: 209) argues that there was a small increase from 0.9 to 1.1 million workers. For population, Wrigley and Schofield, 1981: 208–9.

⁴ Crafts, 1984: table 2. Figures refer to male labour in agriculture and extractive industries.

⁵ His upper bound figure for annual TFP is +0.12 per cent a year and the lower bound –0.08 per cent. In the eighteenth century the range was between +0.19 and +0.04 per cent (Hoffman, 1996: table 4.9).

Table 3.1 *Indicators of European agricultural performance, 1800–1910*

	Net output – calories per male worker (Britain ¹ 1800 = 100)	Output per worker (Britain 1851 = 100)	Output per male worker (Britain ¹ 1910 = 100)	Output per acre (Britain 1851 = 100)	Total productivity (Britain 1851 = 100)
Britain	100	100	100	100	100
Netherlands	51	54	69	94	76
Belgium	40	37		122	73
Ireland		47		78	67
France	37	44	62	82	66
Germany	37	42	89	56	56
Austria	28 ²	32		54	50
Sweden	24	37		45	49
Italy	28		34		
Spain	24		24		

¹Figures for Britain have been obtained by multiplying the United Kingdom estimate by 1.33.

²Refers to Austria-Hungary.

Sources: Column 1: Bairoch, 1989: table 6; columns 2, 4 and 5: Clark, 1999: table 4.2; and column 3: O'Brien and Prados de la Escosura, 1992: table 6.

In pre-industrial Europe, demographic growth was a major stimulus to agricultural change (Boserup, 1965). Because a very high proportion of food consumption was produced domestically,⁶ changing population densities altered the relative prices of land and labour. Changing relative prices in turn influenced farm organisation and product mix, and the demand for technological and institutional change. In the sixteenth century, growing population in Europe increased the demand for bread cereals and encouraged a greater specialisation in their production. As Boserup argues, population growth encouraged farmers to work their land more intensively, with natural pastures being turned to arable and cereal rotations shortened. In the sixteenth century the larger population needed an expansion of agricultural output but, because labour inputs increased faster than output, productivity fell.

After a slow growth or stagnation in the first half of our period, there was an unprecedented growth in population in the second half of the eighteenth century (table 3.2). However, even before this, contemporaries in various European countries already believed that English agriculture

⁶ Most recently Allen, 2000: 13–18. The importance of Europe's 'Ghost acreage' increased over the period (Jones, 1981: chapter 4). Both Wrigley (1988) and Clark (1999: 233–4) stress the decline of domestic agriculture as a supply of raw materials and energy.

Table 3.2 *Population growth and urbanisation in select European countries*

	1600	1700	1750	1850
England and Wales	4.3	5.8	6.0	18.0
France	18.5	22.0	24.0	36.0
Netherlands	1.5	2.0	2.0	3.0
Germany	12.0	13.0	15.0	27.0
Italy	12.0	13.0	15.0	25.0
Spain	8.5	8.0	9.5	15.0
London	200	575	675	2685
Paris	220	510	576	1053
Naples	281	216	305	449
Madrid	49	110	109	281

Population of countries in millions and cities in thousands.

Sources: McEvedy and Jones, 1978: 41–119; de Vries, 1984: appendix 1; Mitchell, 1975: 76–8.

was significantly more advanced than their own. Space does not permit a detailed discussion of the changes that were taking place, but they are in any case well known. The planting of legumes increased the nitrogen content of the soil, produced more fodder for animals and reduced the area of unsown fallow. Root crops allowed more livestock to survive the winter months, leading to larger herds. Large numbers of animals produced greater quantities of manure which, with their better integration with the arable, increased crop yields.⁷ Finally, by enclosing common land and the open fields, English landowners were able to establish large, compact farms.

The work of Eric Jones and Bob Allen, amongst others, suggest that English agriculture followed a very different trajectory to most European countries in the century between 1650 and 1750. As population pressures eased, a combination of low wheat prices and high real wages depressed agricultural investment, as many farmers found it difficult to switch into other crops or specialise in livestock. However, English farmers appear to have suffered less than their European neighbours for three reasons. First, wheat prices fell by less (table 3.3). Stronger wheat prices in England were the result of state intervention that protected farmers

⁷ That some of these options had been known in previous periods is also not in dispute as 'new' crops and farming methods appear to have advanced and retreated over the centuries. See especially Ambrosoli, 1997 and Thirsk, 1997. Grantham (1999: 212) argues 'that by 1300 farmers in the more intensively cultivated districts of Europe were sowing up to 25 and perhaps even up to 40 per cent of arable in bean, peas and vetch'.

