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ECONOMICS 301Y1

The Economic History of Later-Medieval and Early-Modern Europe

LECTURE TOPIC NO. 7: part 2

III. LATE-MEDIEVAL AGRICULTURE: Changes in Later Medieval Agrarian Society, from c. 1300 - c. 1520

D. Agrarian Changes in Late-Medieval England: Shift from Arable to Sheep Farming and the Early Enclosures as Responses to Agrarian Crises

III. LATE-MEDIEVAL AGRICULTURE: Changes in Later Medieval Agrarian Society, from c. 1300 - c. 1520

D. Agrarian Changes in Late-Medieval England: before and after the Black Death, 1290 - 1500 (to the Early Enclosures)

1. Some Introductory Comments:

a) In view of the uncontested fact that England was the homeland of the modern Industrial Revolution, and thus of modern urban industrialisation [the basic theme of ECO 303Y], we might well ask if we can find the roots or origins of England's future success in her late-medieval economy.

b) **Indeed a basic theme of this course [ECO 301Y] is to understand the phenomena that led to:**

i) **the reorientation and transfer of economic and political power from the Mediterranean basin** (the heart of the old Hellenistic and Roman Empire, and of the ensuing Islamic Empires), where it had securely rested for many millennia, to north-west Europe: in particular to the Low Countries and England

ii) **and with that the creation or establishment of the foundations for England's future successes** in being – and uniquely so – the homeland of modern industrialization.

c) **But few would discern or guess that future success from an examination of the English economy in, say, the fourteenth century:**

i) **For England was then far less advanced economically than were,** say, the regions of central and northern Italy, the Low Countries (above all the southern Low Countries: Flanders and Brabant), the Rhineland towns of western Germany

ii) **But later medieval England had one very major economic asset: sheep**

(1) These sheep, far more numerous than people in medieval England, produced Europe's major supply of wool – the most voluminous in all of Europe

(2) Furthermore, though such wools were produced in wide range of qualities, the very finest were the very finest, unrivalled in quality, in all of Europe – until Spain finally succeeded, by the later 16th-century, in producing an even superior quality form of wool in the famed *merinos*[1].

(3) England thus came to supply the leading West European woollen manufacturers with the wools uniquely required for luxury quality woollens.

(4) Wool was long England's overwhelmingly dominant and most lucrative export, until, by the mid 15th century it was superseded by exports of woollen broadcloths manufactured from those same wools

(5) Wool-based textiles remained England's single most important export until 1805, when they were

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[1] See n. 10 below.

superseded by another English textile: cottons, becoming the very heart of the Industrial Revolution, and the final topic in this course.

d) **So, since sheep raising was a fundamental component of English agriculture** – of mixed husbandry, as seen in earlier lectures:

i) **we must now turn to see and understand the fundamental changes** that English agriculture underwent in the 14th and 15th centuries

ii) **ending with the Tudor Enclosure movements of the later 15th century:** chiefly involving the conversion of uninhabited arable lands into sheep pastures for wool production, and thus for the export boom in woollen broadcloths (1460s to 1540s).

iii) **for this reason, the next major topic, following this one on agriculture,** will be on Manufacturing Industries: with (in this term) just the one case study of the woollen cloth industry.

2. English Responses to Demographic and Agrarian Crises in the 14th Century

a) **Demographic Pressures and the Boserup Model in Flanders and England ca. 1290:**

i) **In early 14th century Flanders, then very densely populated,** the agrarian changes examined in the previous lecture [printed version, but not delivered orally last week], were in essence technological changes in response to:

(1) namely the responses to the challenges or problems of diminishing returns with continued population growth, and overcrowding of peasant plots:

(2) i.e., in order to increase outputs per hectare of land, using abundant labour, to feed the growing population.

