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The English Economy in the *Longue Durée*, 1086–1850

STUDIES ATTEMPTING to explain the origin of the Industrial Revolution in England usually go no farther back than the late seventeenth century. There were a few attempts in the 1960s to take the story to the medieval period. A. R. Bridbury tried to demonstrate that the economic growth that led to the First Industrial Revolution can be traced to the late Middle Ages.[1] In 1968 Sidney Pollard and David Crossley made such an attempt.[2] Then in 1969, in a rather provocative paper, Max Hartwell invited historians to take a long-term view of the thousand years of English economic history that preceded the Industrial Revolution, in part, to mitigate the parochialism arising from, "the tendency of each historian to elevate his period, his growth factor, his depression or crisis, to a status of prime importance, either in the history of capitalism or of industrialization . . ."[3] More recently, in an intellectual effort covering more than 20 years and devoted to the development of an institutional theory of economic history and economic performance, Douglass North has traced the rise of the Western World from the era of the hunters and gatherers to the Industrial Revolution in England. North's central focus is to identify the critical long-term institutional changes that determined the direction of long-term economic change and performance, the central factors responsible for major institutional shifts over long periods of time, and the mechanisms by which

[1] R. Bridbury, *Economic Growth: England in the Later Middle Ages* (London: Allen and Unwin, 1962).

[2] Sidney Pollard and David W. Crossley, *The Wealth of Britain, 1085–1966*, (London: B. T. Batsford, 1968).

[3] R. M. Hartwell, "Economic Growth in England before the Industrial Revolution," in R. M. Hartwell, *The Industrial Revolution and Economic Growth* (London: Methuen, 1971), p. 41, first published in *Journal of Economic History*, Vol. 29 (1969), pp. 13–31.

change was effected.[4] In a somewhat different project aimed at showing that the economies of European countries and of nations created overseas by European migrants have followed a systematic pattern of change over very long time periods, Graeme Snooks has traced the growth path of the English economy from 1086 to the present and beyond. He reports that his study of the English economy over the 1,000-year period reveals three "great waves" of growth lasting between 130 and 300 years each. Snooks uses this study of the English economy over the very long period to demonstrate that modern economists employ neoclassical theory in a way that makes it impossible for them to understand and fashion policy prescriptions that are relevant to real world economies.[5]

These examples of *longue durée* perspective for a study of the Industrial Revolution have not attracted much following. Scholars who consider the Industrial Revolution or related subjects as the primary focus of their research and writing continue to limit themselves to the eighteenth and early nineteenth centuries, with occasional extension to the sixteenth and seventeenth centuries.[6] To have a long-term view of the historical developments within which the Industrial Revolution can be located, causally or otherwise, one must read the work of three broad groups of specialists –

[4] See Douglass C. North and Robert P. Thomas, "An Economic Theory of the Growth of the Western World," *Economic History Review*, 2nd series, vol. 22, no. 1 (1970), pp. 1–17; Douglass C. North and Robert P. Thomas, *The Rise of the Western World: A New Economic History* (New York and London: Cambridge University Press, 1973); Douglass C. North, *Structure and Change in Economic History* (New York and London: W. W. Norton, 1981). The theoretical perspective emanating from these publications has been somewhat modified in a more recent work: Douglass C. North, *Institutions, Institutional Change and Economic Performance* (New York: Cambridge University Press, 1990).

[5] Graeme Donald Snooks, *Economics Without Time: A Science Blind to the Forces of Historical Change* (London: Macmillan, 1993); Graeme Donald Snooks, "Great Waves of Economic Change: The Industrial Revolution in Historical Perspective, 1000 to 2000," in Graeme Donald Snooks (ed.), *Was the Industrial Revolution Necessary?* (London and New York: Routledge, 1994), pp. 43–78.

[6] This is exemplified by the more frequently cited books published in the 1980s: Roderick Floud and Donald McCloskey (eds.), *The Economic History of Britain since 1700: Volume I: 1700–1860* (New York: Cambridge University Press, 1981); François Crouzet, *The First Industrialists: The Problem of Origins* (New York: Cambridge University Press, 1985); N. F. R. Crafts, *British Economic Growth during the Industrial Revolution* (Oxford: Clarendon Press, 1985); Joel Mokyr (ed.), *The Economics of the Industrial Revolution* (Totowa, NJ: Rowman and Allenheld, 1985). The publications of the 1990s are following the same pattern. See, for example, Joel Mokyr (ed.), *The British Industrial Revolution: An Economic Perspective* (Boulder, Colorado: Westview Press, 1993), which promises to be a major text for the 1990s. A competing volume is Roderick Floud and Donald McCloskey (eds.), *The Economic History of Britain Since 1700, Volume 1: 1700–1860* (2nd edition, Cambridge: Cambridge University Press, 1994), which continues the period coverage of the first edition mentioned earlier.

medievalists, historians of Tudor and Stuart England, and economic-growth specialists writing on the eighteenth and early nineteenth centuries – with all the confusions arising from studying these periods in isolation one from another. Of course, much can be said in favor of historians limiting themselves to the periods they know best. The risk of making misleading statements when historians wander into periods with which they are not very familiar cannot be overemphasized. But the advantage of using a long-term perspective to identify more accurately the strategic factors in the historical process that produced the Industrial Revolution would appear to outweigh the risk. For this reason the descriptive survey in this chapter follows in some way the lead provided, in particular, by Hartwell and North.

It is not implied by this approach that there was a linear development from Domesday England to the Industrial Revolution. Rather the purpose is to provide the background against which to view the operation of many factors over an extremely long period of time, observing how they operated, their starting and terminal points in time, when they operated as independent variables and when their operation was initially triggered by that of other variables, and taking particular note of the mechanisms by which their operation transmitted structural change. In this way confusion and error may be minimized in attaching a relative weight to the contribution of the factor that forms the focus of this study. Furthermore, to achieve the same purpose, the *longue durée* descriptive survey in the chapter includes a regional dimension.

In their efforts to offer a clearer view of the main factors in the historical process leading to the Industrial Revolution, scholars have attempted in the last two decades or so to provide a comparative perspective through comparative studies of selected national economies in Europe. These studies have been particularly helpful in sharpening our understanding of the issues.[7] Extending the lessons from this to a *longue durée* study of the English economy one finds that a comparative regional perspective produces a similar result. Studies of the Industrial Revolution have typically focused analysis on the national economy in spite of the well-known divergent regional developments and the weak regional linkages of the period. This national focus has helped to conceal from our view some aspects of the historical process that are critical to a proper understanding of the main issues. An examination of the divergent regional developments over the long time period examined in this chapter brings out these aspects sharply to focus and helps to eliminate confusion and minimize error in the identification and analysis of the crucial factors in the historical process in question.

[7] In particular, see the papers in Frederick Krantz and Paul M. Hohenberg (eds.), *Failed Transitions to Modern Industrial Society: Renaissance Italy and Seventeenth Century Holland* (Montreal: Interuniversity Centre for European Studies, 1975).

What is particularly remarkable about the English economy during the long period of this survey is its movement from being a periphery of the more industrially advanced economies of Continental Europe to being the core economy of the whole world. It is the view of this writer that this radical geographical shift in economic power was the product of industrialization, regardless whether or not one agrees that the term Industrial Revolution accurately describes what happened. Hence, the descriptive survey in this chapter, in conformity with the focus of the entire study, lays emphasis on industrial development. At some point the other sectors are examined in their own right, but in general they are viewed, along with the evolution of socio-political institutions, in terms of their contribution to industrial development.

The survey is divided into two main sections, 1086–1660 and 1660–1850, each of which is further divided into sub-sections. The first section combines description with some analysis and discussion to eliminate the necessity for any further detailed treatment of that period in subsequent chapters. The survey in the second section is largely descriptive.

2.1 EVOLUTION OF ECONOMIC AND SOCIO-POLITICAL INSTITUTIONS, 1086–1660

Between the Domesday Inquest and the Restoration there were major changes in economic and socio-political institutions in England that are critical to a proper understanding of the socio-economic processes of the 200 years that followed. There was, among other things, the evolution of market institutions, a gradual shift from the predominance of subsistence production to production largely for market exchange; the development of property rights, in particular, the movement from rights in persons to rights in land, leading to the ending of slavery and serfdom; a change in the structure and organization of production; a change in the regional pattern of production and socio-economic organization; and, particularly important, the evolution of political institutions that were critical to subsequent socio-economic processes. This section focuses on these fundamental changes. Economic growth, that is increases in per capita income over time, is de-emphasized. The latter arises from the fact that, given the kind of economy and society in question, socio-economic change and economic growth may not necessarily go together – major socio-economic changes leading to economic growth in the long run may occur at the same time that income per head declines in the short run. Three periods may be distinguished for the changes examined in the section: 1086–1300, a period of remarkable expansion, followed by a prolonged contraction; 1300–1475; and then further expansion, 1475–1660.

Now what was the nature of economy and society in Domesday England? A central feature of the economy was a general under-utilization of the country's natural resources in the form of fertile soils, woodlands and pastures, and minerals. Relative to Continental Europe, England was a land of much later settlement. Population estimates, with wide margins of uncertainty, indicate a total population of about 2 million in 1086.[8] With a total area of 50,333 square miles,[9] this means an average density for England as a whole of approximately 40 persons per square mile. The total population was, however, unevenly distributed. It was heavily concentrated in the regions of older settlements in the South, particularly East Anglia. A population map of Domesday England shows that only a handful of counties had a density of 15 and above. Most counties had 5 to 10, and all areas of Lancashire included in the Domesday survey had a density of 5 or less.[10] It is understandable why subsistence agriculture was predominant, even though production for market exchange had already made some progress.[11] More will be said on this later.

Although the Norman Conquest strengthened the central administration, for all practical purposes the more or less self-sufficient manor remained the unit of socio-economic, as well as political, organization. The lord's demesne was at the center of production. This is reflected in the social structure. Only 14 percent of the peasant population in rural England was free in 1086. Slaves accounted for 10.5 percent. The rest (75.5 percent) were serfs. The regional distribution of the free peasants and the slaves varied considerably. In fact, about 85 percent of all the free peasants were in 5 counties – Lincolnshire, Norfolk, Suffolk, Nottinghamshire, and Leicestershire – where the proportion of free peasants ranged between 30 and 51 percent. For most counties the proportion was less than 3 percent. The slaves were more widely distributed. Even so, 10 counties in the South of England had about 61 percent of the total, with Devon, Somerset, and

[8] The sources contain a wide range of estimates. John Hatcher, *Plague, Population and the English Economy, 1348–1530* (London: Macmillan, 1977), p. 68, gives a range of 1.75 million to 2.25 million, whereas Sally Harvey, after examining the evidence and method employed in the better known estimates, concludes that 2 million is a more reasonable estimate. See Sally Harvey, "Domesday England," in H. E. Hallam (ed.) *The Agrarian History of England and Wales: Volume II, 1042–1350* (Cambridge: Cambridge University Press, 1988), p. 49.

[9] E. A. Wrigley, "The Growth of Population in Eighteenth-century England: A Conundrum Resolved," *Past and Present*, No. 98, February, 1983, p. 121.

[10] Harvey, "Domesday England," p. 47.

[11] S. R. H. Jones, "Transaction Costs, Institutional Change, and the Emergence of a Market Economy in later Anglo-Saxon England," *Economic History Review*, XLVI, 4 (1993), pp. 658–678.

Gloustershire having the largest concentration (in absolute and proportionate terms).[12]

There is very little information on the extent of manufacturing and mining in Domesday England.[13] However, there is an indication that the manufacturing of woollen cloth of some scale existed.[14] With a large number of regions in Europe producing cloth for local consumption and for export at this time, English cloth exports by 1086 must have been on an extremely small scale. Even the great centers of export production in the Middle Ages – the Low Countries and Florence – began their industrial expansion in the eleventh century, with real rapid growth occurring not until the twelfth and thirteenth centuries.[15] The export trade in raw wool must also have been very small at this time, for the major manufacturing regions in Continental Europe were largely self-sufficient in raw material supply.[16] The first important reference to raw wool export from England is dated 1113.[17]

Two contending estimates of the Gross Domestic Product (GDP) of feudal England in 1086 deserve mentioning. Graeme Snooks estimates a GDP of £136,621, with a population of 1.53 million people, which gives a per capita income of 1.8 shillings. Nicholas Mayhew, on the other hand, gives a much higher estimate of £300,000 and a per capita GDP of 2.6 shillings, implying a population of about 2.3 million. Snooks and Mayhew also differ in their views of the social distribution of the GDP. According to Snooks, the ruling elites, with a total population of about 35,500 persons (made up of 5,500 tenants-in-chief and their families and 30,000 undertenants and their families), being about 2.3 percent of his preferred population of 1.53 million, received 41.7 percent of the GDP; the peasants, with 89.9 percent of the population, had a share of 50.5 percent; and the urban population of 120,000 (7.8 percent of the population) had 7.8 percent. Mayhew believes the lords received only about one-third of the GDP.[18]

[12] H. E. Hallam, "England Before the Norman Conquest," in Hallam (ed.), *Agrarian History*, pp. 10–13.

[13] Lack of information on the subject is indicated by the fact that only one short paragraph is devoted to it by Pollard and Crossley, *The Wealth of Britain*, p. 14. The point is also stressed by Miller that "the history of medieval rural industry in the country as a whole has yet to be adequately studied." Edward Miller, "Introduction: Land and People," in Edward Miller (ed.), *The Agrarian History of England and Wales: Volume III, 1348–1500* (Cambridge: Cambridge University Press, 1991), p. 27.

[14] T. H. Lloyd, *The English Wool Trade in the Middle Ages* (Cambridge: Cambridge University Press, 1977), p. 1.

[15] Eileen Power, *The Wool Trade in English Medieval History: Being the Ford Lectures* (Oxford: Oxford University Press, 1941), pp. 8–9.

[16] Lloyd, *The English Wool Trade*, p. 2.

[17] *Ibid*., p. 6.

[18] Snooks, *Economics Without Time*, pp. 176–202; John McDonald and G. D. Snooks, *Domesday Economy: A New Approach to Anglo-Norman History* (Oxford:

There is also some disagreement on the extent of production for market exchange. Snooks estimates that the market and subsistence sectors were approximately 40 and 60 percent, respectively, in 1086, with 60 percent of seigneurial production being marketed. However, a detailed study of the gross output of 201 manors sampled within the London region by Bruce Campbell shows that only 45 percent of seigneurial production in 1300 was marketed. According to Campbell, the estimate is biased in favor of the most commercialized manors in the sample, for which reason he believes his figures are "upper-bound estimates." Given Campbell's upper-bound estimates from the unusually commercialized London region and what is known of increasing commercialization from 1086 to 1300, Snooks's estimates would appear to be a considerable exaggeration of the extent of the market sector in 1086. In the light of Campbell's evidence, Snooks's estimate of the market sector of seigneurial production in 1086 for England as a whole may be cut by half to 30 percent. If the population of England in 1086 is put at 2 million, which is more consistent with the most recent review of the evidence by the main authorities, as stated earlier, and the peasants' share of the GDP is raised to two-thirds as Mayhew suggests, then the extent of the market sector in all England in 1086 may have been no more than about 25 percent of the GDP.[19]

The amount of wealth assessed in the counties for the payment of royal taxes enables us to observe the regional distribution of wealth in Domesday England. The ranking of the counties according to the amount of wealth assessed per acre shows that the wealthiest counties in 1086 were all in the areas of older settlement in the south. The top 10 in a descending order of wealth are Oxfordshire, Kent, Berkshire, Essex, Hertfordshire, Middlesex, Dorset, Somerset, Buckinghamshire, and Bedfordshire. The counties up north were at the bottom. There is no ranking for Lancashire and Yorkshire in 1086, but they ranked 34 and 27, respectively, out of 39 counties in 1275.[20]

Between 1086 and 1660 this undeveloped economy of Domesday England underwent a significant transformation. The first phase occurred

Clarendon Press, 1986), pp. 11–36; Nicholas Mayhew, "Modelling medieval monetisation," in Richard H. Britnell and Bruce M. S. Campbell (eds.), *A Commercialising Economy: England 1086 to c.1300* (Manchester: Manchester University Press, 1995), pp. 55–62.

19 Snooks, *Economics Without Time*, pp. 98–202; Bruce M. S. Campbell, "Measuring the commercialisation of seigneurial agriculture c.1300," in Britnell and Campbell (eds.), *A Commercialising Economy*, pp. 174–193.

20 E. J. Buckatzsch, "The Geographical Distribution of Wealth in England, 1086–1843: An Experimental Study of Certain Tax Assessments," *Economic History Review*, 2nd series, Vol. III, no. 2 (1950), pp. 186–187. A map showing the geographical distribution of income per household in England in 1086 displays a similar distribution. See Snooks, *Economics Without Time*, p. 195.

between 1086 and 1300. This was a period of prolonged population growth; surplus land and other under-utilized natural resources permitted population to operate as an independent variable and the numbers multiplied. John Hatcher's review of the evidence indicates that the population of England grew by a factor of three between 1086 and the 1290s, increasing from about 2 million to about 6 million during the period.[21]

This expansion of population gave rise to the internal colonization of the vast wilderness that previously separated settled manors. By the early fourteenth century the colonization process and the expansion of cultivated land had been completed in all regions of England.[22] With the phenomenal increase in population densities – from a national average of 40 per square mile in 1086 to about 120 in the 1290s – economy and society in England moved from conditions of scarce labor and surplus natural resources to those of surplus labor and scarce land. The regional distribution of the population continued to be uneven. The areas of older settlement in the southern part of the country remained more densely populated.

The increase in population and the colonization process stimulated the expansion of internal trade and the spread of production for market exchange. The growth of raw wool exports from the late thirteenth century intensified the expansion of market activities. This growth of wool production for export was on such a scale that it touched all aspects of the political economy of England from the later Middle Ages to the Industrial Revolution, the development of the woollen textile industry from the fourteenth century adding a new dimension. The sheep was to medieval and early modern England what crude oil is to contemporary Saudi Arabia.[23]

Annual average exports, by the available evidence, were 9.7 million lbs in 1279–1290, produced by about 5 million sheep. This increased to 14.4 million lbs, produced by 7.6 million sheep, in 1304–11.[24] Although export

[21] Hatcher, *Plague, Population and The English Economy*, p. 68.

[22] J. A. Tuck, "The Occupation of the Land: The Northern Borders," in Miller (ed.), *Agrarian History*, p. 34.

[23] Eileen Power made the point succinctly: "The trade which gave England her key position was bound to dominate the domestic scene: her commerce and her politics alike were built upon wool. When her kings got themselves taken prisoner, like Richard I, the ransom was paid – with grumbling – out of wool. When they rushed into war with their neighbours, like the three Edwards, the wars were financed and allies bought – with more grumbling – out of wool. . . . At home honest burgesses climbed upon wool into the ranks of the nobility, only outstripped in their progress there by the dishonest ones, who arrived first, like de la Poles of Hull. The very Lord Chancellor plumped himself down on a wool-sack, and the kingdom might have set on its great seal the motto which a wealthy wool merchant engraved on the windows of his new house: I praise God and ever shall. It is the sheep hath paid for all." Power, *The Wool Trade*, p. 17.

[24] See Joseph E. Inikori, "Slavery and the Development of Industrial Capitalism in England," *Journal of Interdisciplinary History*, XVII, 4 (1987), fn. 6, p. 777; also

figures are not available, indirect evidence indicates that large-scale production of wool for export dated much further back in the thirteenth century. There were broadly two categories of producers: large-scale demesne producers and small-scale peasant producers. The former reached the peak of their production in the thirteenth century, whereas the latter increased their share of total output as the Middle Ages progressed. Even during the period when the big producers had their largest share of total output in the thirteenth century, it is believed that the peasants produced more than half of the total.[25] This means that thousands of peasants all over the country earned cash on a regular basis, which helped to pull them into active market exchange. As stated above, the extent of the market sector of the English economy was around 25 percent of the GDP in 1086. It is reasonable to suppose that the wool trade, together with the multiplier effects (especially in the area of foodstuffs purchases by wool growers), must have constituted a large proportion of the market sector in the centuries that followed and, so, played a dynamic role in the extension of market activities to the subsistence sector over time. According to Barbara Harvey, the cash economy made remarkable progress in rural England in the twelfth and thirteenth centuries, and by the fourteenth there was an active land market, especially in regions well endowed with pasture.[26]

The growth of markets and the spread of the money economy, together with the availability of cheap labor, following diminishing land-labor ratios, provided a conducive environment for both lords and peasants to accept the commutation of labor dues and renders in kind to money rents. By the fourteenth century this had become the dominant element in the economic relations between lords and peasants. In the judgment of one authority, "It is hard to think of any development in the medieval countryside which was more important than this change . . . [It] revolutionised relations between lords and their tenants and much else beside."[27] These fundamental

reprinted in Solow and Engerman (eds.), *British Capitalism and Caribbean Slavery*, fn. 6, p. 85.

[25] Power, *The Wool Trade*, pp. 29–31.

[26] Barbara F. Harvey, "Introduction: the 'crisis' of the early fourteenth century," in Bruce M. S. Campbell (ed.), *Before the Black Death: Studies in the 'crisis' of the early fourteenth century* (Manchester: Manchester University Press, 1991), pp. 12–16.