Table 3.3 *Trends in European wheat prices, 1620s–1820s; 1601–50 for each country is equal to 100*

	England	France	Italy	Belgium	Spain
1620s	104	113	127	107	102
1630s	106	112	92	120	91
1640s	119	105	89	121	100
1650s	101	107	61	105	111
1660s	100	94	54	91	100
1670s	104	73	66	98	75
1680s	81	65	48	77	73
1690s	120	92	53	116	55
1700s	89	77	57	93	68
1710s	96	66	50	74	45
1720s	89	60	39	59	42
1730s	80	64	54	63	57
1740s	72	54	58	67	40
1750s	93	62	57	61	52
1760s	106	68	59	70	88
1770s	110	79	73	73	84
1780s	115	84	79	83	87
1790s	153	96	97		110
1800s	202	105	110		
1810s	210	130	116		
1820s	143	97	72		
Decade when prices lowest	1740s	1740s	1720s	1720s	1740s
Number of decades lower than 76% of the 1601–50 price level	1	8	14	7	9
Average silver price 1661–1760 in grams/ 100 kilos	96.6	78.0	64.6	78.3	98.1
Index. England = 100	100	81	67	81	102

Prices have been calculated in grams of silver per 100 kilos.

Sources: Abel, 1966. For Spain (Castilla la Nueva) Hamilton, in Feliu, 1991: table III.6. See also Lindert, 1991: table 2.4.

rather than consumers, as was the case elsewhere in Europe (Lindert, 1991). In the 1740s, which was the worst decade for English farmers, prices were 72 per cent of the 1601–50 average, which was significantly above the lowest level found in Belgium (59 per cent in the 1720s), France (54 per cent in the 1740s), Spain (40 per cent in the 1740s), or Italy (39 per cent in the 1720s).⁸ In only one decade, that of the 1740s did prices fall below 76 per cent of the 1601–50 average, compared to seven

⁸ If Bowden's price index is used instead (1985: 812–31), the minimum for the 1740s is slightly higher at about 76 per cent.

decades in Belgium, eight in France, nine in Spain and fourteen in Italy. High grain prices encouraged investment in enclosures, farm buildings, livestock, fencing, drainage, etc., even if this might have had an adverse effect on industrial growth.⁹ A second factor was the relative decline in the farm population from 60 per cent of the total in 1670 to 46 per cent in 1750, which increased the number of people dependent on markets for their food, and therefore encouraged specialisation. By contrast, in France the numbers occupied in agriculture fell from 69 per cent to 61 per cent over the longer period 1600–1750.¹⁰ Finally this movement of labour out of agriculture in England was also accompanied by an 80 per cent increase in the urban population between 1670 and 1750 (calculated from Wrigley, 1985: table 3.4). Urban markets allowed farmers access to a concentration of consumers, which in turn reduced transport and transaction costs. Furthermore, the concentration of high-income consumers in the largest cities gave farmers a major incentive to specialise in commodities whose income elasticities of demand were higher than wheat.¹¹ Per capita meat consumption in capital cities, for example, was often two or three times the national average.¹² By contrast, demand conditions in France, for example, did not encourage significant livestock specialisation until the 1840s (Grantham, 1978: 331). As a result, Kussmaul has argued for a ‘once and for all’ increase in productivity in England brought about by regional specialisation, which she claims was largely ‘won’ by the end of the seventeenth century.¹³ One feature of this specialisation was the appearance of ‘new crops’ in England, such as woad, madder, hemp, flax, rape seed, saffron or hops, which were intensive in the use of labour and provided farmers with greater employment throughout the year.¹⁴

⁹ O’Brien (1985: 777–8) argues that terms of trade favoured industry between 1635 and 1705, were stable between 1705 and 1745, and then between 1750 and 1815 net barter terms of trade ‘moved decisively against industry’.