(3) note that these took place on individual peasant holdings, held in severalty; i.e. they were not peasants engaged in common-field forms of agriculture.

ii) **The Boserup Model:** [2]

(1) As also noted in that lecture, the American economist and agronomist Esther Boserup had argued that similar agrarian changes have resulted, in contemporary third-world countries, from similar response to diminishing returns with rapid population growth

(2) She and others have also argued that similar responses to population growth and patterns of agrarian changes can be found elsewhere in world history.

iii) **In 13th and early 14th-century England,** when population growth had reached its maximum, some

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[2] Esther Boserup, *Population and Technological Change: A Study of Long-Term Trends* (Chicago, 1981).

examples of highly intensive cultivation can also be found:

(1) but only or chiefly in East Anglia (Norfolk and Suffolk – sometimes Essex also included),

(2) and particularly in the county of Norfolk, according to studies by Prof. Bruce Campbell.[3]

iv) **In late-13th century Norfolk, many if not all features of highly labour-intensive husbandry that were discussed in the lecture on the Low Countries can also be found:** especially to reduce the fallow and sometimes even to eliminate it

(1) especially intensive row cultivation and heavy manuring and growth of fodder crops;

(2) stall-feeding of livestock to provide extra manuring for the arable fields.

(3) lesser reliance on grain production; or proportionately less land devoted to grains;

v) **For Norfolk, however, in contrast to Flanders, there is no concrete evidence to show that:**

(1) any genuine form of convertible husbandry [analysed in the lecture on Flemish agriculture] was being practised in Norfolk during this era of demographic growth, i.e., up to the 1320s;

(2) nor indeed before the 16th century, when the written evidence clearly shows that techniques of convertible husbandry had been imported from the Low Countries.

(3) We will deal again with this subject of convertible husbandry in 16th and 17th century England in the second term.

vi) **Why Norfolk (and East Anglia) as a zone of more intensive husbandry? Chief factors:**

(1) Weak manorialism in much of Norfolk (East Anglia, and SE England, in general)

- i.e., open-field farming was either absent or only imperfectly developed
- therefore, there was considerable individual peasant farming in Norfolk

(2) Densely populated region supplying ample cheap labour for intensive husbandry;

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[3] Bruce Campbell, 'Arable Progress in Medieval England: Some Evidence from Eastern Norfolk', *Economic History Review*, 2nd, 36 (1983), 26-47; B.M. Campbell, 'Arable Productivity in Medieval England: Some Evidence from Norfolk', *Journal of Economic History*, 43 (June 1983), 379-404; Bruce M. S. Campbell and Mark Overton, eds., *Land, Labour and Livestock: Historical Studies in European Agricultural Productivity* (Manchester, 1991): Essays by Overton & Campbell, Shiel, Biddick & Bijleveld, Campbell, Thornton, Clark, Persson; Bruce M. S. Campbell and Mark Overton, 'A New Perspective on Medieval and Early Modern Agriculture: Six Centuries of Norfolk Farming, c.1250 - c.1850', *Past & Present*, no. 141 (November 1993), 38 - 105; and Bruce M. S. Campbell, 'Progressiveness and Backwardness in Thirteenth and Early Fourteenth-Century English Agriculture: the Verdict of Recent Research', in Jean Marie Duvosquel and Erik Thoen, eds., *Peasants & Townsmen in Medieval Europe: Studia in Honorem Adriaan Verhulst*, Belgisch Centrum voor Landelijk Geschiedenis nr. 114/Centre belge d'histoire rurale no. 114 (Ghent, 1995), pp. 541-560; Bruce Campbell, 'The Agrarian Problem in the Early Fourteenth Century', *Past & Present*, no. 188 (August 2005), 1-69. See also his recent monograph, though it does not really consider this issue in any depth: Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450*, Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge University Press, 2000).

(3) this region was more densely populated than any other region, except for the adjacent east-central Midlands, dominated by open-field or common-field agriculture.

(4) Transport and trade: coastal shipping and good road networks to permit and promote trade in agricultural products; and especially to supply grain.

vii) **Battle Abbey in nearby Suffolk (also in East Anglia):**[4]

(1) Provides another example of intensive husbandry, and possibly also with elements of convertible husbandry, in the late 13th century;

(2) This was an abbey that was largely in the form of domain lands run as a commercial estate, with few peasant tenancies;

(3) Battle Abbey also had access to coastal shipping and trade.

b) **Norfolk Farming After the Black Death:**

i) **As the graph on the screen shows,** agricultural yields and productivity had peaked in the early 14th century -- evidently in response to population pressures;

ii) **but sometime after the Black Death,** and the catastrophic fall in population, yields did fall once more, with apparent agrarian retrogression (i.e., going backward)..

iii) **Why? Because of the demographic changes, and the Ricardo model:**

(1) With falling population, labour was becoming too scarce and expensive to permit such labour-intensive husbandry.