[27] Harvey, "Introduction," p. 13. North and Thomas believe that with the commutation of labor dues and renders in kind to money rents the classic manor of the tenth century had dissolved by 1200. In their view the classic theory which explains the decline of the manorial system in terms of the rise of the market economy, though now in disrepute, is supported by the logic of their own analysis. See North and Thomas, *The Rise of the Western World*, pp. 35–40. This view recently received a very strong support from Snooks: "Indeed the great transformation from feudalism to mercantile capitalism should be thought of as being caused by the emergence of factor markets" (Snooks, "Great Waves of Economic Change," p. 75). However, Rodney Hilton argues that the commutation of labor dues and renders in kind to

institutional changes were to continue in different forms under a different set of conditions from the late fourteenth to the seventeenth century.

In this second period (1300–1660) the emergence of the yeoman farmers, the development of manufacturing, especially woollen cloth production, and the establishment of parliamentary power in relation to monarchical authority were the major structural changes in the political economy of England. The first one and a half centuries of the period saw a reversal of the population growth of the previous two centuries. The decline reached catastrophic levels during the period of the Black Death, 1347–50. The recurrence of epidemic and infectious diseases caused a prolonged decline that continued to the middle decades of the fifteenth century. By 1450 the population of England had been reduced to less than 2.5 million.[28] Then growth began again in the last quarter of the fifteenth century and continued to the first half of the seventeenth.

The drastic demographic decline had a negative impact on the growth of market activities. Urban populations and the markets they provided for rural products declined. Even the population of London was reduced in the fifteenth century.[29] However, the negative impact of declining

money rents did not end serfdom. He holds that there was plenty of serfdom without labour services in parts of England, and that the institution was not abolished; it simply withered away over time, beginning in the 14th century. See R. H. Hilton, *The Decline of Serfdom in Medieval England* (London: Macmillan, 1969), pp. 29–31. The sources are rather silent on the ending of slavery. It may be reasonably assumed that the change in relative factor prices brought about by population growth and the attendant decline in land-labor ratios made the employment of other forms of labour relatively more economic than slavery. For some discussion of the subject, see M. M. Postan, *The Famulus: The Estate Labourer in the XIIth and XIIIth Centuries*, (*Economic History Review*, Supplement 2, 1954). It should be noted at this juncture that some Marxists will disagree with the points made in this chapter about the role of population growth. In particular, Robert Brenner has argued that class struggle was the central element in the historical process in medieval and early modern Europe, rather than population growth. For Brenner's arguments and reactions to them, see T. H. Aston and C. H. E. Philpin (eds.), *The Brenner Debate: Agrarian Class Structure and Economic Development in Pre-Industrial Europe* (Cambridge: Cambridge University Press, 1985); also Harvey, "Introduction," pp. 16–19. But while class struggle was an important element in the process, it did not operate as an independent variable. Class struggle was provoked by other developments. The classes were formed out of the operation of certain factors, and the outcome of the class struggle at a given moment was determined by the relative bargaining strength of the classes, which was in turn determined by the operating factors at the given moment and preceding institutional changes. Undoubtedly, Douglass North's framework is the most comprehensive on this subject. It treats population growth as the dynamic factor, but incorporates market development, ideology, and class struggle as the mechanisms through which change was effected. For details, see North and Thomas, *The Rise of the Western World*, and North, *Structure and Change*.

[28] Hatcher, *Plague, Population and the English Economy*, p. 69.

[29] Miller, "Introduction," pp. 29–30.

population was mitigated somewhat by the development of the woollen textile industry from the middle of the fourteenth century under government protection.[30]

The woollen textile industry, which existed in the twelfth century, had been severely constricted by the devastating impact of cloth imports from Flanders, which reduced England to an exporter of raw wool and importer of woollen cloth. Cloth manufacturing, therefore, developed in the fourteenth century as an import-substituting industry. English manufacturers struggled to capture the domestic market in the 1330s and 1340s.[31] Thereafter cloth export grew, while raw wool export continued. When the amount of wool employed in producing the quantity of cloth exported and that which replaced imported cloth is added to the quantity of wool exported the indication is that overall wool production in the late fourteenth and fifteenth centuries remained at levels that compared favorably with the peak points of the pre-plague period. Carus-Wilson's estimate put total production at 36,000 sacks per annum between 1353 and 1368.[32] The peak of raw wool exports between 1279 and 1336 was in the years 1304–13, the annual average for the peak period being 39,177 sacks.[33] At this time cloth manufacturing was strictly limited; hence, the export figures represent virtually the total output. Taking account of the years during which exports were less than 30,000 sacks (1279–90, 1297–1304, 1313–29), it can be said that total production was at about the same level in the periods, 1279–1336 and 1353–68.

The evidence shows that wool production continued to depend primarily on the export market in the post-plague period, even as cloth manufacturing for the domestic market grew and replaced imports. Between 1353 and 1368 average annual export of raw wool was 30,966 sacks. During the same period cloth export averaged 9,284.6 cloths.[34] Taking four and one-third cloths to one sack of wool,[35] the cloth export figure comes to 2,144 sacks of wool. Thus the combined quantity of wool involved in cloth and wool exports averaged 33,110 sacks in the years 1353–68. This is 92 percent of the total output estimated for the period by Carus-Wilson, as stated earlier.[36] From the last decades of the fourteenth century through the

[30] E. M. Carus-Wilson, "Trends in the export of English woollens in the fourteenth century," *Economic History Review*, 2nd series, Vol. III, no. 2 (1950), pp. 162–179.

[31] *Ibid.*, p. 164. [32] *Ibid.*, p. 169.

[33] For the figures of raw wool exports from 1279 to 1336, see Inikori, "Slavery and the Development of Industrial Capitalism," fn. 6, p. 777; see also Lloyd, *The English Wool Trade*, pp. 63, 79–80, and 123.

[34] E. M. Carus-Wilson and Olive Coleman, *England's Export Trade, 1275–1547* (Oxford: Clarendon Press, 1963), pp. 47–49 and 75–78.

[35] Peter J. Bowden, *The Wool Trade in Tudor and Stuart England* (London: Macmillan, 1962), p. 37.

[36] Carus-Wilson's estimate may be on the low side; but even so, it is clear that the export market was overwhelmingly dominant.

fifteenth, cloth exports grew as wool exports decreased. Annual average cloth export was 19,249 cloths between 1350 and 1400, and for the whole of the fifteenth century it was over 42,000.[37] Adding raw wool export and wool employed to produce cloth for the domestic market, the indication is that wool production was on a large scale throughout the fifteenth century, and the export market remained dominant.

The fact that wool production from 1350 to 1500 was sustained at about pre-plague levels while population fell to only a fraction of its pre-plague size means that England was producing several times more wool per capita in the century and a half after 1350 than in the preceding two centuries. What is particularly important for the spread of market activities and the commercialization of agriculture is the fact that peasant producers increased their share of the total output considerably after 1350.[38] Thus, on the average, the peasants had significantly more cash to spend after 1350. In general, although the volume of trade may have declined in absolute terms, there is some indication that the proportion of agricultural output marketed increased in the late fourteenth and fifteenth centuries.

These developments, in association with changes in relative factor prices (land and labor), gave rise to some important changes in land use and the social distribution of land, and in lord-peasant relations. Between the Black Death and 1520, there was a general transfer of land from arable to pasture. This may be illustrated with evidence from the West Midlands. In the Avon valley and Feldon, virtually the entire land was devoted to arable farming in 1345–55. But by 1496–1500, 33 percent of the land had been transferred to pasture. In Arden the proportions for pasture are 7 percent in 1345–55 and 38 percent in 1496–1500; and for Gloucestershire the proportion of pasture increased from 2 percent in 1349–54 to 34 percent in 1485–1500.[39] This large-scale extension of pasture in the fifteenth and early sixteenth centuries ultimately made England unique in Europe in terms of the proportion of agricultural land devoted to sheep rearing and livestock farming in general. And this did not escape the attention of European visitors. A Frenchman describing England in the first decade of the seventeenth century wrote:

> The face of the countryside bears some resemblance to that of Brittany and Normandy, differing in one thing only from all the other countries of the world, that there is none which uses so much land for pasture as this.[40]

[37] Pollard and Crossley, *The Wealth of Britain*, pp. 71–72.

[38] Power, *The Wool Trade*, pp. 37–40.

[39] C. C. Dyer, "The Occupation of the Land: The West Midlands," in Miller (ed.), *Agrarian History*, pp. 78–79.

[40] Cited by Joan Thirsk, "Introduction," in Joan Thirsk (ed.), *The Agrarian History of England and Wales: Volume IV, 1500–1640* (Cambridge: Cambridge University Press, 1967), p. xxx. As Thirsk shows, this view was also expressed by other European visitors in the sixteenth and seventeenth centuries.

This change in land use had important consequences. It encouraged specialization, and helped to reduce subsistence production and to extend commercial agriculture. In particular, the relative profitability of sheep farming, which required more land per unit of output than arable farming, helped to sustain the value of land at a reasonable level at a time of drastic demographic decline. What is more, rising wool prices stimulated private enclosure for sheep farming.[41] Although this early enclosure movement was not as massive as the outcry against it would seem to indicate, it was an important part of the institutional changes of the period, especially in the Midlands.[42]

An important part of the structural changes of the period was the social redistribution of land and the emergence of the yeoman farmer. The conditions that prevailed between 1086 and 1300 had favored the manorial lords relative to the peasants. In general, both lords and peasants benefited from the commutation of labor dues and renders in kind to money rents. But population pressure, which translated into increased demand for land, led to rising rents, decreasing size of peasant holdings, and a growing landless class among the peasantry. In consequence, there was a significant redistribution of income in favor of the lords.[43] The conditions were reversed between 1350 and 1500, during which the dramatic reduction of the population gave rise to declining rents and relatively rising labor costs.[44]

Under these circumstances the lords generally abandoned direct farming of their lands and the demesnes were leased on commercial rents to tenants. Along with this development, the commutation of labor dues and renders in kind to money rents, which began in the thirteenth century, was further generalized, and other manorial practices less acceptable to the peasants were whittled away. In the words of one authority, "Most landlords by the end of the fifteenth century were primarily rentiers, and most tenants were primarily payers of money rents . . ."[45]

[41] Between 1450 and 1489, wool prices rose by 38 percent, while grain prices rose by only 16 percent. See D. C. Coleman, *The Economy of England, 1450–1750* (Oxford: Oxford University Press, 1977), Table 4, p. 35.

[42] Coleman, *The Economy of England*, pp. 35–36 and 175–176.

[43] Cicely Howell, "Stability and Change 1300–1700: The Socio-Economic Context of the Self-Perpetuating Family Farm in England," *Journal of Peasant Studies*, Vol. 2, No. 4 (1975), p. 471; Pollard and Crossley, *The Wealth of Britain*, pp. 38–39.

[44] Miller shows that rents per acre declined in Norfolk from about 10¾d. in 1376–78 to 9 d. in 1401–10 and then to 6½–8 d. for the rest of the fifteenth century. See Miller, "Introduction," p. 8. On the other hand, Hatcher's evidence shows that wage costs doubled in Westminster and Winchester manors between 1301 and 1450. See Hatcher, *Plague, Population and the English Economy*, p. 49.

[45] Miller, "Introduction," p. 31. There is a general tendency in the literature to explain these developments solely in terms of the drastic reduction of the population. It is often not recognized that the population size which existed in the fifteenth century had existed in earlier centuries without giving rise to such developments. In fact, a

With growing woollen cloth manufacturing, increased wool production by peasant growers, continuing market activities, and the elimination of most of the fettering elements of the manorial system, the stage was set for the more resourceful members of rural England to pull ahead from the crowd. As already mentioned, the leasing of the demesnes made a large amount of land available to tenants between 1320 and 1500. In the course of this period, the more resourceful peasants built up large commercial family holdings to become the celebrated yeoman farmers. To highlight this development the peasant cultivator of the thirteenth century has been compared with the seventeenth-century small farmer. The former had a 12 to 24-acre holding devoted predominantly to subsistence production, while the latter had a 60- to 100-acre family farm devoted primarily to production for market exchange.[46] The transition from one to the other began in the late fourteenth century. The process was quite slow for various reasons. But by the end of the fifteenth century the new class of smallholder commercial farmers was fully established. The price revolution of the sixteenth century, and the large-scale sale of church and Crown lands during the century, brought some changes (especially land purchases by merchants, lawyers, and other members of the urban middle class). On the whole, however, the sixteenth century consolidated the dominant position of the smallholders as commercial farmers.[47] Not until the low agricultural prices of the second half of the seventeenth century was their position threatened.

question that medievalists have failed to pose is why the character of economy and society, after the drastic reduction of population by the fifteenth century, did not simply revert to what it was in the late eleventh century when population size and density were at about the same level. Why was there so much change in the manorial system, a change usually attributed solely to the reduction of the population size? Why did the same population size and density produce different effects in two different periods? The answer to these questions rests with the development of the market and the associated institutional changes of the period 1086–1300, which were outlined earlier in the chapter, changes that were partly due to population growth and the spread of settlements during the period. Economic and political entrepreneurs responded to the conditions created by declining population in the context of a market economy and a general structural environment that did not exist in earlier centuries. This is why the changes of the fifteenth century are treated in the chapter as a continuation of those that were effected in the thirteenth and fourteenth centuries.

46 Howell, "Stability and Change," pp. 468–469. In Howell's view, the small cultivator of the thirteenth and fourteenth centuries was a peasant, but the smallholder of the seventeenth century was not. And so, the developments of the fourteenth and fifteenth centuries can also be seen in terms of the disappearance of the peasant in England. Howell's study is based on the Midlands.

47 Howell, "Stability and Change," pp. 471–477; Miller, "Introduction," pp. 13–16, 20–24, and 32; Pollard and Crossley, *The Wealth of Britain*, pp. 69–72; Harvey, "Introduction," p. 23. For a concise summary of these developments, with some statistics, see Coleman, *The Economy of England*, pp. 41–47.

Thus by the seventeenth century English agriculture was fully commercialized. Two groups characterised the new agrarian structure – the family farmers, who were much larger in numbers, and a new class of non-cultivating large landholders who invested capital to improve the quality of their lands in order to enhance their profits by attracting more able tenants. These developments were very important for the socio-economic processes of the period 1660–1850.

There is just one more issue to examine briefly to conclude discussion of the socio-economic changes of the late medieval and early modern periods. This concerns the question of what happened to per capita incomes during the prolonged period of dramatic decline of England's population from the fourteenth to the late fifteenth century. The received wisdom has been the view that real income per head increased during the period. Hatcher seems unimpressed by this view of a prosperous age during which families regularly lost young and active members to premature death. But, persuaded by a view with the weight of history and of respected authorities behind it, he could only offer a qualification based on a rather awkward conception of economic well-being.[48]

The received wisdom has now been challenged vigorously by Snooks. Snooks employs the evidence in the Domesday Book and Gregory King's national income estimate, using simulation techniques, to show that real GDP per capita (in 1688 prices) grew from £1.72 in 1086 to £3.30 in 1300, and then declined continuously to £2.02 in 1400, stagnating thereafter up to 1470 before increasing once again to £3.26 in 1510. The 1300 level was surpassed in 1520 when real income per head stood at £3.70.[49] He traces the source of the traditional view that there was an inverse relationship between population and real income per capita to the Brown-Hopkins wage index, which he demonstrates to be based on misleading evidence. Snooks argues to the contrary that there was a positive correlation between population and economic growth during the period in question, and that the dramatic decrease of England's population following the Black Death reduced

[48] As he put it, "Finally we must do something to correct an impression given in this account, and in much of the writing on this period, that living standards can be assessed solely in terms of the amount of goods that a man's wage would purchase. In these terms the fifteenth century was truly the golden age of the English labourer. Yet, as we have seen, these high living standards were not due to any decisive advances in techniques or in the structure of the economy, but to the simple fact that there were fewer people to share the resources of the nation. . . . Clearly an age which relies for its prosperity upon large numbers of its members dying at an early age, and suffering the frequent losses of spouses, children, relatives, friends, and colleagues, is somewhat less than golden. Can we wonder that a preoccupation with death and putrefaction is encountered so frequently in the artistic, literary and religious movements of the age?" (Hatcher, *Plague, Population and the English Economy*, p. 73).

[49] Snooks, "Great Waves of Economic Change," pp. 77–78.

drastically the English economy's scale of operation with significant adverse effects on per capita income: "It is just not plausible to argue that a country experiencing a long and savage downswing in population will experience a sustained increase in real per capita income – sustained, according to Brown and Hopkins, for over a century."[50]

One may question whether Snooks's evidence is adequate to bear the weight of his conclusions. However, the logic of the analysis makes better economics than the traditional view, and the critique of the Brown-Hopkins wage index is persuasive. What is more, new evidence produced by research, which shows that real wages in Essex fell by about 24 percent after the Black Death and remained at that level up to the late fifteenth century, appears to support Snooks's position.[51] Also Mayhew's estimates mentioned earlier show a pattern of per capita income growth similar to that of Snooks, though somewhat slower: £2.6 in 1086, £4.2 in 1300, and £10.2 in 1688.[52]

While the commercialization of agriculture, the elimination of the remnants of manorial constraints, and the emergence of new dominant classes in rural England were the major developments in the fifteenth and sixteenth centuries as shown earlier, there were also some changes in the industrial scene. Although England continued to export mainly unfinished cloth – which was finished on the continent and sold back to English consumers – the transformation of England from an exporter of raw wool to an exporter of manufactured cloth was completed in the sixteenth century. What was particularly important for the future of the industry, a new product, the "new draperies," was developed from the middle decades of the sixteenth century. Continental producers had earlier invaded English overseas markets for cloth with this product. By mastering its production, English manufacturers were able to sustain their overall level of export in the early seventeenth century. To illustrate, estimated woollen exports in 1606/14 were as follows: cloth, £1,193,000; new draperies, £347,000. The comparable figures for 1640 are £847,000 for cloth and £605,000 for the new draperies.[53] Thus, while the export of cloth declined, that of the lighter product, the new draperies, almost doubled. This lighter product was to capture new markets in the warmer climates and become the main source

[50] Snooks, *Economics Without Time*, p. 263; for details of the argument, see pp. 256–264.

[51] L. R. Poos, *A Rural Society after the Black Death: Essex, 1350–1525* (Cambridge: Cambridge University Press, 1991), pp. 52 and 211, cited by Snooks, "Great Waves of Economic Change," pp. 71–72.

[52] Mayhew, "Modelling medieval monetisation," pp. 71–77. Mayhew presents his estimates in 1086 prices: £0.13 in 1086, £0.21 in 1300, and £0.51 in 1688. To compare with Snooks's estimates, these figures have been converted to 1688 values, using Mayhew's 20-fold increase in prices between 1086 and 1688.

[53] Coleman, *The Economy of England*, p. 64; Bowden, *The Wool Trade*, p. 44.

of export growth in the late seventeenth and eighteenth centuries. The indication is that the woollen industry still sold the bulk of the output overseas. A rough estimate of the annual value of the industry's total output in the 1580s puts it at £1.5 million.[54] This suggests that the exports in 1606/14 stated earlier could not have been less than two-thirds of the total output at the time.

There was also some stirring in other sectors of manufacturing in the late sixteenth and early seventeenth centuries. Joan Thirsk has documented the establishment in England of several manufacturing industries between 1540 and 1630.[55] Apart from the establishment of new industries, output in mining and iron production increased during the period. Pig iron production is estimated to have grown from 5,000 tons a year in the 1550s to about 20,000 tons per annum in the 1630s.[56] Although existing estimates of coal output during the period are of doubtful quality, it is believed nonetheless that coal production increased greatly in the sixteenth and early seventeenth centuries, mainly to meet increased demand for home heating at a time of rapid population growth and urbanization. In the opinion of A. E. Musson, technological improvement in coal mining and use of coal fuel was a major development of the period, with important consequences for subsequent industrial growth.[57]

An important link between the socio-economic changes of the centuries from Domesday England to the Restoration, and the development of industrial production in the 200 years that followed, is the evolution of political institutions in the former period. This political development is characterized by the strengthening of the central administration at the expense of seigneurial authority at the local level and the establishment of effective power sharing between parliament and the monarchy. These institutional changes are described often in the literature as the emergence of the nation-state and the growth of parliamentary power. Central to the process leading to the changes is the need of the central administration for revenue. To stress

[54] Sybil M. Jack, *Trade and Industry in Tudor and Stuart England* (London: Allen and Unwin, 1977), pp. 103–104.

[55] As she reports, "I was struck [while indexing a volume on seventeenth-century documents] by the frequency of references to consumer goods like brass, cooking pans, cambric, gold and silver thread, hats, knives, lace, polvadis, ribbons, ruffs, soap, and tape. . . . I recognized some of them as consumer goods which had been roundly condemned in 1547 as foreign fripperies that robbed this kingdom of its bullion. Yet here they were in everyday use in the seventeenth century, and, what is more, being manufactured in England. I decided to pursue their origins. In the end . . . I found a deliberate government policy to foster the native manufacture of consumer goods." (Joan Thirsk, *Economic Policy and Projects: The Development of a Consumer Society in Early Modern England* (Oxford: Clarendon Press, 1978, p. v.)