¹⁰ Wrigley, 1985: tables 4, 8 and 9. Over the period 1600–1750, England declined 24 percentage points (from 70 per cent to 46 per cent), three times more than France. By contrast, between 1650 and 1750 the figure in the Dutch Republic stagnated at about 43 per cent.

¹¹ Smith, (1776) 1976: book 3, chapter 4. Major studies include Fisher, 1935 and Wrigley, 1967, for London, Grantham, 1989 for Paris and Ringrose, 1983, for Madrid. Even so, the income elasticity for dairy products among the rural poor in 1787–96 was 0.97, meat 0.87 and grains only 0.34 (Clark *et al.*, 1995: table 3).

¹² In France in the 1840s national consumption was around 20 kilos per person compared to 60–75 kilos in Paris (Grantham, 1978: 334).

¹³ Kussmaul, 1990: 111. See also Grantham, 1991. Hoffman (1996: 183) claims that falling transport costs explain ‘much of early modern productivity growth, not just in France, but in Germany and England as well’.

¹⁴ Thirsk, 1997: 36–8. Output remained relatively small, however. Gregory King in the 1690s estimated the contribution of industrial crops, fruit, vegetables and garden produce as about 9 per cent of total agricultural production (cited in Thirsk, 1997: 70).

In Europe, both the growth in urbanisation and the drift away from agriculture was slower than in England (or the Dutch Republic), thereby reducing the role of the market in allocating food supplies and farm specialisation. This, together with low farm prices for cereals, provides a noted contrast between the growing intensification and specialisation in England and *la grande malaise* in French agriculture during the period 1660–1740. Furthermore, and unlike the sixteenth century, growth in output was now achieved through higher levels of capital investment per acre and per worker (O'Brien, 1985: 779).

With the upturn in farm prices from the mid-eighteenth century there were incentives for farmers everywhere to invest heavily once more. This interest is reflected in the leading works on British agronomy being translated, and the ideas contained in many more being summarised and divulged in different languages, leading Voltaire to remark that although 'useful books were written about farming, everybody read them except farmers'.¹⁵ Although demand-side changes are essential for understanding the diversity of change in European agriculture in this period, the supply elasticities of the sector also differed significantly between countries. We shall now consider a number of these differences, not in an attempt to highlight British 'superiority', but rather to understand better why demand-side changes were more likely to lead to increased productivity in that country compared with France or Spain.

2 Livestock specialisation

As Patrick O'Brien and others have stressed, English farmers had perhaps two-thirds as much animal power per worker as their French counterparts in 1800.¹⁶ There are problems in these types of calculations, especially if they are to be pushed back into the eighteenth century. Not only is it difficult to determine herd size, but it is almost impossible to know when farm animals were kept primarily for farm work, rather than for their meat or dairy produce.¹⁷ In traditional agriculture with weak market integration, animals were used for a variety of different functions, which made it difficult to improve breeds. However, by the eighteenth century animal specialisation in Britain had advanced significantly, allowing horsebreeders to concentrate on improving animals for work, and livestock

¹⁵ Cited in Blum, 1978: 248. For the influence of English farming methods in France, see especially Bourde 1967 and 1953; for Spain, García Sanz, 1974.

¹⁶ O'Brien and Keyder, 1978: 115–9, O'Brien, 1996: 221–2 and Wrigley, 1991: 326–30.

¹⁷ Toutain (1992: 11, p. 224), for example, gives 2.8 million horses and 1.4 million oxen for French agriculture in 1892, compared to 1.3 and 1.4 million by O'Brien and Keyder (1978: table 5.5). This difference is sufficient to remove the supposed energy gap present on French farms.

Table 3.4 *Agricultural output by major products*

		Crops	Livestock	Total	% livestock products
England and Wales	1700	19	21	40	53%
	1750	25	34	59	58%
	1800	37	51	88	58%
	1850	56	79	135	59%
UK	1910				75%
Ireland	1850–4	19.3	14.1	33.4	42%
	1910–4	8.0	40.7	48.7	84%
France	1852	5779	2715	8494	32%
	1910				45%
Germany	1910				66%
Italy	1910				32%
Spain	1850				26%
	1910				32%
Portugal	1850				35%
Denmark	1850				46%
Sweden	1850				47%
Norway	1850				51%

Notes:

Unless otherwise stated, figures are in English £millions for *c.* 1850.