(2) Land was more abundant to provide sufficiently ample food supplies for a smaller population without resorting to intensive farming;

(3) Presumably, higher cost marginal lands were abandoned, if slowly, so that cultivation of arable crops was now concentrated on more fertile, more productive lands, on average.

(4) in other words, without the demographic pressure,

- most farmers returned to a traditional three-course rotation,
- with one third of the land in fallow

(5) Later in this lecture, we will encounter more specific and really surprising evidence that, after the Black Death,

- both labour productivity and land productivity in the arable sector fell
- while productivity, conversely, rose in the pastoral or livestock sectors, especially in sheep farming.

(6) **Remember what has been the conventional wisdom about post Black Death agriculture:**

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[4] See Eleanor Searle, *Lordship and Community: Battle Abbey and Its Banlieu, 1066-1538* (Toronto, 1974).

- the dramatic changes in the land:labour ratios should have led to rising labour productivity, i.e., to an increased MP of labour (and thus to rising real wages)
- and, furthermore, the contraction of land in agricultural production should have affected chiefly poorer quality more costly marginal lands,
- so that, as just argued, most crops would have been grown on the remaining lands with higher fertility and lower costs

(7) **We also have to consider the role of price changes**

- note in particular that the true equation for wages is $W_L = MRP_L$ [the marginal *revenue* product of labour]
- and thus falling grain prices may have offset rising MP_L (physical productivity of labour)

iii) **As the graph also indicates,** and as suggested earlier, the next period during which Norfolk again experienced a rise in yields was also be a period of demographic growth: the 16th, and again in the 18th centuries.

c) **English Agriculture in the Generation Following the Black Death: 1348 - 1378**

i) **As the next graph on the screen indicates:**

(1) the generation following the Black Death, lasting until the late 1370s, was marked by high agricultural prices;

(2) and, as I have indicated before, that price behaviour was in part a purely inflationary phenomena: the post-Plague inflations, when 'men were dying, but coins were not' (as David Herlihy commented, for Italy).

ii) **The wage evidence on the graph:**[5]

(1) though rising after the Black Death, nominal money wages [in silver pence] did not keep pace with the inflation — i.e., the general rise in the price level.

(2) much evidence indicates that manorial wages, in general, rose rather less than did urban wages.

(3) real wages rose only with the deflation of the later 14th century: i.e., nominal wages remained more or less fixed, while the price level (cost of living) fell.

iii) **The Ordinance (1349) and Statute of Labourers (1351) may be one reason:**

(1) With the Black Death, the government immediately reacted to perceived labour shortages by attempting to freeze all wages at 1346 (pre-Plague) levels, clearly in response to landowners.

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[5] See John H. Munro, 'Wage Stickiness, Monetary Changes, and Real Incomes in Late-Medieval England and the Low Countries, 1300 - 1500: Did Money Matter?' *Research in Economic History*, 21 (2003), 185 - 297; also available as a working paper (but an earlier version) on my Home Page, at: http://www.economics.utoronto.ca/ecipa/archive/UT-ECIPA-MUNRO-00-03.html

(2) Although the wage restrictions were a national issue, enforcement was clearly focussed on manorial agriculture and not in manufacturing industries, either urban or rural.

(3) To be sure, the manorial records do show that wages did rise, and many rose above the levels permitted by the Statutes;

(4) but, as just noted, they did not rise as high as did urban wages;

(5) Thus one may argue that enforcement of the labour laws was sufficient to prevent manorial wages from rising to their true market levels;

(6) and yet they did rise above the permitted rates on so many manors.

iv) **These crown-enforced wage restrictions may be seen as part of the so-called Feudal (Seigniorial) Reaction that followed the Black Death, discussed last day:**

(1) If wages of free labour were suppressed, servile labour would have had a lesser incentive to demand greater freedom (at least to become free-labour, with no security in landholding).

(2) But enforcement of the wage laws may have also reduced the supply of available free labour.

(3) Thus many landlords, failing to obtain free labour, may have resorted to measures to extort more work from their servile/customary tenants: i.e., the Seigneurial Reaction.