[56] Jack, *Trade and Industry*, pp. 77–78.

[57] A. E. Musson, *The Growth of British Industry* (New York: Holmes and Meier, 1978), p. 52.

the centrality of this factor, one authority has defined the state as "an organization with a comparative advantage in violence, extending over a geographic area whose boundaries are determined by its power to tax constituents."[58]

The origin of the English state in a conquest situation – the Norman Conquest – had given England a relatively strong central administration at an early stage in comparison with Continental countries, such as France and Spain. In the course of the thirteenth century, the authority of the national government was further extended.[59] The growth of the wool trade in the medieval era gave the Crown a large source of revenue, which was administratively inexpensive to tax but politically difficult to handle. The first export tax on wool, 7 shillings and 6 pence (7s:6d.) per sack, was levied in 1275. By the fourteenth and fifteenth centuries tax on the external trade organized around wool exports had become the main source of revenue for the Crown.[60] But the tax on wool export affected interest groups with considerable political clout – the merchant exporters and the wool growers (made up of large demesne producers and a multitude of small freeholders). Parliament was composed largely of people drawn from these interest groups, especially wool growers. Ultimately parliament won its initial power to check the authority of the monarch out of the fourteenth-century struggle over the wool tax. The compromise that ended the struggle left the king "in possession of a high permanent tax on wool, and parliament was left in possession of the power to control it."[61] The ability of parliament to determine the amount of revenue available to the Crown became the most effective instrument with which parliament influenced the policies of the national government. The Civil War and the Glorious Revolution of 1688 subsequently consolidated the power of Parliament.

The establishment of the power of this representative body, that is Parliament, provided an effective channel for dominant interest groups in England to influence the policies of the national government in both domestic and external matters. To understand the policies of the English government in the seventeenth and eighteenth centuries one must, therefore, study the evolution of interest groups that influenced those policies through Parliament. Robert Brenner's study of London's overseas traders shows how the emergence of a new interest group in overseas trade between

[58] North, *Structure and Change*, p. 21.
[59] North and Thomas, *The Rise of the Western World*, p. 64.
[60] Power, *The Wool Trade*, p. 75; North and Thomas, *The Rise of the Western World*, p. 83.
[61] Power, *The Wool Trade*, p. 85, but see pp. 63–85 for more details on the politics of the wool tax.

1550 and 1653 influenced the direction of England's foreign policy during the period of the Commonwealth.[62] The new group was made up largely of merchants in the trade of the Americas. In the struggle between the Crown and Parliament leading to the Civil War, this group of merchants, because of their socio-economic origin and because Crown policies excluded them from the traditional areas of English overseas trade, joined the landed classes in supporting Parliament. The company merchants, whose monopoly rights depended on the Crown, did the opposite. The merchants in the rapidly growing American trade made a major contribution to the parliamentary cause through their effective mobilization of support among London radical elements, which was financially and militarily crucial for Parliament's ultimate victory. This placed the American traders in a strong position to influence the foreign policy of the Commonwealth administration in a manner consistent with their own commercial interest.

Their influence is clearly discernible in the aggressive and expansionist commercial and colonial policies pursued by the Commonwealth, which left a long-lasting impact on English commerce and economic development. Probably the most important outcome of their influence was the creation of a permanent, well-equipped and highly efficient navy, single-mindedly devoted to the expansion and protection of English commerce. Started in 1649, representatives of the American traders played a major role in the conception and execution of the naval program. They dominated the important committees charged with the implementation of the plan. And most of the naval officers were recruited from among former ship masters in the American trade. The influence of these merchants was also very much behind the laws of the 1650s, aimed at the destruction of Dutch hegemony in the trade of the Americas and the ultimate use of the navy to achieve that purpose militarily.

Several gains made by Parliament were lost after the Restoration, but these were fully reinstituted by the Glorious Revolution of 1688. This development of parliamentary power, and the evolution of socio-economic structures that produced dominant groups whose self-interests were consistent with the growth of English overseas trade and the development of commodity production in England, is pertinent to a proper understanding of the politico-military and economic processes of the late seventeenth and eighteenth centuries. The role of Parliament was particularly important in the relatively more efficient management of English public finance in

[62] Robert Brenner, *Merchants and Revolution: Commercial Change, Political Conflict, and London's Overseas Traders, 1550–1653* (Princeton NJ: Princeton University Press, 1993). Much of what follows, up to the next reference, is based on this book.

the eighteenth century as compared with France, especially in the establishment and management of the English national debt.[63]

It is thus reasonable to say that important socio-economic and political changes occurred between Domesday and the middle decades of the seventeen century. No explanation of the growth and development of industrial production, which took place from 1660 to 1850, would be complete without a proper consideration of these changes. To create a helpful context for such a consideration, we need to make a generalized pronouncement on the character and overall level of the socio-economic development of the period and show its regional distribution.

There is a consensus in the literature that the social changes, which occurred in England between 1086 and 1660, created a conducive social environment for the English economy to respond vigorously to growth stimuli. Changes in the social relations of production had eliminated virtually the extraction of economic surplus through extra-economic coercion. The spread of market activities and the drastic reduction of subsistence production increased considerably the capacity of market forces to allocate resources. In particular, the commercialization of agriculture and the establishment of an active land market exposed the relatively large agrarian population to the operation of market forces. On the political side, the development of a representative system of government, with the representatives of the dominant socio-economic groups exercising an effective control over the extraction and utilization of resources by the national government, provided secure protection for the property rights of economic entrepreneurs, and helped to keep in check the phenomenon of rent-seeking by political and bureaucratic office holders.

However, there is some disagreement on the specific character of the agrarian and industrial development, which occurred during the period. It is held in some sections of the literature that England's agriculture had become capitalist by the sixteenth century. Others disagree, arguing that the predominance of free wage labor is the defining element of the capitalist system of production, and that the existing evidence shows that self-employed producers cultivating family farms were still predominant in English agriculture in the first decades of the seventeenth century.[64] It would seem more accurate to characterize England's agriculture in the first half of

[63] Brenner, *Merchants and Revolution*, pp. 577–632 and 638–716; Derek Massarella, "'A World Elsewhere': Aspects of the Overseas Expansionist Mood of the 1650s," in Colin Jones, Malyn Newitt and Stephen Roberts (eds.), *Politics and People in Revolutionary England: Essays in Honour of Ivan Roots* (Oxford: Basil Blackwell, 1986), pp. 141–161; H. R. Trevor-Roper, *Religion, the Reformation and Social Change, and Other Essays* (second edition, London: Macmillan, 1972), pp. 345–391.

[64] For a critical discussion of the literature on the subject, see Joseph E. Inikori, *Slavery and the Rise of Capitalism: The 1993 Elsa Goveia Memorial Lecture* (Mona, Jamaica: The University of the West Indies, 1993), pp. 2–13.

the seventeenth century as a highly market-oriented agriculture dominated by smallholder commercial family farmers.

On the characterization of the industrial development during the period, the views in the literature center on the notion of an industrial revolution in the years 1540–1640, which John Nef propounded several decades ago.[65] This view has now been largely discredited.[66] The new industries encouraged by the government, which Thirsk noted, were not successfully developed. As Musson observes,

> such projects were generally more notable for their exaggerated pretensions, mismanagement, corruption and eventual failure than for their technological innovations . . . this country [England] long remained heavily dependent on foreign imports of glass, paper, iron, copper, brass, etc., despite protective tariffs.[67]

Coleman expresses a similar view. After examining the industrial development of the 200 years from 1450 to 1650, he warns: "The temptation to resort to hyperbole . . . or to feel oneself present at the unearthing of the roots of modern, materialistic industrial civilisation: such delights must be resisted." And he adds:

> Woollen cloth aside, English exports were still those of a primary producer, with virtually no other manufactured wares in the export list. . . . Nor was it all a matter of supply. English demand for many manufactured wares was limited largely because levels of wealth and income, as of culture, sophistication, and urban achievement, were inferior to those of the great towns of Europe.[68]

Although these views are understandable in the context of Nef's claims, it is still valid to say that some progress was made in the development of mining and manufacturing in England in the late sixteenth and early seventeenth centuries. This industrial progress – amounting to proto-industrialization in the case of the woollen industry – certainly made some contribution to subsequent industrial development in the eighteenth and nineteenth centuries. However, to have a proper sense of the contribution that the socio-economic changes between 1086 and 1660 made to the growth and development of industrial production in the 200 years that

[65] John U. Nef, "The Progress of Technology and the Growth of Large Scale Industry, 1540–1640," *Economic History Review*, original series, V (1934–35); John U. Nef, "A Comparison of Industrial Growth in France and England from 1540 to 1640," *Journal of Political Economy*, XLIV (1936).

[66] See Jack, *Trade and Industry*, pp. 18–26, for a review of the literature; also Musson, *The Growth of British Industry*, pp. 30–53.

[67] Musson, *The Growth of British Industry*, p. 43.

[68] Coleman, *The Economy of England*, p. 88 and pp. 69–70. Robert Brenner disagrees with this view of limited English demand for manufactured wares. He holds that in the first half of the seventeenth century, "a growing English home market was absorbing record imports of commodities of all types." See Brenner, *Merchants and Revolution*, p. 42.

followed, we need to know the regional distribution of the developments in both periods. The distribution in the later period will be examined in the next section of this chapter. Here we examine that of the earlier period.

As noted earlier in the chapter, much of the impetus for change during the period came from population growth and overseas trade. The southern counties, favored by their greater population densities from the very beginning of our period (1086), were the centers of early development. As we have seen, all top 10 counties in the amount of wealth assessed per acre for tax payment at this time were in the south. The tax records of the early sixteenth century show that the most densely populated counties were still in the south,[69] although the population growth of the preceding centuries had filled up much of the wilderness that existed in parts of England in 1086, especially in the northern counties.

The southern counties were also major beneficiaries of the expansion of overseas trade during the period, which was dominated by wool exports, and from the sixteenth century by cloth exports. Outside the south, the Midland counties were also involved in wool exports on a large scale. As England gradually moved from wool exports to cloth exports, the woollen industry developed up to the seventeenth century more or less like an agro-allied industry. Every county produced some quantity of wool. For example, in 1700, 35 counties produced 1,000 packs of wool or more each; 24 produced 2,000 and above; 13 produced 3,000 and more; the largest producers, Lincoln, Kent, Dorset, Northampton, Sussex, and Northumberland, produced 6,000 packs, 5,500 packs, 4,000 packs, 4,000 packs, 4,000 packs and 4,000 packs, respectively.[70] As cloth imports from Continental Europe were reduced, cloth manufacturing developed in the counties based on locally supplied wool. Much of it, in all probability, was at the level of peasant craft for local consumption. Again, in the sixteenth and seventeenth centuries, large-scale cloth production was located in the south, in particular, the West Country and East Anglia.[71] The latter regions supplied the bulk of the cloth exported during the period. They thus developed as the most industrialized parts of England in the late sixteenth and early seventeenth centuries. According to the textile historian, Julian de Lucy Mann:

> In 1600 and throughout the previous century the clothiers of Gloucestershire, Wiltshire, and east Somerset had been distinguished from most of their neighbours by the degree of their concentration on unfinished, so-called "white" cloth, mainly for export to Holland and Germany, whence, after being dyed and finished, it was transported all over Europe.[72]

[69] Miller, "Introduction," p. 29.
[70] Bowden, *The Wool Trade*, p. 40.
[71] Pollard and Crossley, *The Wealth of Britain*, pp. 101–102.
[72] Julian de Lucy Mann, *The Cloth Industry in the West of England from 1640 to 1880* (Oxford: Clarendon Press, 1971), pp. xii–xiii.

Of East Anglia, Coleman says:

> Before the Industrial Revolution, the three counties of Norfolk, Suffolk and Essex had at various times been the scene of important industrial and commercial activity. . . . the widespread woollen industry of Suffolk and northern Essex reached the appex of its considerable importance in the late fifteenth and early sixteenth centuries . . . When the "New Draperies" came to England from the Low Countries, they came first to East Anglia. Norwich added a miscellany of "stuffs" to its traditional worsteds, and Colchester acquired a fame for bayes and sayes. Though these two became the main urban centres for the manufacture and marketing of the new fabrics, many smaller towns and villages, especially along the Essex-Suffolk border were busy with them. . . . The whole area was seemingly in the forefront of advance, prosperous in agriculture as in industry, accepting from the countries across the North Sea new ideas in farming as well as new men and new fabrics in textiles.[73]

Much of the stimulus from the growth of manufacturing in the densely populated and agriculturally rich southern counties of England would appear to have been limited to the south, and to a lesser extent, the West Midlands. The latter supplied wool to the broadcloth regions. But, in general, the industrial centers of the south, located in agriculturally rich areas, supplied the bulk of their own food and raw materials, although the cattle trade from the north may have provided some animal products.[74] In this way, the growth of manufacturing in the south further increased the level of agricultural development in the region as compared with that of the northern counties. It is no surprise that the concentration of wealth in the south further increased over the period. The areas of greatest increase of wealth were in the cloth-producing regions of the southwest (Gloucestershire and Wiltshire) and East Anglia.[75]

Developments in the Midlands over the period under consideration were just good enough to keep the region in the same position as in 1086 in relation to the rest of England. As one historian of the Midlands wrote,

> The changes in land use in the East Midland region in the late middle ages, though they have left substantial visible remains, were an adaptation which left the five counties close to the median of wealth in the early sixteenth century, just as they had been in the early fourteenth. The Midland counties indeed show little fluctuation at any time from Domesday onwards.[76]

[73] D. C. Coleman, "Growth and Decay During the Industrial Revolution: The Case of East Anglia," *The Scandinavian Economic History Review*, Vol. X, nos. 1 and 2 (1962), pp. 115–117.

[74] J. A. Chartres, *Internal Trade in England, 1500–1700* (London: Macmillan, 1977), pp. 13–27.

[75] Miller, "Introduction," p. 29.

[76] Edmund King, "The Occupation of the Land: The East Midlands," in Miller (ed.), *Agrarian History*, p. 76.

Because northern England did not share greatly in the developments of the centuries from 1086 to 1660, the northern counties continued to move farther below the southern ones in wealth and socio-economic development during the period. The evidence for Lancashire and Yorkshire shows this clearly. As Edward Miller states,

> At the opening of the fourteenth century, even after vigorous expansion in preceding generations, Yorkshire and Lancashire were still relatively poor counties. In terms of the ratio of taxable wealth to acreage, if the four northernmost counties are ignored, only Devon and Cornwall ranked lower than the West Riding; Lancashire and the North Riding were the West Riding's near neighbours in the order; and, while the East Riding came higher in the list, it was still somewhat below the middle point. This relative poverty reflected a terrain and climate which restricted the options open to farmers, so that the natural landscape had been less radically modified here than in many parts of England.[77]

That the stimulus from developments in the south was not seriously felt in the north of England during the period in question is also demonstrated by the author of a detailed social history of Lancashire from 1558 to 1939.[78] His description of mid-Tudor Lancashire shows that the social changes between 1086 and 1550, examined earlier in the chapter, did not reach the county:

> Mid-Tudor Lancashire was an obscure, remote, insular and backward corner of England. The population density was low, towns were small and underdeveloped, long-distance trade was very limited in its scope and range, and wide areas of the county were given over to moss and moorland. Local magnates retained considerable autonomy; some still exercised feudal rights of wardship and marriage over their tenants, and labour dues and payment in kind were widespread elements in the relationships between small farmers and their landlords.[79]

As a measure of the gap in wealth and income between Lancashire and the more developed southern counties in the sixteenth century, the tax assessment for 1515 put Lancashire at £3.8 per thousand acres; the comparable figures for Essex, Kent, and metropolitan Middlesex are £102, £100.5, and

[77] After examining the changes of the fourteenth and fifteenth centuries, Miller, again, remarks: "There are indications, therefore, of development as well as of difficulties in the Yorkshire and Lancashire countryside. Even so, both counties at the opening of the sixteenth century ranked even lower in assessed taxable wealth than they had in 1334 and the growth of their taxable capacity was well below the average for the country as a whole. It had been lowest of all in Lancashire, suggesting the limited economic potential of such development of stock farming as there had been, and also the slight progress yet made by the woollen industry of Salfordshire and Blackburnshire." Edward Miller, "The Occupation of the Land: Yorkshire and Lancashire," in Miller (ed.), *Agrarian History*, p. 42.

[78] John K. Walton, *Lancashire: A Social History, 1558–1939* (Manchester: Manchester University Press, 1987).

[79] Walton, *Lancashire*, p. 7.

£238.1, respectively. Of the 38 English counties assessed in this year, Lancashire came last, and the county "was to remain so for well over a century."[80]

Thus, although some socio-economic changes occurred in all parts of England between 1086 and 1660, the really fundamental changes were limited to the densely populated, agriculturally rich, and industrially more developed, counties of the south, and, to a lesser extent, those of the Midlands. In particular, Lancashire and Yorkshire were still very backward in socio-economic structure and in the technology and organization of production by the early decades of the seventeenth century. On the whole, the level of industrial development in England in the first decades of the seventeenth century was still considerably lower than that of the major centers of commerce and industry in Continental Europe. But some progress had been made between 1540 and 1660, especially in the West Country and East Anglia.

2.2 GROWTH AND DEVELOPMENT OF INDUSTRIAL PRODUCTION, 1660–1850

The central focus of the survey in this section is the structural transformation of the English economy from the predominance of agriculture to that of industry and the development of the organization and technology of industrial production. But these changes in industry did not occur in isolation from changes in other sectors of the economy – changes in agriculture, in services, and in trade and transport. For this reason, much space is allocated in the section to developments in these sectors. But it must be understood that this is done in order to be able to show in subsequent chapters how changes in these sectors related to the growth and development of industrial production during the period. We start with agriculture.

As was shown in the preceding section, the dominant features of England's agrarian history from 1086 to 1660 were the expansion of production for market exchange at the expense of subsistence production; the freeing of the cultivators from extra-economic coercion; the transfer of the land to small freeholders, copyholders, and tenants; and the emergence of the yeoman farmers and a new class of profit-oriented large landholders. The latter were still a small minority by 1660, as the number of small farmers increased considerably between 1500 and 1650.[81] The 200 years

[80] Walton, *Lancashire*, p. 8.

[81] R. B. Outhwaite, "Progress and Backwardness in English Agriculture, 1500–1650," *Economic History Review*, 2nd ser., XXXIX, 1 (1986), pp. 1–18; E. M. Leonard, "Inclosure of Common Fields in the Seventeenth Century," *Transactions of the Royal Historical Society*, new series, XIX (1905), reprinted in E. M. Carus-Wilson (ed.), *Essays in Economic History*, vol. II (London: E. Arnold, 1962), p. 228; J. H.

that followed witnessed further fundamental changes in the agrarian structure – a reduction of the number of small farmers; the growth and predominance of large landholders, large farms, and large tenant farmers; the emergence of free wage labor as the dominant form of labor in agriculture; and the spread of enclosure.

Figures reflecting the over time changes in the agrarian structure are scarce and of questionable quality. Those generally employed by historians for the seventeenth century are derived from Gregory King's social statistics for England and Wales in 1688. Peter Lindert has shown that King's figures exaggerated the size of the agricultural sector in the late seventeenth century.[82] Accordingly, the King's tables have been revised, first by Lindert and then by Lindert and Williamson. The latter revision shows that in 1688 there were 227,440 families employed in agriculture in England and Wales, excluding laborers. Of this total, freeholders (this must mean all small farmers working farms of 20 to 100 acres employing family labor) numbered 124,058 and farmers (that is, large tenant farmers) counted 103,382. A similar revision of Joseph Massie's mid-eighteenth-century tables gives a figure of 140,871 families for freeholders, 134,160 for husbandmen, and 103,977 for farmers, making a total of 379,008 families employed in agriculture in England and Wales in 1759, excluding wage workers. Lindert and Williamson find Colquhoun's figures generally consistent with local census and burial data. They, therefore, accept them without revision. For 1801–03, the figures are as follows: freeholders, 160,000 families; farmers, 160,000 families. This gives a total of 320,000 families for 1801–03.[83] Figures for the rest of the nineteenth century, which are derived from census data, are generally more reliable. According to the census data of 1831, there were a total of 961,100 families employed in agriculture in the whole island of Britain; of whom large tenant farmers, who worked large farm units rented from large landholders, numbered 144,600, and small farmers working farms of 20 to 100 acres (mostly owned and partly rented) using family labor totaled 130,500. In addition, there were 686,000 free wage-earning families employed by the large tenant farmers.[84] As for changing

Habakkuk, "English Landownership, 1680–1740," *Economic History Review*, X (1939–40), p. 2.

82 Peter H. Lindert, "English Occupations, 1670–1811," *Journal of Economic History*, Vol. XL, No. 4 (1980), pp. 706–707.

83 Lindert, "English Occupations," Table 3, pp. 702–704; Peter H. Lindert and Jeffrey G. Williamson, "Revising England's Social Tables, 1688–1812," *Explorations in Economic History*, 19 (1982), pp. 385–408. For a criticism of Lindert's estimates, which by implication also applies to Lindert and Williamson, see Julian Hoppit, "Counting the Industrial Revolution," *Economic History Review*, 2nd series, XLIII, 2 (1990), pp. 177–178.