Figures for 1910, with the exception of Ireland, are final agricultural output. O'Brien and Prados de la Escosura, 1992: table 3.

England: Allen, 1994: table 5.1. Figures refer to 'principal commodities' and prices to 1815.

Ireland: final agricultural output. Turner, 1996: table 4.2.

France: Demonet, 1990: table 13, in millions of francs.

Denmark, Norway, Sweden, Portugal and Spain: Reis, 2000: table 2.3.

breeders for the production of milk or meat, and helps explain the greater importance of livestock in farm output compared to most other countries (table 3.4).

Important as the level of demand and market integration are in explaining different livestock densities in countries, they were not the only explanations. Animal husbandry might be profitable, but it was risky investment for those with little capital.¹⁸ A farmer making the investment of about £3 for a young cow, the equivalent of two months' wages, could expect an annual gross income of about £5 in the 1730s.¹⁹ However, there

¹⁸ Bowden (1985: 102–17) calculates an annual return on investment of 23 per cent on his notional farm of 100 acres in south Devon in the 1730s and 1740s, with costs including £99 for rent and maintenance, £86.5 for purchasing twenty bullocks for fattening and £34 for labour.

¹⁹ Bowden, 1985: 102–11. Land and labour were the major expenses to be subtracted from this figure.

were three problems facing small farmers who wanted to own livestock, namely the cost of farm animals, credit constraints and the high element of risk involved in losing animals through disease (Dercon, 1998). It is not surprising therefore that if some smallholders owned only one or two animals, many others had to depend on formal and informal rental markets for the use of draft animals for ploughing. The highly seasonal demand of farm work led to the overwork of animals and inferior-quality ploughing, making the poor-quality animals one of the more visible signs of backward agriculture for contemporaries. This was especially true of Europe south of Poitou, where the possibility of growing spring cereals was limited because of summer droughts, and where the obstacles to increasing farm animals were the shortages of summer, rather than winter, fodder as in the north.²⁰ In conclusion, one explanation for the high cereal yields in early nineteenth-century England was that the country's large, wealthier farmers were better able to substitute 'animals for manpower and fertiliser for land' (Young, 1929: 286; O'Brien, 1985: 779).

But large-scale livestock farming was also present in continental Europe. In central and southern Spain, for example, the very low population densities had for centuries been ideal for extensive sheep farming, and the low cereal prices until the 1750s encouraged a recovery in flocks from about 1.6 million sheep in the early 1630s to over 4 million in the 1740s (Phillips and Phillips, 1997: 293–4). From the mid-eighteenth century the combination of growing exports and rising population drove up both wool and grain prices, and led to a further increase in the number of sheep. There were important economies of scale in the organisation of livestock, which were achieved at different levels. First, as winter and summer pastures were separated by a distance of up to 500 miles, a legal authority and supervisory body (the Mesta) was required to organise the movement of sheep and the allocation of pastures (Nugent and Sanchez, 1989; García Sanz, 1994). Second, the movement of sheep and sale of wool over large distances in areas of very low population density created its own problems of organisation, which favoured large owners. The monasteries of El Paular and Guadalupe, for example, each owned 30,000 sheep in the mid-eighteenth century (Dillon, cited in Phillips and Phillips, 1997: 329). Finally, the optimal flock size appears to have been between 1,000 and 1,500 animals, which employed five shepherds (Phillips and Phillips, 1997: 103 and 125).

The Mesta, and some of the other transhumant organisations in the Mediterranean, are good examples of the benefits to be achieved from specialisation and scale in ranching activities (Carrier, 1932; Moriceau,

²⁰ This division is given in Bloch, 1966: 31. However, the lighter soils of southern Europe partly compensated the much lower densities of work animals.