(4) One historian in particular, G.A. Holmes, has argued that by the mid-1370s, gross manorial incomes of the greater landlords had fallen by only 10%;

(5) and thus, if population had fallen by 30% or more, these data suggest a significant transfer of income from the peasantry to landlords.[6]

(5) but the evidence for such a Feudal Reaction is mixed:

- i.e., there is some evidence -- quite concrete evidence for the Bishopric of Durham (documented in a recent article);[7]
- but perhaps not enough evidence is available to sustain the view that this was a truly national phenomenon.

v) **Nevertheless, manorial demesne farming, especially commercial agriculture on the great landed estates,** does seem to have remained buoyant, for both grains and wool, for a full generation after the Black Death: until the late 1370s.

d) **The Agrarian Turning Point of the late 1370s: Prices, Wages, and Demesne Farming**

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[6] G.A. Holmes, *The Estates of the Higher Nobility in Fourteenth-Century England* (Cambridge, 1957), pp. 85-120.

[7] Richard H. Britnell, 'Feudal Reaction after the Black Death in the Palatinate of Durham', *Past & Present*, no. 128 (August 1990), pp. 28-47.

i) **The late 1370s and 1380s:** appear to be a turning point or distinct watershed in English agrarian history:
(1) for as the graphs on the screen indicate [online, within MS-Word documents, accompanying the online pdf and Word files for this lecture], agricultural prices plunged over the next twenty years, experiencing one of the steepest declines recorded in English history.
(2) Nominal money wages, however, did not fall (or only a very few did, while others still rose):
(3) and with the sharp fall in the price level, as you can see, real wages now experienced a genuine and very substantial rise that would last until the mid 15th-century.

ii) **The landlords' reaction to this price-cost squeeze (i.e., falling agricultural prices and rising labour and perhaps also capital costs):** as indeed we saw last day in the decline of serfdom.
(1) was to give up commercial demesne farming, though gradually, by region, and not all at once.
(2) and thus, by the terminology discussed last day for serfdom, they switched:

- from a manorial income regime strongly based on *Gutsherrschaft* (profits from the demesne and from the exercise of manorial lordship)
- to a manorial regime based on *Grundherrschaft* (on rental incomes from peasant tenancies)

iii) **From the late 1370s to the 1440s or so,**
(1) the greater and lesser landlords, secular (lay) and ecclesiastical, gradually but in so many cases leased out their demesnes to their peasantry,
(2) on leasehold contracts for 7, 10, or 20 years, for fixed cash rents,
(3) and, as noted last day, without any servile attachments or obligations.
(4) Note that contractual leaseholds, even with steadily falling rents, should have earned the landlords higher rents than were being fetched on either customary tenures or freeholds: most of which rents were below market value (for reasons discussed in last week's lecture).

iv) **With the decline and fall of manorial demesne farming, on both ecclesiastical and lay estates:**
(1) there was obviously little or a much reduced need for servile labour services;
(2) and thus the contraction of the demesne farming, combined with the expansion of leasehold contracts, were together a powerful force, as suggested last day, for the steady erosion of English serfdom.

v) **At the same time, leaseholds carved out of the domain supplied much more rental land:**
(1) for previously landless farm labourers or for those called cottars who had been part-time farm labourers because their holdings were too small:
(2) and their acquisitions of leases thus reduced even further the supply of agricultural labour.
(3) The extent of the contraction of manorial demesnes was varied regionally:

- it was weakest in the north (less manorialised and more pastoral)

- strongest or most marked in southern England
- about average (the mean) in the Midlands

(4) Overall the contraction of demesne production was about 30%, and thus less than the overall, aggregate population decline, of at least 50%

(5) **Note**: in many cases leases of demesne land (domain) were in the form of plough strips (as was customary in traditional Open Field farming) that were interspersed between and among the manorial lord's own plough strips.

vi) **As more small-holders acquired sufficient land to feed themselves,** they less frequently resorted to markets, thus aggravating the fall in aggregate demand for foodstuffs.

e) **The Reaction to Changing Agricultural Prices: Landlords and Peasants**

i) **While all grain prices fell (as did other agricultural prices)** initially, from the late 1370s:

(1) the fall in rye prices may have been the most precipitous.

(2) wheat prices, at least in England, fell less, because wheat was the superior good

(3) i.e., in so far as the real cost of living did fall – and this is not always clear, with so many fluctuations in agricultural prices (with bad harvests, etc) – the lower classes would presumably have shifted more and more from rye to wheat bread, which did become predominant.