84 J. H. Clapham, "The Growth of An Agrarian Proletariat, 1688–1832: A Statistical Note," *Cambridge Historical Journal*, Vol. I (1923), p. 93.

farm size over time, the average for demesnes, copyholds and leased land in northern England, and in open villages in southern England was 65 acres in 1700, according to estate surveys. Enclosed farms in southern England at this time were larger. By 1800, the average had increased to 150 acres for all types of farms in the south and 100 acres in the north. For the nineteenth century, the data for the 1890s show that there were, in England and Wales, 83,000 holdings of over 100 acres and 129,000 of between 20 and 100 acres; holdings of less than 20 acres made up only 6 percent of the agricultural land in England and Wales at this time.[85]

These figures raise several questions about the nature of England's agrarian structure and its change over time between 1660 and 1850. The capitalist character of English agriculture from the sixteenth century onward is often stressed.[86] The evidence for 1500–1650 referred to earlier shows that self-employed family farmers dominated English agriculture up to the middle of the seventeenth century. The figures just presented indicate that as late as the middle of the eighteenth century, the number of entrepreneur families (379,008) still exceeded that of free wage workers in agriculture.[87] The figures for 1801–03 show that "laboring people in husbandry" numbered 340,000 families against 320,000 entrepreneur families.[88] These figures, therefore, indicate that free wage workers, the defining element of the capitalist system of production, did not become predominant in English agriculture until well into the nineteenth century.[89] Even by then, their dominance was not overwhelming. Chambers and Mingay are certainly right in their view that "The picture sometimes presented of English farming, with a select band of large

[85] Robert Allen, "Agriculture during the industrial revolution," in Floud and McCloskey (eds.), *The Economic History of Britain*, p. 99; G. E. Mingay, *Enclosure and the Small Farmer in the Age of the Industrial Revolution* (London: Macmillan, 1968), p. 14; Patrick O'Brien and Caglar Keyder, *Economic Growth in Britain and France 1780–1914: Two Paths to the Twentieth Century* (London: Allen & Unwin, 1978), p. 127.

[86] Immanuel Wallerstein, *The Modern World System I: Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century* (New York: Academic Press, 1974); Robert Brenner, "Agrarian Class Structure and Economic Development in Pre-Industrial Europe," *Past and Present*, No. 70 (1976), pp. 31–75; Robert Brenner, "The Origins of Capitalist Development: A Critique of Neo-Smithian Marxism," *New Left Review*, No. 104 (July-August, 1977), pp. 25–92; Brenner, *Merchants and Revolution*, p. 40.

[87] The social tables analyzed by Lindert and Williamson do not show the number of wage-earning families for each sector. They are lumped together for all sectors, except for 1801–1803. For 1688 wage-earning families in all sectors are put at 284,997, and 240,000 for 1759. Lindert and Williamson, "Revising England's Social Tables," pp. 389 and 397.

[88] Lindert and Williamson, "Revising England's Social Tables," p. 401.

[89] For more detail, see Inikori, *Slavery and the Rise of Capitalism*, pp. 2–13.

capitalist farmers employing a vast army of landless laborers, is patently a false one."[90]

The figures also touch on the old debate about the decline of the small farmer. To the extent that we can rely on the story told by these figures and taking account of the growth of the small family farmers between 1450 and 1650, the indication is that a considerable reduction in the number of the small farmers occurred between 1650 and 1688. Thereafter their numbers increased (from 124,058 families in 1688 to 275,031 in 1759), to be considerably reduced again in the second half of the eighteenth century (down to 160,000 families by 1801–03). Before the census of 1831, the population of small farmers would appear to have been reduced further by about one-third.[91] This would mean that a considerable reduction of the number of small farmers did occur during the era of parliamentary enclosure, 1760–1830, even though a much earlier reduction took place in the second half of the seventeenth century. In this way, the protagonists on both sides of the debate would appear to be half winners and half losers.[92] However, the more recent research holds that the decline of yeoman agriculture from the second half of the eighteenth century was due to factors other than parliamentary enclosure. It is argued that early enclosures and those of the seventeenth century had the effect of enlarging the size of farms and reducing the number of small farmers, particularly the enclosures before the mid-sixteenth century, those of the eighteenth and nineteenth centuries had little effect on landownership.[93]

These structural changes provide the necessary background against which to view the growth of agricultural output during the period under

[90] J. D. Chambers and G. E. Mingay, *The Agricultural Revolution, 1750–1880* (London: Batsford, 1966), p. 18.

[91] To arrive at this conclusion, I have assumed that about 20,000 out of the 130,500 families of small farmers in the whole of Britain in 1831 may be assigned to Scotland.

[92] For more detail on the debate, see Mingay, *Enclosure and the Small Farmer*, pp. 9–11, where the extent of the literature and some of the participants are discussed. Basically Karl Marx and his subsequent followers argued that parliamentary enclosure was the mechanism employed by the large landholders to rob the small farmers of their land. Several historians countered with the argument that the small farmers declined largely between 1650 and 1750 owing to the impact of low prices and the land tax.

[93] Robert C. Allen, *Enclosure and the Yeoman: The Agricultural Development of the South Midlands, 1450–1850* (Oxford: Clarendon Press, 1992), pp. 14–15. As Allen put it, "The real collapse of yeoman agriculture occurred in the eighteenth century, in open field villages as well as in enclosed. Many yeomen were freeholders, and they sold their property to great estates. Other yeomen held their land on copyholds for lives or beneficial leases for lives or long terms of years, and they lost their land when large landowners stopped renewing these agreements. These real estate dealings were due to the creation of modern mortgages which increased the propensity of great estates to buy land."

consideration. The more recent literature contains somewhat conflicting estimates. Earlier estimates of output growth by Deane and Cole and by Crafts have been thoroughly reviewed and revised by Jackson.[94] The revised estimates show that output grew considerably between 1660 and 1740, and stagnated during the 50 years from 1740 to 1790. Overall, output grew by 40 percent in the first period, and by 14 percent in the second, being an average of 4.3 percent and 2.7 percent per decade, respectively. Because population stagnated between 1660 and 1740 and grew relatively fast from 1740 to 1790, agricultural output per head increased significantly in the first period, while it declined in the second.[95]

In contrast to Jackson's estimate, Allen shows a much larger growth of output in the second half of the eighteenth century, with an increase of 49 percent between 1750 and 1800 and a further growth of 53 percent between 1800 and 1850.[96] Crafts also shows rapid increases in output for the nineteenth century – 1.18 percent per annum between 1801 and 1831.[97] On the other hand, Gregory Clark argues that the bulk of the agricultural productivity gains in England and Wales before 1850 had been achieved by 1770, so that very little change occurred between 1770 and 1850. He estimates that productivity levels for England as a whole in 1701–30 were 92 percent of their level in 1850.[98] Judging from the whole evidence and analysis, Jackson's estimates for the period 1660–1790 appear to receive more support, even by Allen who thinks that the Crafts's series, as reconstructed by Jackson, "may give a more accurate indication of the rhythm of change."[99] And Clark's conclusion that the bulk of the productivity gains achieved before 1850 had been accomplished by 1730 is consistent with Jackson's estimate.

Although there are disagreements over the specific rate of growth of output in the first half of the nineteenth century, there is a consensus among the authorities that domestic production of agricultural products fell far short of what was needed during the period, and the gap was filled by imports. This was due to the inter-related phenomena of growing industrialization, rising per capita income, and expanding population – the

[94] R. V. Jackson, "Growth and Deceleration in English Agriculture, 1660–1790," *Economic History Review*, 2nd series, XXXVIII, No. 3 (August, 1985), pp. 333–351; Phyllis Deane and W. A. Cole, *British Economic Growth, 1688–1959: Trends and Structure* (Cambridge: Cambridge University Press, 1962), pp. 65, 78; N. F. R. Crafts, "British Economic Growth: 1700–1831: A Review of the Evidence," *Economic History Review*, 2nd series, XXXVI, No. 2 (1983), p. 187.

[95] Jackson, "Growth and Deceleration," pp. 346 and 349.

[96] Allen, "Agriculture during the industrial revolution," Table 5.1, p. 102.

[97] Crafts, *British Economic Growth*, Table 2.10, p. 42.

[98] Gregory Clark, "Agriculture and the Industrial Revolution: 1700–1850," in Mokyr (ed.), *The British Industrial Revolution*, pp. 246–247.

[99] Allen, "Agriculture during the industrial revolution," p. 103.

population of England doubled between 1801 and 1851, increasing from 8.3 million to 16.8 million.[100] Conceptually, the gap has been computed differently by scholars. Crafts calculates that net agricultural imports grew from 16.4 percent of total consumption of agricultural products in 1801 to 22.6 percent in 1841, and 31.8 percent in 1851. Using a broader definition of agricultural products, Clark calculates much larger proportions for imports.[101] On the whole, the available evidence shows that for the entire period 1660–1850, it was only in the years 1660–1740 that the growth of agricultural output exceeded the rate of population growth in England.

The changes in agricultural output outlined in the preceding paragraphs were partly related to the structural developments examined earlier and partly associated with technical and institutional changes.[102] A brief discussion of the contribution of enclosure is pertinent. It is generally agreed that the enclosure movement stretched over several centuries. But historians had believed that more land was enclosed in England in the eighteenth than in any other century.[103] The chronology of English enclosure published in 1983 by Wordie presents a totally different picture. Wordie uses the term enclosure in its legal rather than its physical sense. Thus by enclosed land he means "land held in severalty, falling completely under the power of one owner to do with as he pleased, whether or not he chose to enclose his land in the literal sense with hedges or ditches. Such land was free of all common rights, except possibly for a right of way." On the other hand, open field or common land applies to land "subject to a measure of common rights."[104] Constructed within this context, Wordie's chronology shows the

[100] E. A. Wrigley and R. S. Schofield, *The Population History of England, 1541–1871: A Reconstruction* (Cambridge: Cambridge University Press, 1986), p. 129.

[101] Crafts, *British Economic Growth*, Table 6.4, p. 127; Clark, "Agriculture and the Industrial Revolution," pp. 256–257.

[102] For the contribution of the changing structure of farms (small farms versus large farms), see Outhwaite, "Progress and Backwardness," pp. 8–16; G. E. Mingay, "The Land Tax Assessments and the Small Landowner," *Economic History Review*, 2nd series, XVII (1964–65), pp. 381–388; Mingay, *Enclosure and the Small Farmer*, pp. 26–31; Chambers and Mingay, *The Agricultural Revolution*, pp. 54–75. Outhwaite, Mingay, and Chambers treat large farms as intruments for productivity gains. But Allen argues the contrary. He believes that the technical changes of the seventeenth century were accomplished by the yeoman farmers, and, so, characterizes the agrarian developments of 1660–1740 as the yeoman agricultural revolution, to which he attributes the bulk of the agricultural progress in England from 1660–1850. Allen, *Enclosure and the Yeoman*, pp. 18–20.

[103] This view was stated by McCloskey several decades ago. See D. N. McCloskey, "The Economics of Enclosure: A Market Analysis," in W. N. Parker and E. L. Jones (eds.), *European Peasants and Their Markets* (Princeton, NJ: Princeton University Press, 1975), p. 125.

[104] J. R. Wordie, "The Chronology of English Enclosure, 1500–1914," *Economic History Review*, 2nd series, XXXVI, No. 4 (1983), p. 484. See the exchange arising from this paper between Wordie and John Chapman in the same journal, XXXVII, No. 4 (1984), pp. 557–562.

percentage of the total surface area in England enclosed in each specified time period as follows:[105] already enclosed in 1500, 45.0 percent; enclosed 1500–99, 2.0 percent; enclosed 1600–99, 24.0 percent; enclosed 1700–99, 13.0 percent; enclosed 1800–1914, 11.4 percent; Commons remaining in 1914, 4.6 percent.

This would mean that the pre-eminent century for enclosure was the seventeenth and not the eighteenth, although the bulk of enclosures by parliamentary acts occurred between 1760 and 1830. On the available evidence, the indication is that much of the seventeenth-century enclosures took place after 1650.[106] All of this would appear to be consistent with other evidence relating to the second half of the seventeenth century. It is believed that the field cultivation of the new fodder crops, which revolutionized agricultural practice in England, began in the middle decades of the seventeenth century.[107] Research also shows that much of the changes in landholding structure in England occurred before 1780. Evidence from Leicestershire shows that about 75 percent of the land was already owned in units of over 375 acres in 1780. What is more, the evidence shows that parishes enclosed without a parliamentary act, both before and after 1780, uniformly had larger proportions of their lands held in large units. The explanation for this is that to overcome the opposition of small land-holders to enclosure without an act, large landowners intending to enclose had to buy out the former. Thus, to the extent that enclosure contributed to the enlargement of farms, it did so more in the period before 1760 (the beginning of large-scale parliamentary enclosure) than the one after.[108] As was shown in the earlier section of the chapter, the dominant feature of developments in the fifteenth and sixteenth centuries was the transfer of the land to small and yeoman farmers. This being so, the expansion of acreage held in large units must have occurred in the seventeenth century, possibly more so in the second half of the century when enclosure was more rampant.

As to the exact contribution of enclosure to the growth of agricultural output, scholars are reluctant to be specific, even though there is a general agreement that the better defined and more exclusive property rights instituted by enclosure were more conducive to innovation and more cost saving in management than open fields. Dr. Yelling, who probably has done more detailed work on the subject than other scholars, will not specify the

[105] Wordie, "Chronology," Table 7, p. 502. The typographical error in the table pointed out by Wordie in his reply to Chapman is corrected as stated.

[106] Outhwaite, "Progress and Backwardness," p. 4.

[107] Outhwaite, "Progress and Backwardness," p. 4.

[108] J. A. Yelling, *Common Field and Enclosure in England, 1450–1850* (London: Macmillan, 1977), pp. 94–119. Yelling argues that while enclosure, before and after 1780, contributed to the enlargement of landholding units, it did so in conjunction with other factors, especially soil type and market demand.

percentage contribution of enclosure to productivity or output growth over time.[109] However, Wordie is willing to be more specific. He believes that "taking an average of all kinds of land in all kinds of circumstances, the output gains in terms of the cash value of produce may have been anything between 50 percent and 100 percent, once all the technical advantages available to the enclosed farmer had been fully deployed." Based on this, Wordie computes that enclosure contributed between 24 percent and 12 percent to the growth of output in the seventeenth century, and between 13 percent and 6.5 percent in the eighteenth.[110]

Now what about the contribution of technological change? According to Feinstein's figures, gross domestic capital formation in agriculture in Great Britain increased from £2.5 million (1851–60 prices) per annum in 1761–90 to £4.0 million in 1791–1820, £4.5 million in 1821–40, and £6.5 million in 1841–60.[111] But this investment was largely on enclosures, drainage, and farm buildings. The war time labor shortages and high labor costs of 1793 to 1815 did encourage a more widespread adoption of the thresher, which had been introduced in the 1780s.[112] On the whole, however, very little mechanization of agriculture occurred before the later nineteenth century.[113]

Like agriculture, developments in the service sector formed an important part of the overall changes in economy and society, which conditioned the growth and development of industrial production in England between 1660 and 1850. Unlike agriculture, however, the service sector has been little studied. It is, therefore, difficult to display data that show quantitative and qualitative change in all the major sub-sections of the sector over time. If we take a comprehensive view of the composition of the sector, we would say that it is made up of the professions, domestic and personal service,

[109] Yelling, *Common Field and Enclosure*, pp. 174–213.

[110] Wordie, "Chronology of English Enclosure," pp. 503–505. See also McCloskey, "The Economics of Enclosure," pp. 158–160. McCloskey computes that in the eighteenth century "a village was roughly 13 percent more productive in an enclosed than in an open state" (p. 160).

[111] C. H. Feinstein, "Capital Accumulation and the Industrial Revolution," in Roderick Floud and Donald McCloskey (eds.), *The Economic History of Britain since 1700: Volume I, 1700–1860* (Cambridge: Cambridge University Press, 1981), p. 133.

[112] G. Hueckel, "Agriculture during industrialization," in Floud and McCloskey (eds.), *Economic History of Britain*, pp. 189–191.

[113] As Chambers and Mingay put it, "Except for an eddy here and there, the 'wave of gadgets' that is said to have swept over England passed it [agriculture] by until well into the nineteenth century. Looked at from this angle, its mode of expansion corresponds rather with that of the domestic industries that could increase production only by reorganization or by an enlargement of the number of productive units working with traditional tools than with the new factory industries." Chambers and Mingay, *Agricultural Revolution*, p. 3.

trade and transport, communication, financial services (including banking and insurance), and government and defense. For some of these, we have a lot of information but for others very little.

Much is known about the growth and development of services connected with overseas trade – merchanting, shipping, insurance, banking, warehousing, port services, and the defense of sea lanes, markets, and sources of imports.[114] The years 1660–1700 witnessed revolutionary changes in English overseas trade. The combined free on board (f.o.b.) annual value of imports, exports, and re-exports increased from £8.5 million in 1663/69 to £12.3 million in 1699–1701.[115] Even more important was the change in the geographical direction and the commodity composition of English foreign trade during the period. In 1621 northern Europe accounted for 62.4 percent of London imports, and southern Europe accounted for another 31.2 percent, while imports from outside Europe were only 6.4 percent. By 1700, the respective contributions of these three regions were 35.7 percent, 29.7 percent, and 34.7 percent.[116] Because a large proportion of the imports from outside Europe was re-exported to other European countries, and significant portions of manufactured imports from Europe were also re-exported to non-European territories, re-exports became a large proportion of the goods sold abroad by English traders. Up to the early decades of the seventeenth century, woollen textiles of different types overwhelmingly dominated the value of goods sold abroad by England. But by the close of the seventeenth century (1699–1701), re-exports (made up largely of colonial produce from the Americas, and to a lesser extent East Indian calicoes) were 30.9 percent of all exports, and woollens 47.4 percent.[117]

[114] Much of what follows is based on the work of Ralph Davis: *The Rise of the English Shipping Industry in the Seventeenth and Eighteenth Centuries* (London: Macmillan, 1962); "English Foreign Trade, 1660–1700," *Economic History Review*, 2nd series, VI (1954), and "English Foreign Trade, 1700–1774," *Economic History Review*, 2nd series, XV (1962), both of which are reprinted in W. E. Minchinton (ed.), *The Growth of English Overseas Trade in the Seventeenth and Eighteenth Centuries* (London: Methuen, 1969), pp. 78–98 and pp. 99–120, respectively; *A Commercial Revolution: English Overseas Trade in the Seventeenth and Eighteenth Centuries* (London: Historical Association, 1967); *English Overseas Trade, 1500–1700* (London: Macmillan, 1973); *The Industrial Revolution and British Overseas Trade* (Leicester: Leicester University Press, 1979). Further information comes from A. H. John, "The London Assurance Company and the Marine Insurance Market of the Eighteenth Century," *Economica*, N. S. 25 (May, 1958), pp. 126–141; A. H. John, "Insurance Investment and the London Money Market of the eighteenth century," *Economica*, N. S. 20 (May, 1953), pp. 137–158; and Joseph E. Inikori, "The credit needs of the African trade and the development of the credit economy in England," *Explorations in Economic History*, 27 (1990), pp. 197–231.

[115] Davis, "English Foreign Trade, 1660–1700," p. 92.

[116] Davis, *English Overseas Trade, 1500–1700*, p. 55.

[117] Davis, "English Foreign Trade, 1660–1700," pp. 96 and 97.

This revolutionary change in the character of English overseas trade in the last half of the seventeenth century meant that the amount of mercantile capital employed (in the form of ships, stocks of goods afloat and awaiting sale, extension of credit to colonial producers, marine insurance, etc.) grew much faster than increases in the overall volume of foreign trade. The tonnage of English-owned merchant shipping increased almost three-fold between 1629 and 1686, from 115,000 tons to 340,000 tons.[118] Davis wrote:

> The number and tonnage of ships employed in overseas trade rose more rapidly than its value, and at home a correspondingly greater force of warehousemen, porters and carters was needed to shift the goods. . . . In the seventeenth century the value of trade evidently grew much more rapidly than national income; and resources of capital and labour employed to carry on trade rose faster still.[119]

What all of the foregoing account means is that the demand for and the production of services connected with overseas trade grew rapidly in the second half of the seventeenth century; more rapidly than the growth of the national product, and, in all probability, more rapidly than the growth of output in any other sector of the economy. As will be shown later in this chapter, the export of English domestic manufactures did not increase very much over the 60-year period 1663–1724. This means that the output of services connected with overseas trade grew much faster than the growth of manufactured exports during the period. In fact, it has been pointed out that the development of English entrepôt trade between 1660 and 1701 stimulated considerable investment in commerce that was not matched by industrial investment.[120] Again, it will be shown later in the chapter that although England's entrepôt trade continued to grow, export of English domestic manufactures began to grow faster than increases in the combined value of imports, exports, and re-exports from the second quarter of the eighteenth century onward.