1999: chapter 5). Although most of the sheep's manure was 'lost' because it fell on uncultivated land, Spain's low population densities allowed extensive crop rotations, thereby preserving crop yields.²¹ Therefore, if the regions bordering the North Sea witnessed a growing intensity of cultivation and higher cereal yields in response to population growth, large areas of the Iberian Peninsula and southern Italy saw few changes in yields, but a significant increase in the area cultivated.²² Was this difference important? On the one hand it clearly was not, as farmers responded to different sets of factor endowments. But productivity in Spanish sheep farming, whether measured by wool output per animal, or area of grazing required per animal, probably changed little over the period. Supply instead was adjusted by changing the number of animals and area used. Only from the mid-eighteenth century, when more land could not be easily brought under plough, did the Mesta and other institutions of the *ancien régime* begin to appear to contemporaries as a serious barrier to future growth. By contrast, conflicts between livestock and arable farmers in Britain were largely absent, and the relative importance of the former was maintained after 1750, in spite of the country's growing population (table 3.4). Not only was livestock better integrated with arable than in most other countries, but the rearing of young animals often took place in the less densely settled parts of Britain, where land was cheaper. Furthermore, while London and increasingly the northern industrial cities encouraged dairy farming and livestock specialisation, the growing imports of food and beverages discouraged the widespread conversion of pasture to arable.

3 Farm size and labour-intensive farming

Arthur Young believed that England's comparative advantage lay in the size of its farms and level of capital investment. Despite the absence of statistics before the late nineteenth century, there is little doubt that land ownership was much more heavily concentrated in England compared to most western European countries (Lindert, 1987), and a sizeable part of the land was rented in large farms and on long leases, supposedly encouraging capital accumulation. Yet in the eighteenth century there were limited economies of scale in agriculture, and the use of wage labour

²¹ By the late eighteenth century the Mesta controlled five million animals (García Sanz, 1994). By contrast, the smaller transhumant flocks of southern Italy were more integrated with the arable (Marino, 1988), as were the local village flocks in Spain which numbered eight million sheep in the late eighteenth century.

²² Elsewhere the addition to cultivated land was relatively small. In France, for example, the area of land in crops, forage and fallow increased from 23.1 to 23.9 million hectares between 1700/10 and 1781/90 (Blum, 1978: 253).

created potential problems of moral hazard and work incentives. In addition, under-employed family labour on small farms could be used to accumulate capital assets by collecting and spreading manure, digging drainage or irrigation ditches, improving fences, hedges or walls, constructing and mending farm buildings, planting olives, fruit trees and vines. The supposed advantages associated with large farms therefore need some explanations.

At the beginning of our period cereals were the major crop for most European farmers, and bread the basic element in most diets. For the small, family farmer, cereal cultivation had a major disadvantage in that labour requirements were relatively small, leading to under-employment. The growth in population, especially after 1750, encouraged an intensification of cultivation, and as Le Roy Ladurie (1976: 56–7) has noted, the 'classic response of Mediterranean agriculture' was to plant trees or vines on old or new assarts, thereby increasing the returns from agriculture by more intensive forms of land utilisation. In viticulture, entry costs for small growers were low, plough teams were not essential and the best wines were often produced on land that was marginal to cereals. The period 1688 and 1815 saw some major developments in wine-making techniques, with the leading Bordeaux châteaux establishing their reputations. The draining of the Médoc in the mid-seventeenth century greatly improved the possibilities for viticulture, and the use of cylindrical bottles and corks allowed the best wines to be matured in bottles (Pijassou, 1980). In Portugal, the 1703 Methuen treaty encouraged merchants to find a suitable wine for the British market, which was achieved by adding brandy during, rather than after, the fermentation (Francis, 1972: 205–6). Growers and wine-makers showed the same sort of ingenuity in adapting products to suit market conditions as British farmers.²³ Yet these are isolated examples. The poor keeping quality of most wines, high transport costs and high level of taxation everywhere limited the possibility for European farmers to utilise labour more intensively and obtain productivity gains through market specialisation in wine (Simpson, 1995).²⁴

In fact, except in those areas especially blessed with good communications or close to urban areas, the presence of small, family-operated farms severely limited the incentives to specialisation. Weak factor and product markets encouraged small farmers to diversify output, rather than risk

²³ Indeed, many of the pioneers were of British origin, as 'many viticultural communities remained passively dependent on external initiatives for marketing and financing their wine trade' (Brennan, 1997: xii).