(4) similarly a shift from oats to wheat and barley

ii) **Was there, as elsewhere in western Europe, a shift away from combined rye and wheat farming, the grains of the Fall-Winter cycle?**

(1) The evidence from Ramsey Abbey estates (with microfilms of its court rolls at the U of T):

- Some shift to barley cultivation, in evident response to a more elastic demand for barley,
- which demand was derived from the demand for beer, whose per capita consumption was increasing.
- Both the price and income elasticity of demand for barley were higher than for wheat.
- On Ramsey abbey estates in later 14th century, wheat production fell 50% while barley cultivation rose 100%.
- Similarly [from evidence of Ramsey abbey estates] a greater shift to legumes.

(2) The most recent and most comprehensive study is that provided by Bruce Campbell in 1997 and 2000, which I have summarized with the tables on the screen:[8] with separate sections for all of England, for Norfolk

[8] Bruce M. Campbell, 'Matching Supply to Demand: Crop Production and Disposal by English Demesnes in the Century of the Black Death', *Journal of Economic History*, 57:4 (December 1997), 827-58.

alone, and for those counties that supplied London with grains. [9]

- note that while there is some reduction in the proportion of acreage devoted to wheat, that reduction is far, far larger for rye and oats
- there is a consequent very large increase in the proportional acreage devoted to barley and legumes.

(3) The question of barley and oats:

- Note that some of the shift from oats to barley reflects a quality shift if brewing (i.e., less reliance on malting oats for beer, and more on superior barley).
- No evidence suggests that a relative contraction in production of oats affected the supply of fodder crops for horses.
- Cultivation of barley and legumes were cheaper (according to Miskimin):
- Barley sapped fewer nutrients from the soil.

(4) The question of legumes:

- Some shift towards cultivation of legumes noted in manorial demesne accounts: the proportion of manorial demesnes cultivating legumes rises from 69% in 1250-1349 to 81% of demesnes in 1350-1449.
- as noted earlier, legumes added nutrients (nitrogen) to the soil.
- and yet the evidence does not show any rise in yields per acre, but more the opposite, surprisingly.

(5) Major problem: legumes, barley, and oats, were all Spring (i.e., summer-maturing) crops, while wheat and rye were winter crops:

- such shifts were not easy to achieve in open-field farming with a three-course rotation.
- but one method was to introduce barley into the winter rotations (called 'berecorn')

iii) **Was there a shift to Pastoral or Livestock Farming?**

(1) was there a shift away from grains and other arable crops into to livestock farming, i.e., sheep and cattle?

(2) That is a complicated question that now requires some further elaboration about the role of livestock, sheep especially, in the medieval English economy.

3. **<u>Livestock Farming in Late-Medieval England</u>:** in part repeating earlier statements

a) **The importance of sheep for wool-production in the medieval English economy:**

i) **Wool had long been England's leading marketable agricultural commodity:**

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[9] The best statistical evidence is to be found in Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450,* Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge University Press, 2000).

(1) In fact, England's predominant export, overwhelming so, accounting for as much as 90% of English export revenues in the 13th and 14th centuries.

(2) In the early 14th century, England was exporting about 35,000 sacks a year, produced by about 8 million sheep

(3) i.e., about 5.8 metric tons of wool with an average of 1.5 lb. wool per fleece, and thus about 240 fleeces in a 364 lb sack.

ii) **The reason:**

(1) The leading Continental cloth industries, especially in the Low Countries, northern France, and Italy, had a voracious demand for English wools.

(2) because they were by far the finest in Europe, unrivalled in quality;

(3) and England produced these fine wools in great abundance.

(4) That English supremacy found no continental challenge before the mid to later 15th century: with the gradual improvement in the quality and expansion in the production of Spanish merino wools.[10]

iii) **English taxation of wool-exports and its consequences:**

(1) For that reason, the lucrative export revenues derived from the wool trade, the English crown had taxed wool exports from 1275.

(2) in the 1330s, at the outset of war with France -- known as the Hundred Years' War (1337-1453) --- King Edward III increased those export taxes six fold (from 6s 8d sterling per sack to 40s and more per sack, by the mid 1340s).

(3) More generally Edward III used the wool trade -- by monopolizing its export -- to finance his French campaigns.

(4) That wool-export tax came to be unpopular with landlords

- because they had to bear some of the tax incidence in the form of lower sales prices,
- forcing the king to find some means of passing the tax incidence more fully on to the foreign buyers.