Now what does this tell us about the growth and development of the whole service sector between 1660 and 1850? The distribution of output in the sector between the internal and overseas components in the estimates by Colquhoun for 1811 may be used as a window into the internal component of the sector in 1660–1700. Lindert and Williamson have identified some errors in the Irish and Scottish components of these estimates. But their comments indicate that the trade and transport components may be free of those errors, and the distribution of service sector income between the internal and overseas components may not be seriously affected, if at

[118] W. E. Minchinton, "Introduction," in Minchinton (ed.), *The Growth of English Overseas Trade*, p. 62.
[119] Davis, *English Overseas Trade, 1500–1700*, p. 10.
[120] Davis, "English Foreign Trade, 1660–1700," pp. 93–94.

all.[121] Colquhoun estimated the total amount of income earned by those employed in trade and transport in Britain and Ireland (United Kingdom) in 1811 to be £79,873,748. Included are inland trade and transport (including the incomes of "Innkeepers and Publicans throughout Great Britain and Ireland"), coasting trade and transport, and foreign commerce and shipping (which includes the incomes of underwriters). Of this total, the overseas component amounted to £46,373,748 or 58 percent. Banking income is stated as £3,500,000; income from the professions (clergy, law, medicine, university and school teachers, and miscellaneous) is put at £35,135,355, and government and defense at £34,036,280.[122] The whole service sector, excluding government and defense, thus comes to £115,009,103, out of a total national income of £430,521,372 for the United Kingdom, that is 26.7 percent of the gross national product (GNP). Trade and transport is 69.5 percent of the service sector income (excluding government and defense), and the overseas component is 40 percent. Taking account of the entrepôt nature of English overseas trade between 1660 and 1700 and the rather backward nature of the internal transportation system during the period, as compared with the much greater strength of manufacturing and the more developed state of the internal transportation system by 1811, it is reasonable to suppose that the overseas component of the service sector was overwhelmingly dominant between 1660 and 1700. This will be the more so when Government and defense activities devoted to the protection of sea lanes, markets, and sources of imports are added.

Against this background, the published figures for trade and transport and for the national product may be employed to make some reasonable calculations. In 1700 and 1770, the national product of England and Wales is estimated to be £50.0 million and £80.9 million, respectively. For these years, trade and transport is put at £5.6 million and £17.0 million, respectively, and the corresponding overseas components are £3.4 million and £9.3 million.[123] Based on our reasoning above, we may suppose that trade and transport constituted 75 percent of the service sector income in 1700 and 1770. This would mean a total service sector income of £7.5 million in 1700 and £22.7 million in 1770, that is 15 percent and 28 percent of GNP, respectively. The indication is that the service sector grew faster than the industrial and agricultural sectors between 1660 and 1770, especially between 1660 and 1700 when entrepôt trade predominated. Thereafter the industrial sector increased output more rapidly, possibly up to the middle

[121] Lindert and Williamson, "Revising England's Social Tables," pp. 404–405.

[122] Patrick Colquhoun, *Treatise on the Wealth, Power and Resources of the British Empire* (London, 1815), pp. 95, 96, 109.

[123] W. A. Cole, "Factors in demand, 1700–80," in Floud and McCloskey (eds.), *The Economic History of Britain*, Table 3.2, p. 64; Inikori, "Slavery and the Development of Industrial Capitalism," Table 1, p. 780.

decades of the nineteenth century when the service sector began to grow faster again.

Lee is basically right in stressing the importance of the service sector.[124] But the growth and development of the sector, during this period, has to be placed in a proper perspective. Its growth and development between 1660 and 1700, and 1700 to 1770, was critical in creating part of the necessary conditions for the subsequent growth and development of industrial production, particularly the development of financial institutions and the credit economy from the late seventeenth century. But without the vigorous development of industrial production from the late eighteenth to the middle decades of the nineteenth century, the entrepôt trade of the seventeenth and early eighteenth centuries would have simply given rise to a small and weak enclave service sector in the trading centers, especially London. In terms of the transformation of a pre-industrial economy over a long-time period, Mathias is certainly correct in stating that "One cannot set out to increase the national income or expand the economy by increasing the number of clerks and lawyers and dock workers . . ."[125] All the same, the evidence reviewed above supports the view that the initial growth and development of the service sector between 1660 and 1700 was initiated not by the growth of manufacturing but by the expansion of entrepôt overseas trade.

We now come to the growth and development of industrial production between 1660 and 1850, which is viewed in this study as the culmination of all the developments outlined in the preceding sections of this chapter and others that were related more directly to manufacturing to be examined shortly. For purposes of effective organization and clear presentation, a historical model of the industrialization process in England, which flows from the preceding evidence and that soon to be presented, may be stated at the onset. By 1660 the English economy was highly commercialized. Market forces, therefore, played a prominent role in the allocation of resources in the 200 years that followed. In particular, England's rural economy and society were highly responsive to market conditions. But, apart from the products of the woollen textile industry, England remained largely dependent on imported manufactures up to the late seventeenth century. The expansion of manufacturing from the late seventeenth to the early decades of the eighteenth century was, therefore, largely based on import substitution. Domestically produced manufactures replaced manu-

[124] C. H. Lee, *The British Economy since 1700: A macroeconomic perspective* (Cambridge: Cambridge University Press, 1986), pp. 98–114. It is hard to see how the service sector could have had a 42.6 percent share of national income in 1700 and 47.7 percent in 1870 as Lee claims (p. 98). What is more, the source cited, Crafts, *British Economic Growth*, Table 3.6, pp. 62 and 63, does not show this.

[125] Peter Mathias, *The First Industrial Nation: An Economic History of Britain 1700–1914* (London: Methuen, 1969), p. 249.

factures imported for the domestic market as well as imported manufactures that were previously re-exported. Developments in agriculture and the growth of entrepôt international trade in the seventeenth and early eighteenth centuries created the necessary conditions for the growth of ISI by helping to provide the markets for manufactured goods at home and abroad, while state policies, fiscal and military, encouraged investment in manufacturing.

However, before the railway age, there was no integrated national market in England for most English producers, specifically because of the nature of inland transportation. For this reason, large-scale production in manufacturing tended to be very much connected with overseas markets. Hence, there were often two broad categories of industrial production, with possible overlap: small and medium scale production aimed largely at local and regional markets, and medium and large scale production aimed largely at overseas markets. Both categories existed in several manufacturing industries, but one or the other was dominant at a given moment in specific regions. Initially, regional concentration of the manufacturing industries was influenced more by the outcome of competition in export than in domestic sales – low cost producers concentrated in a region took overseas markets away from high cost producers located in other regions, but the latter continued to retain their local and regional markets until the railways swept away the de facto protection provided by inland transportation costs.

Much of the initial productivity gains in manufacturing were achieved through changes in organization associated with expanding markets. Further productivity gains came as a result of technological change, which, again, was largely due to expanding markets and increasing scale of production, in the first instance. In turn, the revolutionary changes in technology further expanded the markets overseas and at home, the latter very much connected with the emergence of an integrated national market following the growth of the railways.

This is the model of English industrialization between 1660 and 1850 derived from the available evidence. It is hoped that the model will help in understanding the main thrust of the organization and analysis of the evidence that now follows.

As was shown earlier in this chapter, the growth of manufacturing in the period, 1540–1640, did not carry the development of industrial production, outside the woollen industry, very far. The most remarkable developments in the English economy between 1660 and 1700, again, as outlined above, were the growth of agricultural output and the expansion of entrepôt overseas trade and the associated production of services. Productivity gains resulting from continuing reorganization and the adoption of new techniques provided a significant agricultural surplus as the population of England stagnated. Hence, England achieved net export of grains in the first

half of the eighteenth century. As A. H. John pointed out several decades ago, the export of grains made an important contribution to the growth of English domestic exports in the first half of the eighteenth century. The decennial annual average official value of grains exported from England grew from £293,000 in 1700–10 to £938,000 in 1741–50. The main producer of the export surplus was the southeastern region of England, which was also the principal supplier of London's food, the raw materials of the brewing industry, and horse-fodder.[126]

The growth of agricultural productivity between 1660 and 1740 and the expansion of entrepôt overseas trade during the same period helped to raise national income per capita. The additional foreign exchange accruing from the agricultural export surplus and from the export of services in the entrepôt trade also helped to pay for imported manufactures, which ensured that some part of the additional incomes was spent on manufactured goods as consumers' tastes for the imported manufactures developed. The 1697 report of the Board of Trade on the state of the general trade of England offers a window into the developments of the period.

The expansion of imports of manufactures and luxury products apparently gave the government some concern over the balance of trade. The Crown, therefore, commissioned the Board of Trade to examine each branch of trade and advise on corrective measures. In its report drawn up on December 23, 1697, the Board stated that during the period covered by its enquiry, 1670–97, England "imported from some countries goods to a much greater original value than we have exported thither," and that "such trades have occasioned the exportation of coin or bullion, or hindered the importation thereof."[127] Sweden and the southern Baltic, France, and East India were singled out as problem areas. The f.o.b. cost of imports from Sweden and the southern Baltic, during the period, was £205,000 per annum, made up mainly of iron and hemp; and these were carried to a large extent by non-English ships. Import of silks, linens, and wines from France grew from 1670; by the mid-1670s silks and linens imported from France in one year reached £300,000 and £500,700, respectively. On trade with East India, the Board reported:

> Our Importations from the year 1670 to Ann. 1688 have amounted upon the sales here to about £1,000,000 per annum as we are informed, of which we suppose [about] one half is usually re-exported; and our exportations in goods for those parts did not exceed £70,000 per annum and in Bullions entered by the Company

[126] A. H. John, "English Agricultural Improvement and Grain Exports, 1660–1765," in D. C. Coleman and A. H. John (eds.), *Trade, Government and Economy in Pre-Industrial England: Essays Presented to F. J. Fisher* (London: Weidenfeld and Nicholson, 1976), pp. 52 and 60.

[127] Public Record Office (PRO), London, CO. 390/12, A Report Concerning the General Trade of England made by the Board of Trade, December 23, 1697, pp. 133–134 (also 101–102).

from the year 1675 to 1685 about £400,000 per annum. But what was more exported in Bullion for the carrying on of that trade from England and Spain by private traders to those parts, we have no certain information.[128]

The imports from East India were mainly textiles, particularly cotton calicoes, the product of efforts made by the East India Company to popularize the wearing of oriental textiles.[129]

The Board also reported on the state of industrial production in England: Much progress was made between 1670 and 1697 in the manufacture of various types of woollen textiles, but the industry was being threatened by the growth of production in several European countries; domestic production of silks was hampered by the greater acceptability of foreign imports, especially from France; and very little progress had been made in the production of linen textiles, "the stock subscribed for that purpose [having been] diverted by a stock-jobbing trade, and thereby the Corporation disabled to promote it . . ." Very little progress had also been made in the manufacture of paper.[130] In general, the Board recommended tariff measures to promote domestic production of manufactures in England.

The evidence summarized by the Board of Trade is corroborated by other sources. The evidence relating to British trade with Germany between 1736 and 1742 is somewhat representative of the general pattern of English trade with the relatively industrially advanced regions of Europe in the first half of the eighteenth century. The 1697 Board of Trade report just examined showed greater concern about the trade with France than that with Germany, because the latter had an export surplus in favor of England, while the former showed a huge deficit as French economic policies restricted the sale of English woollen textiles and English re-exports in France. Other than that, both Germany and France, as well as the Netherlands, were major sources of manufactured imports into England between 1660 and 1750. The German trade figures for 1736–42 are thus quite instructive. For these seven years, the total value of linens imported into Britain from Germany amounted to £4,311,501, being an annual average of £615,929. Other goods imported totaled £664,514 or £94,931 per annum. The two sets of imports from Germany, during the period, come to £710,860 per annum. On the other hand, British export of non-woollen manufactures to Germany during the same period amounted to only £749,441 or £107,063 per annum. Woollen exports totaled £3,036,539 or £433,791 per annum. Thus even when woollens are included Britain imported from Germany more manufactured goods than the domestic manufactures it exported to that country during the period; removing woollens,

[128] *Ibid.*, pp. 140–141 (also 108–109).

[129] Beverly Lemire, *Fashions Favourite: The Cotton Trade and the Consumer in Britain, 1660–1800* (Oxford and New York: Oxford University Press, 1991), pp. 12–21.

[130] Board of Trade Report, 1697, pp. 157–164 (also 125–132).

the figures show that England related to Germany at this time the same way Third World countries relate today to the industrialized countries – huge deficits in manufactured imports. Yet Britain recorded a large surplus in merchandize trade with Germany during the period, amounting to £3,197,611. This was due to re-exports, which totalled £4,387,647 for the whole period, being more in value than woollens and the other manufactures combined.[131]

The more comprehensive figures compiled by Ralph Davis are generally consistent with the pattern revealed by the German evidence. Annual average of manufactured imports into England from all parts of the world for 1699, 1700, and 1701 was £1,844,000, made up largely of linens (49 percent), East Indian calicoes (20 percent), and silks (11 percent). During the same period, non-woollen manufactured exports averaged only £538,000 and woollens £3,045,000.[132]

An important element of English trade outside Europe between 1660 and 1750, which reflected the relative weakness of England's manufacturing industries outside woollen textiles, was the large proportion of re-exports in the value of manufactured exports from England. The trade figures for 1715 to 1726 show this clearly. During this period, manufactured goods totaling £5,264,108 were exported from England to the British "Sugar Colonies in America" (British Caribbean), of which £3,263,397, or 62 percent, were English manufactures, while £2,000,711, or 38 percent, were foreign manufactures re-exported from England.[133] During the same period, manufactured goods totaling £1,652,572 were also exported from England to Africa, of which £737,702, or 45 percent, were English manufactures, and £914,870, or 55 percent, were foreign manufactures re-exported from England.[134] This element in England's trade from 1660 to 1750 meant that the opportunity for import replacement existed not only on the home market but also on markets outside Europe to which English merchants

[131] PRO, T.70/1205/A.7, An Account of the Total Amounts of the Value of All Exports and Imports to and from England and Germany for Seven years ending at Christmas 1742, distinguishing each year and also distinguishing how much by woollen manufactures, how much by other British Manufactures and how much by Foreign Commoditys Re-exported, as also how much by linens and how much by other Foreign Commoditys Imported. Custom House, London, 9 April, 1744.

[132] Davis, "English Foreign Trade, 1660–1700," p. 96.

[133] PRO, T.64/273/29, An Account of the Exports to His Majesty's Colonies in America from Christmas 1714 to Christmas 1726, distinguishing how much by Certificate Goods [Re-exports] and how much by English Manufactures. Custom House, London, 4 April, 1732.

[134] PRO, T.64/273/55, An Account of the Value of the Exports to Africa from Christmas 1714 to Christmas 1726 distinguishing how much by [English] Manufacture and how much by Certificate Goods [Re-exports]. Custom House, London, 4 April, 1732.

re-exported foreign manufactures, especially the British American colonies and Africa.

The evidence available shows that the growth of industrial production in England from the late seventeenth to the early decades of the eighteenth century was due largely to the achievements of British entrepreneurs, aided in several ways by the English government, in taking over these markets previously supplied with foreign manufactures by English traders. To illustrate, in 1751 a Manchester cotton manufacturer, Samuel Touchet, told a House of Commons committee that about 40 years earlier the home market for linen and cotton goods was supplied by foreigners, "which is now supplied by our own manufactures."[135] Similarly, in 1799, Thomas Williams, who completely dominated the copper and brass industries in England in the late eighteenth century, informed a committee of the House of Commons that in the first 20 or 30 years of the eighteenth century most of the copper and brass utensils for culinary and other purposes in England were imported from Hamburg (in Germany) and Holland,

> procured from the Manufactories immemorially established at Nuremburg, and various other parts of Germany; even brass pans for the purposes of the dairies of our country could not be procured but of the German make. So late as 1745, 1746, and 1750, copper tea kettles, saucepans, and pots of all sizes, were imported here in large quantities from Hamburgh and Holland; but through the persevering industry, capitals, and enterprizing spirit of our miners and manufacturers, those imports became totally unnecessary, being all made here, and far better than any other country could produce.[136]

The evidence of Samuel Touchet and that of Thomas Williams point to import-replacement industrialization in textiles and metal products, respectively. As the process of ISI progressed in a broad front from the late seventeenth century, the home market was the first to be captured from foreign suppliers. According to Ralph Davis, English industries squeezed most foreign competition out of the domestic market in the early decades of the eighteenth century, but before these infant industries were strong enough to compete with foreign industries in their own countries, their next effort was aimed at capturing the re-export markets in the American colonies and the quasi colony of Ireland.[137] Western Africa followed quickly. The capture of the domestic market, the American and African markets, and the acquisition of markets in southern Europe through diplomatic efforts (especially

[135] British Library, London, *House of Commons Reports*, Vol. II, 1738–65, Report of Committee on Chequed and Striped Linens, 26 April, 1751, Evidence of Samuel Touchet, p. 293.

[136] British Library, London, *House of Commons Reports*, Vol. X (1785–1801), Report on Copper Mines and Copper Trade, 7 May, 1799, Evidence of Thomas Williams (a Member of the House of Commons), p. 666.

[137] Davis, *A Commercial Revolution*, p. 18.

Table 2.1. *Growth of Industrial Output (percent per year)*

	Revised Crafts	Revised Harley	Jackson
1700–60	0.7		
1760–80	1.3		1.3
1780–1801	2.0		2.1
1801–30	2.8		2.9
1770–1815		1.5	
1815–41		3.0	

Sources and Notes: Jackson, "Rates of industrial growth," Table 10, p. 19; Crafts and Harley, "Output Growth," Table 3, p. 712. The figures for Jackson are derived by Crafts and Harley from the decennial figures of Jackson for comparability.

in Portugal and Spain) were critical elements in English industrialization from 1660 to the 1780s.

Quantitative historians and economists attempting to construct a statistical story of the growth and development of industrial production in England continue to debate the figures. The estimates by Deane and Cole,[138] on which scholars had based their arguments, have been challenged and modified by Harley and Crafts.[139] The estimates by Crafts and Harley have themselves been challenged by others.[140]

In response, Crafts and Harley have revised their estimates slightly on the basis of what they have accepted from their critics.[141] These are presented together with Jackson's estimates in Table 2.1. Given the margin of uncertainty surrounding all the estimates, the Crafts-Harley-Jackson figures appear the more soundly grounded, and they tell a broadly similar story, especially Crafts's and Jackson's. Jackson's decennial breakdown shows that overall industrial production grew at 0.3 percent per year in the fourth decade of the eighteenth century, which was less than the rate of popula-

[138] Deane and Cole, *British Economic Growth*.

[139] C. Knick Harley, "British Industrialization Before 1841: Evidence of Slower Growth During the Industrial Revolution," *Journal of Economic History*, Vol. XLII, 2 (1982), pp. 267–289; Crafts, "British Economic Growth."

[140] Julian Hoppit, "Counting the Industrial Revolution," *Economic History Review*, 2nd ser., XLIII, 2 (1990), pp. 173–193; Maxine Berg and Pat Hudson, "Rehabilitating the Industrial Revolution," *Economic History Review*, XLV, 1 (1992), pp. 24–50; R. V. Jackson, "Rates of Industrial Growth during the Industrial Revolution," *Economic History Review*, XLV, 1 (1992), pp. 1–23.

[141] N. F. R. Crafts and Harley, "Output Growth and the British Industrial Revolution: A Restatement of the Crafts-Harley View," *Economic History Review*, XLV, 4 (1992).

Table 2.2. *Changing Structure of Industrial Value Added in Britain (£m. current and percent)*

	1770		1801		1831	
	£m.	**%**	**£m.**	**%**	**£m.**	**%**
Cotton	0.6	2.6	9.2	17.0	25.3	22.4
Wool	7.0	30.6	10.1	18.7	15.9	14.1
Linen	1.9	8.3	2.6	4.8	5.0	4.4
Silk	1.0	4.4	2.0	3.7	5.8	5.1
Building	2.4	10.5	9.3	17.2	26.5	23.5
Iron	1.5	6.6	4.0	7.4	7.6	6.7
Copper	0.2	0.9	0.9	1.7	0.8	0.7
Beer	1.3	5.7	2.5	4.6	5.2	4.6
Leather	5.1	22.3	8.4	15.5	9.8	8.7
Soap	0.3	1.3	0.8	1.5	1.2	1.1
Candles	0.5	2.2	1.0	1.8	1.2	1.1
Coal	0.9	4.4	2.7	5.0	7.9	7.0
Paper	0.1	0.4	0.6	1.1	0.8	0.7
	22.9		54.1		113.0	

Sources and Notes: Crafts, *British Economic Growth*, Table 2.3, p. 22. The item, Building, includes investment in dwellings, public building and works, industrial and commercial buildings, railways, roads and bridges, canals and waterways, docks, and harbors, plus half of agricultural investments.

tion growth; hence, industrial output per capita declined by 0.1 percent per year during the period. From 1740 onward, industrial production grew faster than population.[142] Both the estimates by Crafts and by Jackson show a turning point in the growth of industrial output in the decades 1780–1801, in both absolute and per capita terms.

The unequal development of the manufacturing sectors over time produced major changes in the structure of industry during the period being examined. This is shown in Table 2.2. The dominance of the woollen textile industry, for all practical purposes the only major industry in England from the late Middle Ages to the seventeenth century, was whittled down over the eighteenth century. From 30.6 percent of total value added in 1770, its share went down to 14.1 percent in 1831. On the other hand, the share of cotton grew from a mere 2.6 percent in 1770 to 22.4 percent in 1831. The growth of investment in transportation, especially canals and railways, is reflected in the growing share of building, from 10.5 percent in 1770 to

[142] Jackson, "Rates of industrial growth," Table 10, p. 19.