²⁴ Though viticulture contributed 24 per cent of final agricultural output in Aquitaine in 1840, and 22 per cent in the Languedoc and 20 per cent in Poitou-Charentes, for France as a whole it was only 10 per cent of final agricultural output (Toutain, 1992: 11, table 2.35A).

crop failure. Even a small rise in the price of wheat created 'misery' for the 'lower classes',²⁵ forcing a reduction in their savings and on occasions the sale of animals and other capital items. As a result, French agronomists showed considerably more interest than their English counterparts in the potato, a crop especially suitable for small farmers in a poor economy with poor communications.²⁶ Elsewhere, risk was reduced using sharecropping contracts. For Arthur Young (1929: 298) it was the poverty of so many small farmers that explained the widespread use of sharecropping contracts (*métayage*) in France because, if the landlord did not stock the farm, it would not have been 'stocked at all'. Sharecropping therefore was a consequence, not a cause, of rural poverty.²⁷ But if sharecropping and potatoes were efficient for small producers during a period of strong population growth when formal capital and insurance markets were weak, they were unlikely to lead to productivity growth. Indeed, the poverty of many European farmers implied that large areas of land were cultivated under sub-optimal conditions.

Finally, labour market organisation suggests that the lower transaction costs associated with small family farms were in fact also enjoyed by English farmers. In 1700, the English agricultural workforce consisted of family labour 'supplemented by young adults in their late teens and early twenties hired on annual contracts as servants'.²⁸ The paternalistic nature of these labour contracts helped reduce problems of moral hazard, and provided incentives for good work. As labour was recruited on annual contracts, large farmers also used the slack periods of the year to create capital assets as small family farmers did. A major difference did exist, however, with the large farms or *latifundios* of southern Europe, where the highly seasonal demand for agricultural labour discouraged the use of annual contracts except for those working with livestock (Bernal, 1988). Instead, most workers were recruited by the day or the task, and labourers lived in the towns rather than on the farms, discouraging the use of off-peak labour for farm improvements.²⁹ Labour was not necessarily unemployed the rest of the year, as there were opportunities for employment in construction, transport, farm maintenance and rural industry. However, seasonal unemployment was much greater in southern Europe than in the north, and it was the inability of farmers to be able to devote more

²⁵ Young, 1929: 278. Fogel (1991: 46–7) estimates that 20 per cent of the French had insufficient energy to do more than three hours of light work daily. At the same time, they were often unable to benefit when prices were high (Persson, 1999: chapter 1).

²⁶ See, however, Hoffman and Mokyr, 1984.

²⁷ Hoffman (1996: 69) makes the same point.

²⁸ Allen, 1994: 106. See especially Kussmaul, 1981.

²⁹ By the late nineteenth century farm labour was only employed for about half the year in southern Spain (Carmona and Simpson, 2003: chapter 3).

of their resources to labour-intensive agriculture which helps explain a major cause of the productivity gap found in table 3.1.³⁰

4 Land ownership and farm organisation

Changes in relative prices reduced the efficiency of traditional farming practices, and encouraged change. One area where this occurred, and which has been controversial for both contemporaries and economic historians, is the nature of land ownership in the *ancien régime*, and in particular the enclosure of open fields and common land.

Recent research has questioned the high level of profitability and the contribution to productivity growth of common fields in England, and instead has emphasised its impact on income distribution, with the large, enclosing landowners gaining at the expense of farmers who lost their land in the open fields and rights to common land (Allen, 1992; Humphries, 1990). An induced model of institutional change would suggest that land was only enclosed when it became sufficiently profitable to do so (Crafts, 1977a; McCloskey, 1975; Clark, 1998). Interest in enclosing appears to have grown with greater livestock specialisation, and hence the need to improve and control grazing, and during periods of high grain prices.³¹ A recent estimate suggests that perhaps 45 per cent of England had been enclosed by 1550, and 75 per cent by 1760. A further 19 per cent was enclosed by Acts of Parliament over the period 1760 and 1914.³² Although the area of unenclosed land in 1750 probably contained a greater share of the nation's arable and agricultural population than these figures suggest, most land had already been enclosed before the age of Parliamentary Enclosure.³³ An Act of Parliament reduced the high transaction costs involved in achieving voluntary agreements which had undoubtedly delayed enclosure in some areas. Resistance to enclosure by villagers was sometimes significant but, because enclosure stretched over several centuries, conflicts tended to be localised.³⁴ Indeed, *if* there

³⁰ Reis (2000: 26–7) also makes this point, by noting the greater importance of livestock farming in northern Europe.