17.2 percent in 1801 and 23.5 percent in 1831. Apart from woollen textile, another major industry that lost ground over the period was leather. Generally speaking, the evidence in Table 2.2 indicates that the the structure of English industry was becoming increasingly characterized by the production of mass consumer products aimed at expanding markets overseas and at home.

These developments are reflected in the trade statistics. From the middle decades of the eighteenth century, the entrepôt nature of English overseas trade began to change. English traders now carried overseas a growing proportion of domestic manufactures. In consequence, as Ralph Davis noted, the wave of commercial expansion of the mid-eighteenth century carried with it the expansion of industrial production at home,[143] in contrast to the growth of commerce in the seventeenth and early eighteenth centuries. A further indication of this transformation of English overseas trade is the change in the relative weights of commerce and manufacturing in the national product. In 1688, commerce, and industry and building, contributed 20.0 percent and 17.6 percent, respectively, to the GNP of England and Wales; in 1759, the respective shares were 21.0 percent and 17.5 percent, and in 1801–03, 19.7 percent and 25.7 percent.[144]

The growth of modern urban industry also wrought a far-reaching transformation of the structure of the whole economy and society of England. Given the conflicting estimates of the annual growth rates for agriculture, industry, and GDP, it is currently impossible to state exact measurements of the over time change of the structure of the economy from 1660 to 1850. Nonetheless, all the estimates show consistently that industry and the urban sectors of the economy grew faster than agriculture during the period. Crafts estimates that agricultural output grew by 0.6 percent per annum in 1700–60, 0.1 percent in 1760–80, 0.8 percent in 1780–1801, and 1.2 percent in 1801–31. On the other hand, Jackson computes that agricultural production increased by 4.3 percent per decade from 1660 to 1740, and 2.7 per decade from 1740 to 1790.[145] When these are compared with Crafts's and Jackson's growth rates of industrial output shown in Table 2.1 above, it is clear that industrial production grew more than twice as fast as agricultural production between 1760 and 1830. If Clark's position as previously stated, that the bulk of productivity gains in agriculture between 1660 and 1850 was achieved before the last quarter of the eighteenth century, is correct, then the gap between growth rates in agriculture and in industry would be much greater still in the decades 1780–1850.

[143] Davis, *A Commercial Revolution*, p. 20.

[144] Nick Crafts, "The industrial revolution," in Floud and McCloskey (eds.), *The Economic History of Britain*, 2nd edition, Table 3.2, p. 46.

[145] Crafts, "The industrial revolution," Table 3.3, p. 47; Jackson, "Growth and Deceleration," p. 349.

Table 2.3. *Population of England (Selected years)*

	Total Population	% In Towns 10,000 Plus
1681	4,930,385	
1686	4,864,762	
1701	5,057,790	13.4
1751	5,772,415	17.5
1801	8,664,490	21.4
1811	9,885,690	25
1841	14,970,372	38
1871	21,500,720	54

Sources and Notes: Roger Schofield, "British population change, 1700–1871," in Floud and McCloskey (eds.), *Economic History of Britain*, 2nd edition, Tables 4.1, 4.5, and 4.6, pp. 64, 88, and 89.The percentages for urban population in 1701, 1751, and 1801 are computed using information in Tables 4.1 and 4.5, pp. 64 and 88.

Even Crafts's apparent conservative estimate of the structural change still shows a major shift in employment away from agriculture to industry between 1700 and 1870. According to Crafts, the percentage of the male labor force employed in agriculture decreased from 61.2 in 1700 to 40.8 in 1800, 28.6 in 1840, and 20.4 in 1870. On the other hand, the percentage of the male labor force employed in industry increased from 18.5 in 1700 to 29.5 in 1800, 47.3 in 1840, and 49.2 in 1870.[146] These figures also indicate that the other non-agricultural sectors – trade and transport, finance, and other services – increased their share of the labor force during the period.

The relatively greater demand of industry for labor and the increasing concentration of industries in the urban centers, away from the countryside, are all reflected in the growth of population and urbanization. This is shown in Table 2.3. The figures show that in the seventy years from 1681 to 1751, the population of England increased by only 17 percent; if John Hatcher's estimates stated previously in this chapter are about right, the population of England in 1751 was still somewhat less than it was in 1300. But in the 100 years that followed, the population more than tripled and

[146] Nicholas F. R. Crafts, "British Industrialization in an International Context," *Journal of Interdisciplinary History*, XIX, 3 (1989), Table 1, p. 417.

Table 2.4. *England's Ten Top Counties in Order of Wealth Assessed for Tax*

Ten Top Counties, 1086 Assessment		Ten Top Counties, 1660 Assessment		Ten Top Counties, 1843 Assessment	
1. Oxfordshire	(15)	1. Middlesex	(1)	1. Middlesex	(1)
2. Kent	(6)	2. Suffolk	(23)	2. Lancashire	(35)
3. Berkshire	(18)	3. Bedfordshire	(26)	3. Surrey	(15)
4. Essex	(19)	4. Kent	(6)	4. Warwickshire	(20)
5. Hertfordshire	(12)	5. Hertfordshire	(12)	5. Staffordshire	(33)
6. Middlesex	(1)	6. Essex	(19)	6. Kent	(4)
7. Dorset	(36)	7. Rutland	(30)	7. Worcestershire	(13)
8. Somerset	(8)	8. Sussex	(22)	8. Somerset	(10)
9. Buckinghamshire	(25)	9. Buckinghamshire	(25)	9. Cheshire	(32)
10. Bedfordshire	(26)	10. Somerset	(8)	10. Leicestershire	(18)

Sources and Notes: Buckatzsch, "Geographical Distribution of Wealth," Table 1, pp. 186, 187. The numbers 1 to 10 represent the ranking of the counties in each assessment; the numbers in parenthesis for 1086 and 1660 are the ranking for 1843, and those of 1843 are for 1660.

became increasingly urban; the proportion living in towns with 10,000 people and over grew from 13.4 percent in 1701 to 54 percent in 1871. Thus, as Crafts and Harley pointed out:

> By the second quarter of the nineteenth century, a combination of the rapid growth of the urban based textile industries that exported most of their product and the marked decline in agriculture's share of the labour force produced the first urban industrial economy – a development that was not inherent in the progress of the late seventeenth-century economy.[147]

Now how did the regions of England fare in the development of industrial production between 1660 and 1850? Because the industrial sector grew faster in both employment and income than any other sector during the period, relative distribution of wealth among the regions may be taken as the first approximate measure of their relative performance. Table 2.4 shows the 10 wealthiest counties in England in terms of tax assessment per 1,000 acres in 1086, 1660, and 1843. As was stated earlier in this chapter, the cloth producing areas of East Anglia were among the regions that grew most in wealth between 1086 and 1660. Thus Suffolk, which ranked 18 in wealth assessed for tax in 1301, became the second wealthiest county in the assessment of 1660, second only to Middlesex whose ranking is inflated by the inclusion of the nation's capital city of London. However, by the

[147] Crafts and Harley, "Output Growth and the British Industrial Revolution," p. 705.

assessment of 1843, Suffolk had dropped to 23 in ranking. In fact, of the 10 wealthiest counties in the assessment of 1660, only Middlesex, Kent, and Somerset remained among the 10 wealthiest counties in the assessment of 1843; apart from Hertfordshire and Essex, which ranked 12 and 19, respectively, all the others now ranked between 22 and 30. What is more, 7 of the 10 wealthiest counties in the assessment of 1843 were not among the top 10 in 1086 or in 1660. Another striking feature of the 1843 assessment is the fact that the 10 wealthiest counties were no longer all located south of the line drawn from the Severn estuary to the Wash as had been the case in 1086 and 1660. In fact, 6 of the 10 counties were now located north of that line. Finally, the truly revolutionary change in the regional distribution of wealth revealed by these tax data is the movement of Lancashire from the very bottom in the Middle Ages and at the time of the Restoration to the very top, being second only to Middlesex in 1843.

A study of over-time changes in regional wage differentials in England in the eighteenth and nineteenth centuries presents a similar picture. The logical assumption here is that rapid industrialization increased the demand for labor over and above the expansion of labor supply through natural population increase and migration. In consequence, wages rose over time not only in the industrial sector but in all sectors, including agriculture. And because inter-county labor mobility was not strong enough, wages rose faster in counties experiencing rapid industrialization than they did in those that were not. County wages for agricultural laborers form the basis of the analysis. The evidence shows that in the years 1767–70, all but 2 of the 11 counties with the highest wages in England were in the south, mostly in the southeast – Kent, Middlesex, Surrey, Sussex, Buckinghamshire, Hampshire, Norfolk, Suffolk, and Essex. The two exceptions were in the Midlands: Nottinghamshire and Warwickshire. Lancashire and the West Riding of Yorkshire were among 11 counties with the lowest wages located mostly in northern England. By 1794–95, however, the regional picture of wages had been reversed completely. Only 3 of the 11 counties (counting the West Riding, North Riding, and East Riding of Yorkshire separately for practical reasons) with the highest wages were now in the south – Kent, Surrey, and Sussex. Six of these 11 counties, including the West Riding and Lancashire, were in northern England, with the West Riding having the highest wages. The situation remained basically the same by 1833–45, with only 2 counties in the south, Kent and Middlesex, remaining among 11 counties with the highest wages in England. By this time Lancashire had the third highest wages among the English counties.[148]

[148] E. H. Hunt, "Industrialization and Regional Inequality: Wages in Britain, 1760–1914," *Journal of Economic History*, XLVI, 4 (December, 1986), Table 6, pp. 965–966.

The regional picture depicted by the tax and wages data is consistent basically with evidence more directly related to the regional distribution of industrial development during the period under consideration. About four decades ago, D. C. Coleman showed how the counties of East Anglia that had been in the forefront of socio-economic and industrial progress in England for several centuries went through industrial decay in the eighteenth century: "by the middle of the eighteenth century, before the Industrial Revolution had made its mark, much of the region's industrial and commercial life was already in decay."[149] This continued for the rest of the century and into the nineteenth. In the first half of the nineteenth century, the region experienced unemployment, wages fell, and the rate of population growth in the region's three counties (Essex, Suffolk, Norfolk) was consistently lower than the national average.[150] Adjacent to East Anglia in the southeast, the Weald of Kent, Surrey, and Sussex also went through deindustrialization between 1660 and 1850. At the beginning of the seventeenth century, the Weald was a major producer of glass, iron, timber products, and textiles (dyed broadcloth in particular). More than 50 percent of the blast furnaces in England by 1600 were in the Weald. The rapid growth of production of iron and iron products, textiles, glass, and timber products in the sixteenth century made the Weald one of the leading industrial regions of England in the early seventeenth century. But in the course of the seventeenth and eighteenth centuries all these industries declined, leading Brian Short to conclude that the region "provides a clear example of the failed transition from proto-industrialisation to full industrialisation."[151] Several other regions shared the experience of East Anglia and the Weald. Sidney Pollard identified 10 regions in Britain, which were large industrial producers in 1760–90, eight of which were in England – Cornwall, Shropshire, south Staffordshire (the "Black Country"), the uplands of Derbyshire, southern Lancashire, the West Riding of Yorkshire (across the Pennines from Lancashire), the region around the rivers Tyne and Wear, and London. In Pollard's view, "only two clear cases (Lancashire and Yorkshire) and a third slightly doubtful one (the Black Country)" survived as major industrial regions.[152] A similar point was made by D. C. Coleman who identified 12 proto-industrial areas in England in the sixteenth and

[149] D. C. Coleman, "Growth and Decay During the Industrial Revolution: The Case of East Anglia," *The Scandinavian Economic History Review*, Vol. X, Nos. 1 and 2 (1962), p. 117.

[150] *Ibid.*, pp. 119, 125.

[151] Brian Short, "The de-industrialisation process: a case study of the Weald, 1600–1850," in Pat Hudson (ed.), *Regions and Industries: A Perspective on the Industrial Revolution in Britain* (Cambridge: Cambridge University Press, 1989), p. 156.

[152] Sidney Pollard, *Peaceful Conquest: The Industrialization of Europe 1760–1970* (Oxford: Oxford University Press, 1981), pp. 14–20.

seventeenth centuries, of which six failed and only four achieved full industrialization.[153] So much for the failed transitions. Let us now turn to the successful cases.

The West Midlands, in particular south Staffordshire – the region popularly known as the "Black Country" because of the thick smoke from its iron and metallurgical industries which darkened the sky over the region – was one of the success stories. The counties in the region (West Midlands) include Warwickshire, Shropshire, Staffordshire, and Worcestershire.[154] Iron and the production of ironware were its main industries. As was stated earlier in this chapter, up to the early seventeenth century the iron industry in England had been concentrated in the southern counties, especially the Weald. As the southern industry declined from the middle of the seventeenth century, England became more dependent on imported iron. According to Ashton, total output of bar iron in England in 1720 did not exceed 20,000 tons; by the middle of the eighteenth century, production had decreased further.[155] At the same time England was also largely dependent on imported ironware.[156]

In addition to the domestic market for iron and iron products, the colonial markets in the British Caribbean and North America expanded rapidly from 1660, as their populations grew and their production for Atlantic commerce increased. Large quantities of agricultural implements and iron nails for plantation needs, but even more for the building of numerous wooden houses in the mainland colonies, were demanded yearly.[157] Thus, in the late seventeenth and early eighteenth centuries, English producers had the opportunity to replace imported iron and iron products both on the domestic and on the colonial markets.

[153] D. C. Coleman, "Proto-Industrialization: A Concept Too Many," *Economic History Review*, 36 (1983), pp. 441, 443.

[154] W. H. B. Court, *The Rise of the Midlands Industries, 1600–1838* (Oxford: Oxford University Press, 1938), p. 2.

[155] Thomas Southcliffe Ashton, *Iron and Steel in the Industrial Revolution* (2nd edition, Manchester: Manchester University Press, 1951), p. 13.

[156] Court, *The Rise of the Midlands Industries*, p. 160. As Court wrote, "Till the Civil Wars, England was not a teacher but a learner, and Germans and Italians led the way in science and invention. The great age of Midland industrial development falls within the first great century of English science, between 1660 and 1760, as well as within a period of political peace and active commerce." This view is supported by Ashton who stated that in the opening years of the eighteenth century the art of iron casting was far less advanced in England than abroad: "the Dutch in particular, by reason, it was alleged, of superior skill, lower duties, and cheaper labour, were formidable competitors with the English founders in the home market, especially as regards the sale of iron pots and similar utensils." Ashton, *Iron and Steel*, pp. 26–27.

[157] Marie B. Rowlands, "Continuity and Change in an industrialising society: the case of the West Midlands industries," in Hudson (ed.), *Regions and Industries*, p. 115; Court, *The Rise of the Midlands Industries*, p. 206.

As the southern production centers declined, three regions of England – the northeast, northwest, and the West Midlands – initially became the new centers of production. In the late seventeenth and early eighteenth centuries, the production of iron products was dominant, the iron employed being largely imported. Most producers served local and regional markets but from the seventeenth century through the eighteenth the West Midlands dominated exports to British America and Western Africa. From the 1650s, the British sugar colonies in the Caribbean imported large and increasing quantities of nails, plantation hoes, cane cutters, oxchains, and slave collars from the West Midlands.[158] The demand for nails to build the numerous wooden houses in British North America was also largely met by Midlands producers. South Staffordshire and the northeastern parts of Worcestershire were possibly the largest nail producing region in England for much of the eighteenth century. It was estimated in the late eighteenth century that about 150,000 people were directly or indirectly dependent on the export trade in hardwares, largely in nails. Earlier, it was computed in 1737 that within two miles of Birmingham no less than 9,000 tons of bar iron were used annually by workers employed under a putting-out system of production, the vast majority of whom were engaged in nail making. Other sources estimate that about one-half or more of the total output of nails in England in the late eighteenth century was exported.[159] The Birmingham area of the West Midlands also became the leading exporter of guns, especially to Western Africa.[160] Because the region was involved heavily in export production, its industries benefited immensely from the expansion of metalware exports from 3 percent of total English domestic export of manufactures in 1699–1701 to 9 percent in 1752–54. Consequently, as Marie Rowlands demonstrates,

> upswings in national overseas trade, especially marked 1700–15 and 1745–60, were also periods of marked diversification and intensification of industrial activity in the Midlands. Conversely, interruptions to overseas trade were quickly reflected in overstocked warehouses, laying off the workers, and high poor rates in the industrial villages.[161]

As stated earlier, much of the pig and bar iron employed in the production of iron products in England in the late seventeenth and early eighteenth

[158] Rowlands, "Continuity and Change," p. 115.

[159] Court, *The Rise of Midlands Industries*, pp. 100, 206, 208–209; Ashton, *Iron and Steel*, p. 19.

[160] J. E. Inikori, "The Import of Firearms into West Africa, 1750–1807: A Quantitative Analysis," *Journal of African History*, XVIII, 3 (1977), pp. 339–368; Alan Birch, *The Economic History of the British Iron and Steel Industry, 1784–1879: Essays in Industrial and Economic History with Special Reference to the Development of Technology* (London: Cass, 1967), pp. 49–51.

[161] Rowlands, "Continuity and Change," pp. 115–116.

centuries was imported. For example, total production of pig iron in England in 1720 was 17,350 tons,[162] while total supply was 35,800 tons.[163] The imports came mainly from Sweden and Russia. The evidence indicates that initially the growth of domestic production of iron in substitution for imported iron expanded more rapidly in the West Midlands where the production of iron products had been growing fast. The northeast and South Yorkshire were other centers of ironware production. They had coal, limestone, and ore. And two of the three ports through which Swedish and Russian irons were imported into England – Newcastle, Hull, and London – were located there. As Alan Birch noted, "With the adoption of coke-smelting it might have been expected that the iron industry in the north of the country would have expanded. There were at hand the raw materials – ore, coal, and limestone . . ."[164] But it was the West Midlands that took advantage of the protective duties instituted by the British government.[165] This must have been due, partly at least, to the relatively larger and faster growing markets served by producers in the region – markets in the Americas, Western Africa, and at home. Table 2.5 presents the regional distribution of the rapidly growing output of pig iron in England and Wales in the eighteenth century.

As the table shows, in the 68 years between 1720 and 1788, total national output increased by 254.5 percent (from 17,350 tons to 61,500 tons); but in the 18 years between 1788 and 1806 (just a fraction of the first period), output almost quadrupled, increasing from 61,500 tons to 227,200 tons, being an increase of 269.4 percent. As phenomenal as the national increases were, output in the West Midlands grew even faster. In 1720, total output for Shropshire, Staffordshire, and Worcestershire was 4,950 tons, and this was 28.5 percent of the national total. By 1788 output for Shropshire and Staffordshire alone was 31,800 tons, an increase of 542.4 percent, raising the share of the West Midlands in the national output of England and Wales to 51.7 percent. In the next 18 years, production in the West Midlands more than tripled to reach 104,400 tons in 1806. However, the share of the region dropped slightly to 46.0 percent, because of the faster growth of output in South Wales during the period. In 1815,

[162] Charles K. Hyde, *Technological Change and the British Iron Industry 1700–1870* (Princeton, NJ.: Princeton University Press, 1977), Table 1.1, p. 12.

[163] Birch, *Economic History of the British Iron and Steel Industry*, p. 18.

[164] *Ibid*., p. 99.

[165] According to Charles Hyde, "British ironmasters earned profits in spite of their high production costs because the market was highly protected and iron prices were kept artificially high. British import duties and Swedish export duties combined amounted to roughly one-quarter to one-third of the price of Swedish bar iron in Britain. The Swedish government also fostered high iron prices in Britain by deliberately restricting Swedish iron output from the 1720s until the early nineteenth century." Hyde, *Technological Change*, p. 47.

Table 2.5. *Regional Distribution of Pig Iron Production in England and Wales*

	1720		1788		1806	
	Tons	%	Tons	%	Tons	%
The Weald	2,000	11.5	300	0.4	—	—
Forest of Dean	4,250	24.4	4,700	7.6	4,100	1.8
South Wales	1,500	8.6	11,300	18.4	75,600	33.3
N. Wales-Cheshire	2,250	12.9	1,000	1.6	2,100	0.9
Shropshire	2,550	14.6	24,900	40.5	104,400	46.0
Stafford-Worcester	2,400	13.8	6,900	11.2		
S. Yorkshire-Derby	2,400	13.8	9,600	15.6	37,000	16.3
Lancashire-Cumberland	—	—	2,800	4.6	4,000	1.8
	17,350		61,500		227,200	

Sources and Notes: 1720 is from Hyde, *Technological Change*, p. 12; 1806 is derived from Ashton, *Iron and Steel*, p. 98; 1788 is a combination of the former (p. 114) and the latter (p. 98). For 1788 and 1806, Ashton's "South East," "South West," "North West," and "Midlands" are treated in this table as The Weald, Forest of Dean, Lancashire-Cumberland, and Shropshire and Stafford-Worcester, respectively. Parallel evidence for 1788 actually makes it clear that Ashton's "Midlands" represents Shropshire and Staffordshire only.

the region raised its share of the total for England and Wales (370,000 tons) to 47.3 percent, with an output of 175,000 tons. In the years 1788–1815, the fastest growing area in the West Midlands was South Staffordshire (the Black Country). Its output increased from 6,900 tons in 1788 to 125,000 tons in 1815, being 11.2 percent and 33.8 percent of the total for England and Wales in the respective years. During the same period output in Shropshire grew from 24,900 tons (40.5 percent of the national total) to 50,000 tons (13.5 percent).[166]

[166] Hyde, *Technological Change*, Tables 6.6 and 11.1, pp. 114 and 181. Hyde's evidence shows the tendency of the iron industry in the nineteenth century to shift its concentration to regions relatively better endowed with iron ore. Thus, although output continued to grow in the West Midlands (129,000 tons in Shropshire in 1871, 2.4% of the total of 5,467,000 tons for England and Wales in this year, and 726,000 tons for the Black Country, 13.3% of the national total), the northeast had become the leading region by 1871, producing 33.3% (1,823,000 tons) of the total for England and Wales at this time. The northwest (Lancashire and Cumberland), with an output of 857,000 tons in 1871, was now also producing more than the Black Country.

The relatively greater dynamism of the industries in the West Midlands in the seventeenth and eighteenth centuries must have attracted the inventors whose inventions ultimately transformed the iron industry in England and Wales. Abraham Darby, who invented the smelting of iron with mineral fuel, worked at Coalbrookdale in Shropshire. Boulton and Watt also worked in the West Midlands to produce the steam engine, which made the smelting of iron with mineral fuel more efficient. It was in Soho, then a village located between Birmingham and the Black Country, that the Boulton and Watt partnership perfected the manufacture and began the commercial production of steam engines, which soon captured numerous production processes outside the iron industry. It is no surprise that the first engine produced by the partnership was installed in the Black Country.[167] Henry Cort, the inventor of the puddling process, was the only major inventor for the iron industry who did his work outside the West Midlands. It is significant that Cort began his work while he was a Navy agent in London, and his experiments were aimed at producing high quality iron for naval and ordnance purposes.[168] He was thus less concerned with the private sector market. The other major inventors were entrepreneurs actively engaged in the private sector market. Darby was primarily an iron-founder, making iron-cast pots, and his invention came from his efforts to produce pig iron suitable for his own purpose.[169] And, as Court noted, Boulton was "at every stage of his career, both before and after the partnership with Watt, an indefatigable and adventurous, or as some contemporaries thought, crack-brained searcher for markets."[170] The evidence thus suggests that of all the regions of England and Wales with adequate natural resources for the growth and development of iron and ironware production in the seventeenth and eighteenth centuries, access to relatively large and fast growing markets gave the West Midlands, at least in part, some relative advantage.

The other regional success story of industrialization in England between 1660 and 1850 was the West Riding of Yorkshire. This region experienced an explosive growth of industrial production in the eighteenth century. The tax data examined earlier in this chapter did not place the West Riding among the top ten counties in wealth in the 1840s, because the region is lumped together with the North Riding and East Riding under the county of Yorkshire by the available source. In the eighteenth and nineteenth

[167] W. K. V. Gale, *The Black Country Iron Industry: A Technical History* (London, 1966), pp. 23–31.
[168] Ashton, *Iron and Steel*, p. 90.
[169] Gale, *The Black Country Iron Industry*, p. 23.
[170] W. H. B. Court, "Industrial Organisation and Economic Progress in the Eighteenth-Century Midlands," *Transactions of the Royal Historical Society*, 4th Series, XXVIII, 1946, p. 99.

centuries, the region contained a wide range of industries: textile industries (woollen, linen, and cotton), iron production, pottery making, lime burning, and lead and coal mining.[171] But by far the largest industry in the region, upon which its industrial fortune depended during the period, was the woollen textile industry. The movement of the industry to this region in the course of the eighteenth century, away from the older regions of production in the West Country and East Anglia, is probably one of the most dramatic examples of acceleration and deceleration in the regional history of industrialization in England between 1660 and 1850.

Phyllis Deane's estimate of the gross value of output of the woollen industry in England and Wales in the eighteenth century provides a national reference point against which to measure the performance of the West Riding industry:[172] 1695, £5.0 million; 1741, £5.1 million; 1772, £10.2 million; 1799, £13.8 million; 1805, £18.5 million. The regional shares at the end of the seventeenth century indicate that the industry was still very much in the south of England and the West Riding was just one of several producing districts. With all the uncertainties of the early regional statistics, Devon's output is valued at £1,350,000; Norfolk £750,000; West Country £900,000; other production centers in the south and areas in the Midlands, roughly £1,000,000. Thus the industries in the south of England had a combined output of probably £3.5 million at this time. With £1 million estimated output for the West Riding, the region's share was about 20 percent.[173] By 1772, however, the value of output in the West Riding had increased to £3,273,701, being about one-third of the total for England and Wales. And between 1772 and 1800 it almost tripled to reach £8.4 million, by which time the West Riding's share of the total for England and Wales had risen to 60 percent.[174] Thus the production of woollen textiles in the West Riding increased by a factor of eight between 1700 and 1800, while production in the rest of England grew by only 40 percent during the same period (from £4 million in 1700 to £5.6 million in 1800).[175]

[171] R. G. Wilson, "The Supremacy of the Yorkshire Cloth Industry in the Eighteenth Century," in N. B. Hart and K. G. Ponting (eds.), *Textile History and Economic History: Essays in Honour of Miss Julia de Lacy Mann* (Manchester: Manchester University Press, 1973), p. 246.

[172] Phyllis Deane, "The Output of the British Woolen Industry in the Eighteenth Century," *Journal of Economic History*, XVII (1957), Table 3, p. 220.

[173] Julia de Lacy Mann, *The Cloth Industry in the West of England from 1640 to 1880* (Oxford: Clarendon Press, 1971), pp. 26–36; Wilson, "Supremacy of the Yorkshire Cloth Industry," pp. 226–235; Derek Gregory, *Regional Transformation and Industrial Revolution: A Geography of the Yorkshire Woollen Industry* (Minneapolis: University of Minnesota Press, 1982), pp. 41–44.

[174] Deane, "Output of the British Woolen Industry," pp. 215, 220; Wilson, "Supremacy of the Yorkshire Cloth Industry," p. 228.

[175] Wilson, "Supremacy of the Yorkshire Cloth Industry," p. 231.

The expansion of production in the West Riding kept pace with the capture of markets in southern Europe from the older regions and the expansion of exports to the Americas. Northwestern Europe was for several centuries the main export market for clothiers in southern England. From the second half of the seventeenth century, competing production in France, Holland, Germany, and Poland took away much of this market. Southern Europe, especially Spain and Portugal, became the growing export market for English woollen textiles in Europe in the eighteenth century. In the course of the century, clothiers in the West Riding captured much of the south-European market from other English producers.[176] At the same time the markets in British America, which absorbed by far the fastest growing volume of English woollen textiles in the eighteenth century, were opened up and dominated by West Riding producers.[177] The achievement of the West Riding in export sales promotion is reflected in the fact that a much greater proportion of the region's total output was exported: It was noted in 1772 by a contemporary who knew the West Riding industry thoroughly for over 30 years that the region exported no less than 72 percent of its total output.[178] The export performance of the West Riding and the growing concentration of the industry in the region account for the increased percentage of the national output exported between the late seventeenth century and the end of the eighteenth, from 40 percent in the former to 67 percent in the latter.[179]

The evidence shows that the loss of the export trade to the West Riding was the principal explanation for the slow growth of the industry in the other regions of England. A case in point, the export success of the West Riding prevented the West Country from sharing adequately in the expansion of cloth exports from the 1760s, especially between 1775 and 1790, and in consequence the latter's export trade became relatively small by 1786.[180] As their export trades declined, the West Country and East Anglia concentrated on production for the domestic market, which continued to grow.[181]

Wilson has attempted to explain the superior performance of the West Riding in export sales. He dismisses the contribution of natural resource endowment: "Clearly, considerations about coal and iron are far less important when applied to the eighteenth century situation. In fact Yorkshire had

[176] Mann, *The Cloth Industry*, pp. xii–xiii, 44–50; Wilson, "Supremacy of the Yorkshire Cloth Industry," pp. 241–244.
[177] Wilson, "Supremacy of the Yorkshire Cloth Industry," pp. 243–245.
[178] *Ibid*., p. 230 and fn. 15, p. 230.
[179] Deane, "Output of the British Woolen Industry," p. 221.
[180] Mann, *The Cloth Industry*, p. 47.
[181] Wilson, "Supremacy of the Yorkshire Cloth Industry," p. 244; Mann, *The Cloth Industry*, p. 50.

Table 2.6. *Factory Employment in the Main Woollen Districts*

	1835	1838	1847	1850
Gloucestershire	7,973	5,515	5,308	6,043
Somerset	1,545	2,133	2,180	2,175
Wiltshire	3,080	3,228	3,265	2,877
Lancashire	4,575	4,947	7,971	8,816
Yorkshire	23,636	27,548	38,737	40,611
ENGLAND	46,964	46,928	62,687	62,352

Sources and Notes: Gregory, *Regional Transformation*, Table 2.11, p. 61. Gregory explains that the figures for Somerset and Wiltshire in 1835 cover only part of the counties.

few natural advantages."[182] After considering and rejecting the unique characteristics of the entrepreneurs and of production organization in the West Riding, he settled for variations in sale procedures as the clue to the region's relative performance in export sales. While exports in the other regions of England were controlled by London's general merchants, with very little knowledge about the export markets for woollen textiles, exports from the West Riding were handled by local merchants specializing in the sale of woollen cloth: "Cloth was their life, their sole interest. They had far closer contacts with the clothiers and they knew the trade . . ." Wilson thus concludes:

> The difference between the ways in which the West Riding trade was handled by the active merchants of Leeds, Wakefield (and eventually Halifax) and the exports of every other production area from Norwich down, which were monopolised by non-specialist London traders often working within the restrictions of the trading companies themselves, accounts in good measure for Yorkshire's growing supremacy in the eighteenth century.[183]

From the last decade of the eighteenth century, the West Riding industry began to adopt merchanization and the factory form of production. In the course of the first half of the nineteenth century, the merchanized sector of the woollen textile industry in England was clearly concentrated in the region, as Table 2.6 shows. In 1835, 50.3 percent of all labor employed in that sector were in the West Riding. This increased to 58.7 percent in 1838, 61.8 percent in 1847, and 65.1 percent in 1850.

[182] Wilson, "Supremacy of the Yorkshire Cloth Industry," p. 135.
[183] *Ibid*., pp. 235–244 for the whole explanation, p. 241 for the quotation.

This regional variation in the pace of merchanization has been explained in two different ways. Mann's argument implies that the more rapid progress of mechanization in the West Riding in the nineteenth century was a function of the rapid rate of expansion of the region's industry in the preceding century, while the slow progress in the West Country and other southern regions was due to the stagnation of their industry in the eighteenth century:

> It was the great increase in demand, especially strong in the early nineties, which induced manufacturers to lay aside their fears and workpeople, or most of them, to acquiesce in the use of spinning machinery. Exports of cloth of all kinds increased from 89,620 pieces in 1786 to 214,489 in 1791; and although they fell in 1792 and were only a little over 133,000 pieces in 1793, this was still a great advance on any year before 1788. By far the larger part, of course, came from Yorkshire, but the West had its share.[184]

On the other hand, Adrian Randall believes that the differing pace of progress was due to differing production organization, which gave rise to differing degrees of labor resistance to mechanization: Labor resistance to machines was greatest in the West Country and this accounts for the slow progress of mechanization and subsequent decline of the industry in that region.[185] Workers' resistance to machines certainly deserves due consideration. However, the evidence showing the correlation between the degree of concentration and the pace of progress in mechanization makes it clear that the critical operating factors were the size of the industry, the extent of the market served, and the pace of growth of both. This point is further strengthened by the evidence showing several decades of market expansion and output growth in the West Riding before the onset of mechanization in the region. What is more, the industry in the south of England went into stagnation or decline for almost a century before machines became important in the woollen textile industry.

Finally, the undisputed, truly dramatic regional success story of industrialization in England between 1660 and 1850 was that of Lancashire. As stated previously, Lancashire was about the poorest and most backward of the English counties at the time of Restoration. It retained much of that honor to the end of the century. As Farnie puts it:

> Until the eighteenth century the society between Ribble and Mersey had maintained a largely self-contained existence upon the fringe of civilization. Cut off from the rest of England by barriers of mountain and marshland, it lay far distant from the great centres of economic activity and from the main channels of commerce. The poverty of a barren frontier region was manifest in the small population, in the

[184] Mann, *The Cloth Industry*, p. 135.

[185] Adrian J. Randall, "Work, culture and resistance to machinery in the West of England woollen industry," in Hudson (ed.), *Regions and Industries*, pp. 175–198.

limited supplies of stone and timber for building, and in the staple diet of oatmeal and offal . . .[186]

But, within two or three generations, from the late eighteenth century to the mid-nineteenth, this region that had remained the backwater of England since 1086 "erupted suddenly into a fury of productive power of which its previous history had given but faint promise and of which its later history showed but little trace."[187] There can be no doubt that an industrial revolution occurred in Lancashire between 1780 and 1850, no matter how the term is defined, and that the Industrial Revolution in England was first and foremost a Lancashire phenomenon.

The region had developed some manufacturing in the sixteenth and early seventeenth centuries, mainly woollen and linen textiles.[188] But the first major development that subsequently became very important for the growth of industrial production in the region was the development of Liverpool as a major port in England, with its strong links to the Americas and Western Africa. Initially, the main source of this development was the trade in colonial produce from the Americas (sugar, tobacco, and rum), the trade in African slaves that provided labor for the production of those commodities, and the transportation of salt and coal.[189] Like the national entrepôt trade of England during the same period, treated earlier in this chapter, the growth of Liverpool's overseas trade in the late seventeenth and early eighteenth centuries was not based on local industries. But, as manufacturing developed in Lancashire in the course of the eighteenth century, the markets served overseas by Liverpool and the raw materials from the same regions became central to the growth of the region's industries. Wadsworth and Mann made the point succinctly:

At the present day [1931], Liverpool owes its importance largely to the hive of industry behind it in Lancashire. In the eighteenth century the situation was the reverse. Liverpool was a prosperous and rapidly growing town when large parts of Lancashire were still thinly peopled or barren waste . . . The merchant and shipowner, not the manufacturer, sought and found the outlets for the products of industry; the organisation of industry adapted itself to the demands of expanding commerce.[190]

[186] D. A. Farnie, *The English Cotton Industry and the World Market, 1815–1896* (Oxford: Clarendon Press, 1979), p. 46.

[187] *Ibid*., p. 324.

[188] A. P. Wadsworth and J. de L. Mann, *The Cotton Trade and Industrial Lancashire* (Manchester: Manchester University Press, 1931), pp. 15–16; John K. Walton, "Proto-industrialisation and the first industrial revolution: the case of Lancashire," in Hudson (ed.), *Regions and Industries*, p. 45.

[189] Walton, *Lancashire*, p. 113; Francis E. Hyde, "The Growth of Liverpool's Trade, 1700–1950," in *Scientific Survey of Merseyside* (Liverpool: Published for the British Association for the Advancement of Science by the University of Liverpool Press, 1953), pp. 148–163.

[190] Wadsworth and Mann, *The Cotton Trade*, p. 224.

First, the growing trade of Liverpool gave rise to a thriving shipbuilding industry and related manufacturing industries in the port town.[191] But, while these and the earlier woollen and linen industries provided some of the general infrastructures for the industrial revolution in Lancashire, it was a new industry, based entirely on imported raw materials and developed out of the stimulus of an imported product from India – the cotton textile industry – that transformed Lancashire into the first modern industrial society in the world. As mentioned earlier in this chapter, cotton textile production in England had started as a typical import substitution industry in the seventeenth and early eighteenth centuries. Several regions of the country were involved. But increasingly the industry concentrated in Lancashire.[192] By 1787 Lancashire already had close to one-half of the capital value of all cotton mills in Great Britain.[193] In 1820, of the 240,000 estimated handloom weavers in Britain (handloom weaving still remaining overwhelmingly dominant at this time), about 165,000 or 68.8 percent were in Lancashire, about 47,000 or 19.6 percent were in Scotland, and the remainder were in the rest of England. By this time handloom weavers in the cotton textile industry were about 25 percent of the total labor force in Lancashire.[194]

Technological development in the industry was slow. Cotton spinning was mechanized in the last decades of the eighteenth century – first in water-powered factories that were scattered all over the county in search of suitable water sites; then steam power was harnessed to the spinning machines, which freed the spinning factories from dependence on water sites and allowed concentration in urban locations.[195] At about the same time, the finishing process of cotton printing was also mechanized. However, both the spinning and finishing branches of the cotton industry required a relatively small amount of labor. The bulk of the labor employed in the industry was in weaving, which remained largely unmechanized up to the mid-1830s.[196] As weaving was increasingly mechanized from the 1830s, Lancashire led the way. In 1835, of a total of 108,189 powerlooms employed in cotton weaving in the whole of Britain, 61,176 or 56.5 percent

[191] R. Stewart-Brown, *Liverpool Ships in the Eighteenth Century* (London, 1932), p. 5.

[192] Wadsworth and Mann, *The Cotton Trade*, pp. 170–177.

[193] In 1787 the estimated capital value of all cotton mills in Great Britain was £500,000, of which 50 percent was located in Lancashire, Derbyshire, and Nottinghamshire. See Ian Inkster, *Science and technology in history: an approach to industrial development* (New Brunswick, N.J.: Rutgers University Press, 1991), p. 65 and fn. 17, p. 320.

[194] Geoffrey Timmins, *The Last Shift: The Decline of Handloom Weaving in Nineteenth-Century Lancashire* (Manchester: Manchester University Press, 1993), pp. 25, 26, 37, 39.

[195] Walton, *Lancashire*, p. 104.

[196] Timmins, *The Last Shift*, pp. 40, 91, 97, 111.

were in Lancashire, with the rest mostly in Scotland. By 1850, 70.9 percent of all the powerlooms in Britain were employed in Lancashire, 176,947 out of 249,627.[197]

The growth of output in the industry between 1760 and 1871 gives some indication of what was happening in Lancashire at this time. In 1760, the gross value of output in the industry was a mere £600,000. This increased almost tenfold to £5.4 million in 1784–86; by 1798–1800 it had more than doubled again to £11.1 million; thereafter it grew even more rapidly, £30.0 million in 1815–17, £48.6 million in 1851, and £104.9 million in 1871.[198] Because the industry was heavily concentrated in Lancashire, the bulk of this explosive growth of cotton production between the 1780s and 1871 occurred in that county. The backward and forward linkage effects of this expansion gave rise to further increases in industrial production in machine and machine tool industries and clothing. As families in the county responded to the buoyant employment opportunities, the county's population increased phenomenally as the age at marriage fell, the frequency of marriage increased, and birth rates rose sharply. Lancashire's population more than quadrupled between 1664 and 1801 to reach almost 700,000, and by 1851 it was over 2,000,000.[199] The county had the highest birth rate in England between 1740 and 1850, and within it the rapidly industrializing southeast experienced the largest increases. In this way, the industrial revolution in Lancashire created its own labor force, with very little net migration from the rest of England.[200]

The trade statistics show unmistakably that Lancashire's cotton industry was the progeny of overseas trade in all respects. It grew initially on the basis of a domestic market that had been previously created by imported East Indian cotton calicoes. But its rapid expansion from a very small base in 1760 was largely due to the fast growth of exports, from 33.3 percent of the industry's total output in 1760 to 61.3 percent in 1798–1800, 63.7 percent in 1859–61, and 73.7 percent in 1872–74.[201] The growth of exports

[197] *Ibid.*, Table 1.1, p. 20.

[198] Joseph E. Inikori, "Slavery and the Revolution in Cotton Textile Production in England," in Joseph E. Inikori and Stanley L. Engerman (eds.), *The Atlantic Slave Trade: Effects on Economies, Societies, and Peoples in Africa, the Americas, and Europe* (Durham and London: Duke University Press, 1992), Table 3, p. 170; Farnie, *The English Cotton Industry*, Table 3, p. 24.

[199] Walton, *Lancashire*, pp. 76–77, 123. The county's population was only 95,000 in 1563 (*Ibid.*, p. 12).

[200] *Ibid.*, pp. 123–124.