³¹ Overton, 1996: 147–67. See, for example, Wordie, 1983: 492, footnote 23 for the pre-1520 period, and Prince, 1989: 48–9 for the eighteenth century.

³² Wordie, 1983: 501–2. Over 4,000 Acts were granted between 1750 and 1850, with nearly three-quarters occurring in the periods 1764–80 and 1875–15 (Chambers and Mingay, 1966: 77–9).

³³ Perhaps 21 per cent of the nation was enclosed by Act of Parliament between 1750 and 1820, covering 30 per cent of agricultural land (Neeson, 1993: 329).

³⁴ If prior to the 1620s there had been official resistance to enclosing, the period from the mid-seventeenth century to the 1790s saw the development of 'a public argument in favour of enclosure even when it *did* cause local distress' (Neeson, 1993: 19, emphasis in the original). See also Thirsk, 1967: 213–38.

of pastures and the refusal of many farmers to pay tithes to the Church producing widespread invasions of common property, the ploughing-up during the Napoleonic Wars, encouraged a 'revolution from below', for example, the political and military upheavals at the turn of the century, and with it incentives for small farmers to increase output. In Spain, nobility and the Church. Violence was often redemptive to change owner-tioned, there was also a high concentration of property in the hands of the areas of land with common rights of various descriptions already men- that took place between the 1780s and 1820s. In addition to the large nology. One explanation for this was the changes to property ownership were fed with apparent ease, and with no obvious improvements in tech- for small farmers. By contrast, the larger populations found after 1820 by widespread complaints of 'land hunger, and restricted access to land relatively low population densities in parts of Europe were accompanied Another feature in agriculture in the late eighteenth century was that enclosures (Young, 1929: 291).

tives to specialise which was a determining factor in the speed of French of all enclosed land seems to suggest that it was the weakness of incen- ing practices were no different on unenclosed land than on nine-tenths, (Grantham, 1980). Indeed, Young's observation in the 1780s that farm- in the profitability of enclosures' remained weak in France until the 1830s gests that the stimulus given to livestock specialisation, a major element remained important much later than in England. Another argument sug- the insurance that the dispersion of holdings in the open fields provided other possibilities. First, given the much smaller size of farms in France, perhaps were lost in the post-war depression. However, there are two which enclosure should have produced once they eventually took place This suggests much less institutional flexibility, and the significant profits easy to give all common property rights to villages, (Rosenthal, 1992: 18).

the Revolution the seigniors lost their political power, so it 'was relatively Heath, 1994: 48-58; Hoffman, 1988; Rosenthal, 1992: chapter 2). After that encouraged opportunistic behaviour by a few farmers (O'Brien and opposition of the crown and the peasantry, together with a legal system tion was the supposed higher transaction costs, caused by the combined enclosing land. One argument for the delay in France before the Revolu- However, in most other countries there was a significant delay in from enclosing after 1760, suggests reasonably flexible institutions.

to have produced significant profits. Instead, the considerable number that the subsequent enclosure of the land under an Act of Parliament opportunistic behaviour of a few farmers, then we would have expected had been widespread institutional 'inertia', caused, for example, by the

(Fontana 1985: 224; Llopis, 1983: 143–4; García Sanz, 1985: 24–7). These gains were then consolidated and extended by the legal changes associated with the 'Liberal Land Reforms' in the nineteenth century, which allowed farmers to shift resources more easily between crops in response to market signals, and thereby increase output without having to change traditional technologies. Similar changes took place elsewhere in continental Europe.

But why did the large landowners in the eighteenth century not convert pasture to cereals more quickly if wheat prices were increasing (table 3.3)? We can advance two reasons. First, because of common property, livestock ownership was often distinct from that of the land on which they grazed. In France, for example, 'seigniors had the right to claim as their own one-third and sometimes two-thirds of the commons, and even to seize all of it if the villagers' rights were based only on prescription and long usage instead of specific title'.³⁵ Rising livestock prices during the century encouraged large graziers to control the large areas of municipal 'common' pastures for their own animals.³⁶ Whatever the level of wheat prices, these graziers would still have had incentives to protect 'their pastures'. In Spain, the opposition of large flock owners was sufficient to limit cultivation by small farmers on the common land, despite the support that these had from the crown after 1766 (Sánchez Salazar, 1988).