[201] Inikori, "Slavery and the Revolution in Cotton Textile Production," Table 3, p. 170; Farnie, *The English Cotton Industry*, Table 2, p. 10. The percentages for 1859–61 and 1872–74 are computed by applying the annual average export figures for these two periods to the output figures for 1861 and 1871, respectively. The point made in this paragraph is consistent with that expressed by Farnie: "The industry had been created in order to supply the markets of Europe with an alternative to Indian

was matched by increases in the import of raw cotton, from 4.2 million pounds (weight) in 1772 to 41.8 million in 1800, and 452 million in 1841.[202]

Some attempts have been made to explain why, of all parts of England that tried to produce a domestic substitute for imported cottons from India, it was Lancashire that forged ahead dramatically to build a whole modern industrial society on the basis of cotton textile production. In some ways it may be tempting to explain the region's success in terms of its natural endowment in coal, water resources, climate, and the like. In this way, Lancashire may fit well into Wrigley's hypothesis on the discontinuity between the organic economy and the inorganic economy in England, a discontinuity occasioned by the use of coal-based energy in the inorganic economy:

> Inasmuch as the growth taking place in some sectors of the English economy was contingent upon the use of cheap energy on a large scale and that energy came from coal, it seems prudent to regard such growth not as a structural feature logically comparable to the benefits derived from specialization of function, or from the development of the landlord, tenant farmer and labourer system in agriculture, but as an uncovenanted blessing.[203]

However, Walton has dismissed the role of coal, climate, and religion during the critical period of industrial development in Lancashire between the middle quarters of the eighteenth and the beginning of the nineteenth century. He rests his explanation primarily on the general poverty of the masses in Lancashire induced in turn by the poor agricultural resources of the county:

> Explanations involving natural advantages carry little weight at this stage. The presence of accessible coal measures became essential to sustained growth through urbanisation and the steam-powered factory from the end of the eighteenth century . . . More to the point is the nature of economy and society at the beginning of the eighteenth century. . . . the poor quality of much agricultural land, especially in relation to the range of available improvement techniques, helped to push investment in industrial directions. The relationship between poor land, small holdings, subdivided plots and the rise of domestic industry is also highly relevant, of course; but in this respect south-east Lancashire was part of a much wider pattern of development.[204]

calico, to replace England's imports by an indigenous product, and thereby to transform the re-export trade into an export trade in domestic manufactures. In the process of development the industry became increasingly geared to the supply of foreign markets and acquired an export bias which remained without parallel in any other industry, either at home or abroad, and generated an intense export-led boom in the economy." Farnie, *The English Cotton Industry*, p. 81.

202 Walton, *Lancashire*, p. 104.

203 E. A. Wrigley, *Continuity, Chance and Change: The Character of the Industrial Revolution in England* (Cambridge: Cambridge University Press, 1988), pp. 114–115.

204 Walton, *Lancashire*, pp. 66–67.

This more or less places Lancashire in the general context of the literature on proto-industrialization, with emphasis on poor agricultural resources, surplus labor, and mass poverty, all leading to the availability of cheap labor for domestic industry.[205] General poverty in Lancashire meant that industrial expansion must depend heavily on external markets, another important element in the proto-industrialization hypothesis. Ultimately, therefore, Lancashire's success in relation to other regions in England may be seen in the region's ability to exploit its cheap labor and win overseas markets, in comparison with the failure of other English regions to do the same. As Farnie points out: "Ready access to the world's greatest market for cotton manufactures conferred upon Lancashire a unique advantage lacked by the industry elsewhere, whether in Britain or abroad."[206] The availability of cheap labor and the other factors mentioned by Walton become very important in this context. Equally important in this context is the prior development of Liverpool as a major world trading port with its important connections with Western Africa and the Americas.

At this juncture it is pertinent to note some of the essential elements that were common to the three regional success stories of English industrialization between 1660 and 1850, and which marked them apart from other regions in England during the period. First, all three were among the poorer regions of England up to the Restoration (1660): None of them was among the top 10 counties in wealth in 1086 and in 1660; the major developments in agriculture and industry between 1086 and 1660 took place very much outside the three; and, undoubtedly, Lancashire and the West Riding were about the poorest areas of England at the beginning of the seventeenth century. Second, their industrialization during the period was heavily dependent on their ability to win overseas markets relative to competing regions in England. The evidence presented earlier makes it clear enough that the West Midlands dominated overseas sales of English iron and ironware during the period under consideration, although the exact proportions are not known. Similarly, more than half of England's woollen textiles sold overseas during the period came from the West Riding, which exported over 72 percent of its total output. And the proportion of Lancashire's cotton output exported and the county's share of England's export of cotton goods during the same period were even greater. Finally, in the course of their industrialization during the period, all three generated the bulk of their needed labor internally through their own reproduction process. These rapidly industrializing regions did not depend in any significant way on net

[205] For a more direct analysis of Lancashire's industrialization in the context of the proto-industrialization literature, see Walton, "Proto-industrialisation and the first industrial revolution."

[206] Farnie, *The English Cotton Industry*, p. 63.

Table 2.7. *Comparative Decennial Population Growth Rates in Selected Regions of England*

	Essex	Suffolk	Norfolk	Average of England and Wales	Lancashire	West Riding of Yorkshire	Derbyshire
1801–11	11	11	7	14.5	23	16	15
1811–21	15	15	18	17.5	27	22	15
1821–31	10	9	13	16.0	27	22	11
1831–41	8.6	6.3	5.7	14.5	24.7	18.2	14.7

Source: Coleman, "Growth and Decay," Table 2.2, p. 119. The evidence is from *British Parliamentary Papers 1843*, Vol. XXII, p. 12.

migration from the other regions of England. Against this background, the information presented in Table 2.7 is quite instructive. As the table shows, the rate of population growth in the three counties of East Anglia, which experienced deceleration in industrial production, was consistently lower than the average for England and Wales from 1801 to 1841. During the same period, on the other hand, the rates for Lancashire and the West Riding, particularly the former, were considerably higher than the national average.

Now, if the other regions of England did not contribute much by way of labor supply to the rapidly industrializing regions, did they provide important markets for the latter's industrial products? In other words, was there a nation-wide division of labor in England in the eighteenth and early nineteen centuries? Almost two decades ago, John Langton published a paper that has since been very influential in directing attention to the regional pattern of manufacturing in England in the eighteenth and nineteenth centuries.[207] The descriptive analysis presented shows that in the eighteenth and early nineteenth centuries, the manufacturing regions of England operated largely in isolation from each other; different production systems existed in different regions in the same industries, with very little direct competition among them in the domestic market. This pattern, which originated from the high cost of inland transportation, was further extended and consolidated by the construction of canals, particularly from the late eighteenth century, owing to the regional nature of their construction and operation.

[207] John Langton, "The Industrial Revolution and the Regional Geography of England," *Transactions of the Institute of British Geographers*, New Series, Vol. 9 (1984), pp. 145–167.

As Langton stresses, "one of the most striking peculiarities of English industrialization was that it was based for over a generation upon haulage along a waterway network." Although the canals reduced the cost of transporting goods considerably, those costs rose quickly as more distances were covered. "The vast majority of shipments" along the canals were, therefore, "over short distances or to and from the main coastal ports. . . . It was the realization of the intra-regional nature of the huge benefits that canal transport brought which generated such strongly regionalized pressures for canal construction." For this reason, effective competition in the canal-based economy of England was limited to regions, within which comparative advantage, arising from the combination of local resource endowments, traditional skills, and the nature of the markets served, determined the form and location of production and encouraged intra-regional specialization. In this way, the regional economies became highly differentiated, internally integrated, and very separate from each other.[208]

The separateness of the manufacturing regions was reflected in the regional organization of the industrial labor unions. As H. Pelling pointed out: "The freer movement of men and materials had to wait for the coming of the railways in the 1830s and 1840s, and it was not until thereafter that national unions of particular industries became practicable."[209] It was the construction of a national railway network that ultimately created a truly integrated national economy in England in the nineteenth century: "Raw materials and products for the home market quickly began to flow over long distances and burst through the old regional barriers."[210]

Further evidence on the separateness of the manufacturing regions comes from the political arena. The regional distribution of modern and traditional forms of manufacturing in England in the eighteenth century made it impossible for the manufacturers to present a common national front on the major issues that concerned them in the 1780s:

> Command of the overseas markets upon which these industrial regions depended was heavily dependent upon policies pursued by national government. The necessary appositional element in the growth of regional consciousness was provided by the interaction of all the industrial (and agricultural) regions with Parliament in London. It was a threat to overseas markets – or rather a series of them – that set off the intense lobbying from manufacturing interests in the 1780s, and it was in that coming together that the manufacturers of different regions realized the depth of the differences between them.[211]

[208] *Ibid.*, pp. 162–163.
[209] H. Pelling, *A History of British Trade Unionism* (London, 1963), p. 4, cited by Langton, "The Industrial Revolution," p. 163.
[210] Langton, "The Industrial Revolution," p. 163.
[211] *Ibid.*, p. 163.

The institution created for the purpose, under the leadership of Midlands manufacturers, was the General Chamber of Manufacturers, which was established in 1785. After some initial successes, the Chamber was destroyed by disagreements along regional lines:

> Unanimity shattered when an attempt was made to organize opinion on the proposed commercial treaty with France in 1786 and to put the General Chamber onto a permanent and regular footing. The newer manufactures of cotton, iron and pottery supported the freer trade that the treaty would have encouraged, but deligates from the traditional handicrafts were opposed to it. Based largely in London and the South, they flooded the assembly in the capital in 1787 and passed a petition on behalf of the General Chamber pleading for a postponement of the application of the treaty. The Midlands and Northern deligates were enraged as 'a fatal split . . . more or less on regional lines' developed to cause the collapse of the General Chamber.[212]

The foregoing original findings of Langton were subsequently confirmed by the results of a collective work, *Atlas of Industrializing Britain, 1780–1914*, sponsored by the Economic History Society and the Institute of British Geographers. In their summary of these results, the editors report:

> In a more difficult way the related question of regionality is raised: just how self-contained and separate were the various industrial regions? This is clearest in the transport material. The flows of goods along the canals and turnpikes of Lancashire and Yorkshire are clearly greater than flows out of the region, except for the export funnels of Liverpool and the Aire.[213]

According to the editors, the national economic integration that was very evident in the late nineteenth century was the creation of the railways. However, the early fares policies of the railway companies tended to prolong the continued existence of regional economies: "the regional base of many companies meant that pricing policies encouraged intra-regional trade . . ."[214] But, eventually a truly national railway network emerged to produce an integrated national economy in Britain.

[212] *Ibid.*, p. 151.

[213] John Langton and R. J. Morris, "Introduction," in John Langton and R. J. Morris (eds.), *Atlas of Industrializing Britain, 1784–1914* (London and New York: Methuen, 1986), p. xxviii. See also the exchange between Derek Gregory and John Langton, *Journal of Historical Geography*, 14, 1 (1988), pp. 50–58, and 14, 2 (1988), pp. 170–176. Both Gregory and Langton agree on the essential issues, including the separateness of the manufacturing regions and their integration into the international economy. Their main point of debate is how best to explain the regional differences. Also in agreement with Langton's findings is Gerard Turnbull, "Canals, coal and regional growth during the industrial revolution," *Economic History Review*, 2nd ser., XL, 4 (1987), pp. 537–560. A more critical view but still basically in agreement is that of Michael Freeman, "The Industrial revolution and the regional geography of England: a comment," *Transactions of the Institute of British Geographers*, New Series, Vol. 9 (1984), pp. 507–512.

[214] Langton and Morris, "Introduction," p. xxix.

All of the foregoing is very much in accord with the evidence concerning the concentration of West Country and East Anglia clothiers on production for the home trade as they lost overseas markets to West Riding producers, which was stated earlier in this chapter. The implication of that evidence is that the rapidly industrializing regions were initially more successful in taking overseas markets from the traditional manufacturers in the south of England than in capturing the latter's local and regional markets at home. Overconcentration on Manchester firms sometimes creates the misleading impression that Lancashire products were the only English cotton textiles sold in England in the eighteenth century.[215] While detailed study of inter-regional product flows may produce more information in the years to come, an attempt to map the geographical spread and density of sales of the products of a Lancashire hand-tool maker (1811–15) and a West Riding linen manufacturer (1791–96) on the domestic market shows concentration of sales within a radius of 50 miles in both cases, but more so for the linen firm; beyond a radius of 100 miles sales diminished to almost zero.[216]

It must not be forgotten that while the rapidly industrializing regions developed modern capitalist industry, traditional manufacturing, some of whose products never even reached the market, persisted in several regions and served a sizable portion of the local markets. Though not directly relevant to this study, some evidence of this type relating to the output and distribution of linen manufactures in Ireland in the late eighteenth century may be cited to illustrate this point. A House of Commons committee report of 1773 shows that in 1770 the total value of linens sold on the market in each county in Ireland was £2,146,800, of which £1,691,787 went for exports, leaving £455,013 of the marketed output for home consumption. But the report adds that a further output worth £378,321 was produced and consumed at home, "and never exposed to sale in Market."[217] Thus, almost one-half (45.4 percent to be precise) of domestically produced linen manufactures consumed in Ireland in 1770 was supplied through subsistence production (produced and consumed directly by the producer). Of course, the English economy in the eighteenth century was more commercialized than the Irish economy. Even so, the extent to which local con-

[215] Beverly Lemire, *Fashion's Favourite: The Cotton Trade And The Consumer in Britain, 1660–1800* (Oxford: Oxford University Press, 1991), pp. 115–160.

[216] Michael J. Freeman, "Introduction," in Derek H. Aldcroft and Michael J. Freeman (eds.), *Transport in the Industrial Revolution* (Manchester: Manchester University Press, 1983), Figure 1, pp. 8–9.

[217] British Library, London, *House of Commons Sessional Papers of the 18th Century, Reports & Papers*, Vol. 25, 1763–74, Report From the Committee Appointed to Enquire into the Present State of the Linen Trade in Great Britain and Ireland, p. 425.

sumption was met by local supply during the period under consideration must not be underrated.

It is now clear that the development of industrial production in England between 1660 and 1850 was first and foremost a regional phenomenon. Three regions – Lancashire, the West Riding of Yorkshire, and the West Midlands, in that order – led the development of modern capitalist industry in England for decades in the eighteenth and early nineteenth centuries. The revolutionary developments in the organization and technology of industrial production in these regions between 1780 and 1850 produced the Industrial Revolution, which transformed the whole economy and society in England irrevocably. Yet these three were among the poorest and most backward regions in England in 1660, judged by the relative amount of wealth and socio-economic structure. This finding raises two fundamental questions. First, why did the agriculturally rich and industrially prosperous south of England, with its highly modernized socio-economic structures in 1660, fail to lead in the full development of modern capitalist industry between 1660 and 1850? And, second, given what we now know of the regional pattern of industrial development from 1660 to 1850, what kind of relationship can we establish between the socio-economic and political developments of the centuries from 1086 to 1660 and the revolutionary developments in industrial production, which occurred at some point in time between 1660 and 1850?

These questions will be explored more fully in the chapters that follow. Here, some preliminary observations will suffice. The evidence previously presented in this chapter makes it clear that the loss of export markets was the principal reason why industrial production in the West Country and East Anglia decelerated in the eighteenth century. On the other hand, as we have seen, the success of the West Riding, Lancashire, and the West Midlands in winning overseas markets was responsible primarily for their explosive expansion of industrial production during the same period. Some of the more convincing explanations for the latter's export success include variations in the organization of export sales and the availability of cheap labour due largely to poor agricultural resources and the proliferation of small property. At some point it appears that the agricultural prosperity of Southern England between 1086 and 1660 was a disadvantage in its industrial development from 1660 to 1850. *A priori*, there are two ways this could have been so. Given an integrated national economy, complementary economies would develop in the regions, with agriculturally prosperous regions specializing in agriculture and the agriculturally poor areas specializing in manufacturing, even if the former were initially more industrially developed. On the other hand, given accessible export markets, and disjointed factor and product markets at home, agriculturally poor regions could take advantage of the willingness of large segments of their populations to accept relatively low wages to capture

the bulk of the export markets and outpace the agriculturally rich regions in industrial growth.

The evidence presented in the chapter shows clearly enough that what actually happened approximated to the second of the two logical possibilities. The three leading industrial regions did not initially depend in any significant way on the hitherto more prosperous southern regions for labor or for markets for their industrial products. The bulk of the labor they needed was internally generated through their own demographic reproduction process as their families responded to the buoyant employment opportunities associated with rapidly expanding industrial production. And by far the greater part of manufacturing output sold outside these regions was sold overseas during the period. What then was the relevance of the socio-economic and political development between 1086 and 1660?

From the available evidence it is clear enough that the industrial revolutions that took place in Lancashire, the West Riding, and the West Midlands between 1780 and 1850 were not caused in any direct way by the socio-economic and political developments in England between 1086 and 1660. But that is not to say that the latter were irrelevant to the Industrial Revolution in England. To start, it must be stressed that the overseas markets available to Lancashire, the West Riding, and the West Midlands during the period being examined depended largely on the strength and policies of the British national government. Those strengths and policies ultimately derived from the institutional and socio-economic developments of the centuries from 1086 to 1660 outlined previously in this chapter.[218] What is more, the general socio-economic development that occurred in England, but more so in southern England, between 1086 and 1660 was critical in the rapid transmission of development from the leading regions to the whole country once a national railway network was established in the nineteenth century. Without the development of modern agriculture and the commercialization of socio-economic life in southern England between 1086 and 1660, the industrial developments in the leading regions would

[218] The significance of the political role of the national government in the Industrial Revolution is the theme of several papers by Patrick O'Brien: Patrick K. O'Brien, "Political Preconditions for the Industrial Revolution," in Patrick K. O'Brien and Roland Quinault (eds.), *The Industrial Revolution and British Society* (Cambridge: Cambridge University Press, 1993), pp. 124–155; Patrick O'Brien, "Central Government and the Economy, 1688–1815," in Floud and McCloskey (eds.), *Economic History of Britain*, 2nd ed., Vol. 1, pp. 205–241; Patrick O'Brien, Trevor Griffiths, and Philip Hunt, "Political components of the industrial revolution: Parliament and the English cotton textile industry, 1660–1774," *Economic History Review*, XLIV, 3 (1991), pp. 395–423. The role of the central government has also been examined in a number of books, of which the following are but examples: Charles Wilson, *Profit and Power: A Study of England and the Dutch Wars* (London: Martinus Nijhoff, 1978); John Brewer, *The Sinews of Power: War, Money and the English State, 1688–1783* (New York: Alfred A. Knopf, 1989).

have remained a regional, rather than a national, phenomenon for a much longer period.

At this juncture it is important, once again, to place the role of the service sector in southern England, especially London and the home counties, in a proper historical perspective. As stated earlier in the chapter, Lee is right in calling attention to the neglected service sector: But he certainly overstretches his point when he gives the impression that the growth of the service sector in London and the home counties was the root cause of the international dominance of the English economy in the nineteenth century:

> For long run prosperity, therefore, the service/consumer economy must be judged to be clearly superior to the industrial export-oriented economy. Thus we should interpret Victorian Britain in terms of the South-East being the most advanced region in the British economy, and making a commensurate contribution to the development of that national economy.[219]

The evidence presented in this chapter shows clearly that south-eastern England declined while the industrializing regions to the north developed rapidly in the eighteenth and early nineteenth centuries. It was after a national railway network established an integrated national economy, with London as its center, that London and the south-east began to grow rapidly on the basis of a service sector dependent on wealth generated largely by industry and the colonies.[220] The British empire was not created by clerks and farmers; it was created by the power of British industry and with the products and technology of British industry. Ultimately, even the service sector of Victorian England itself depended on the technology of the Industrial Revolution – the railways, the steam ship, the telegraph, and so on. Berg and Hudson are basically right in their conclusion:

> The metropolitan economy may well have become the major focus of service sector growth and wealth accumulation by the third quarter of the nineteenth century, but in the industrial revolution period itself it is more likely that regional industrial revolutions dictated the course of structural change and colonial expansion.[221]

[219] C. H. Lee, "Regional Growth and Structural Change in Victorian Britain," *Economic History Review*, 2nd ser., XXXIV, 3 (1981), p. 452.

[220] As Langton says: "Inexorably, as part of this process of national social and economic integration, London again began to exert the sway over national commerce that it had lost to the canal based regional capitals. With this commercial activity came those whose business it was. The role of London changed from that of an external irritant suffered by all provincial regions to that of a truly national economic and social metropolis to which all regions were more and more closely bound by functionally necessary ties." Langton, "The Industrial Revolution," p. 163.

[221] Maxine Berg and Pat Hudson, "Rehabilitating the industrial revolution," *Economic History Review*, XLV, 1 (1992), pp. 43–44.

To summarize, let us reiterate the main features of English industrialization between 1660 and 1850. It has been stressed in this chapter that the industrialization process in England during the period followed basically the pattern of ISI. To explain why it was successful would, therefore, require an analysis informed by a theoretical framework incorporating critical elements in the conceptual and empirical literature on ISI. The evidence presented in the chapter shows further that the national process of industrialization was led in the first instance by a handful of regions. These leading regions were individually more internally integrated and tied more closely to their overseas markets than they were connected to the other regions in England in the early stages of the process. This pattern of development has serious methodological implications. It raises questions that aggregate national approaches cannot deal with adequately. To illustrate the point, it is often said at the national level that agriculture released labor to industry. But, as we have seen, industrial employment expanded in the north on the basis of locally generated labor supply, while much of the initial agricultural labor was in the South where industrial employment grew very little. Without a national study with a regional focus, facts of this nature get lost in national aggregates. Again, the pattern of development revealed by the evidence presented in this chapter makes it clear that issues such as the role of overseas trade cannot be properly treated on the basis of national aggregate statistics. A more effective and realistic way to conduct the assessment is to examine the relative importance of overseas and domestic markets for the leading regions. These and similar issues are explored more fully in the chapters that follow.