If this helps explain why common land was not converted more often to cereal production, why did large landowners not take advantage of rising land values to rent *their own land* to small farmers to cultivate? In the first instance, the potentially higher rents which landowners might have received by renting to large numbers of small tenants ignores the greater transaction costs caused by the need for a more efficient administration (Llopis, 1989: 279–82). In addition, the highly volatile prices in this period significantly increased the risks of small farmers being unable to pay their rents in some years. Indeed, the rise in rents is itself a reflection of the attempts by landowners to protect their incomes in the face of default by some. In turn the high rents and major price fluctuations made it difficult for small farmers to accumulate resources, especially livestock, and explains over-cultivation and declining cereal yields in the late eighteenth century. An even more pessimistic interpretation is that small farmers made little attempt to increase output, believing that a greater surplus would simply be appropriated by the state or seigniors (Blum,

³⁵ Blum, 1978: 148. Rosenthal (1992: 16) by contrast claims that common land 'was frequently in a state of well-defined use and poorly defined ownership'.

³⁶ For Spain, and especially Extremadura, Llopis, 1989: 282–6. For France, Hoffman, 1996: chapter 2.

1978: 119). In general, market conditions before about 1820 encouraged Europe's landowners to look for large, prosperous tenants to farm their land, thereby reducing the risks of unpaid rents.

The growth in per capita food consumption in Europe in the early nineteenth century was partly caused by changes in land ownership. In particular the Church lost virtually all of its land, tithes were abolished and common land sold. More efficient commodity markets were produced by the decline in internal market regulations throughout Europe, and transport improvements. However, changes in relative prices perhaps also need to be considered. Landowners after 1820 faced lower commodity prices and higher real wages, conditions that favoured renting their land to small farmers, and thereby encouraging a more intensive cultivation. But while these conditions in many areas of Europe encouraged labourers to stay in farming because of improved access to land, in England farmers tried to cut labour costs by mechanisation (Hobsbawm and Rudé, 1985).

Conclusion

Although the advantages of the large capitalist farmers which had impressed Arthur Young and some of his English and European contemporaries were perhaps exaggerated, they probably were more efficient than small, family farms for reasons we have already noted. But three other features of English society also appear to have contributed to a more efficient agricultural sector.

First, agriculture was no longer the 'employer of last resort'. Landless labour flocked in numbers to the towns. In France, and in Europe more generally, access to land for those who lived in the countryside was greater and the urban demand for labour less. As O'Brien and Keyder have reminded us, 'in France underemployed or low-productivity labour tended to remain in peasant households in the countryside. In Britain, by contrast, the tenorial institutions of agriculture could not hold much "excess" population which crowded into towns as a "lumpen proletariat" or reserve army of labour' (O'Brien and Keyder, 1978: 73). From a much earlier date the situation in England appears to have changed from one of finding employment for surplus agricultural labour to that of farmers having to make contingency arrangements to have sufficient labour during the harvest (O'Brien, 1996).

Second, the relatively low physical and institutional barriers to trade *within* the country led to a much greater level of market integration. The fear of famines, which were widespread throughout the eighteenth century in continental Europe, was virtually absent in England. Average

food prices may have been higher, reflecting a grain policy designed for farmers, but consumers could be much more certain of finding food available. In addition, the geographical shape and the relative abundance of navigable rivers presented farmers with more market opportunities than their counterparts in France or Spain. In fact, for wine producers in Jerez or Bordeaux for example, transport costs were cheaper to London than to Madrid or Paris.

Finally, and as Crafts (1989) has argued, Britain's comparative advantage was in industry and not agriculture. As manufacturing goods left the country, raw materials and food produce entered in vast quantities. Britain was not adverse to follow mercantilist policies when it was in its interest, but imported food occupied a large and growing share of the national market on a considerably greater scale than any other European country, with the exception of the Dutch Republic. Many of these products, such as sugar or tea, started as luxuries, but quickly became consumed by large sections of society. But it was not just tropical crops. British merchants also helped to create new markets for products such as wine, silk and timber, thereby encouraging greater farm specialisation within Europe itself.