(5) As the graph and Table 2 demonstrate, the ratio of wool prices to grain prices (and also to the CPI) fell from 1341-45 to 1366-70.

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[10] See last day's lecture, the section on Spanish medieval agriculture, in Topic no. 6: http://www.economics.utoronto.ca/munro5/06AGRMD1.pdf. See also John Munro, 'Medieval Woollens: Textiles, Textile Technology, and Industrial Organisation, c. 800 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles*, 2 vols. (Cambridge and New York: Cambridge University Press, 2003), Vol. I, chapter 4, pp. 181-227; and John Munro, 'Spanish *Merino* Wools and the *Nouvelles Draperies*: an Industrial Transformation in the Late-Medieval Low Countries', *Economic History Review*, 2nd ser., 58:3 (August 2005), 431-84. Also available in the Working Paper version.
http://www.economics.utoronto.ca/ecipa/archive/UT-ECIPA-MUNRO-02-03.html

(6) **The Calais Staple Company (1363):**

- The answer that the Crown provided in 1363: was the creation of the Staple Company at Calais (a recently conquered French port, held by the English from 1347 to 1558),
- as an organized cartel of wool merchants to control all wool sales to northern Europe, and thus pass the tax on to buyers, chiefly in the Low Countries.

(7) Italians who shipped wool directly by sea to the Mediterranean were exempted from the Staple requirements.

(8) As you can also see from the graph and the table, the Staple mechanism worked: for the relative price of wool (i.e., the ratio of wool prices to grain prices then rose: from 1366-70 to 1386-90.

(9) These wool-export taxes were fixed and *specific* (at 40s, i.e., £2, or more per sack), not varying with the price – i..e, they were not *ad valorem* duties;

(10) Thus, as the *nominal* wool-prices fell in the later 14th and early 15th centuries,

- the relative burden of the export taxes rose,
- until, by the 1390s, they were accounting for almost 50% of the mean export prices. (See tables in appendices; and graphs)

(11) For the Flemish cloth industries in particular, those tax-burdened English wools were now accounting for almost 70% of their production costs.

(12) Not surprisingly, therefore, as the next graph on the screen clearly demonstrates, wool exports plunged in the late 14th century, to about half their former levels by the early 15th century.

(13) At the same time, from1391-95, the ratio of wool prices to grain prices was reversed, and thus fell again (rising again only in 1411-20).

(14) To be sure, as we shall later see, some of those lost wool exports were going into domestic cloth production;

(15) but cloth exports did not make up for all the lost wool exports;

(16) increased cloth production within England was not large enough yet to sustain large demesne estates devoted principally to sheep-farming -- not until the 1460s.

iv) **Consequently the commercial incentive to engage in large-scale sheep-farming for the wool trade came to be sharply reduced, certainly from the 1390s:**

(1) that was a major reason why the so many of the greater landlords (secular and ecclesiastical) gave up demesne farming even in sheep-raising as well as in wheat cultivation.

(2) For this reason, also, the famed English historian of the wool trade the late Eileen Power scoffed at the once standard view: in the historiography of the later 19th, early 20th century, that the post Black Death

period had witnessed a shift from arable (grain) farming to pastoral (sheep)farming.[11]

vi) **Four recent studies, however, do document and analyse a shift from arable to pastoral farming in late-fourteenth-century England that had begun about two decades, especially from the 1370s, and was not reversed, evidently, on peasant holdings:** [12]

(1) as just noted, with the establishment of the Calais Staple in 1363, and thus finally the transfer of the tax incidence to foreign buyers, the ratio of changes in wool and grain prices rose in favour of wool (i.e., the relative price of wool rose). [See graph and Table 2]

(2) a shift to pastoral farming, especially to raise sheep, but also cattle, was in part a rational adjustment to depopulation and thus scarcer labour supplies;

(3) and that shift may also reflect a shift in consumer patterns of expenditures on food: to be discussed again in more detail below.

(4) The reversal in the movement of the wool:grain price ratios from the 1390s

- i.e., a fall in the relative price of wool, while all nominal prices were falling, with deflation – reflecting the precipitous fall in wool exports –
- evidently had a much greater impact on domain (demesne) agriculture that had been devoted to sheep-raising, than it had on peasant agriculture.

(5) **Furthermore:** as indicated earlier, these and several other studies also indicate that labour productivity rose in pastoral farming and livestock production, while, somewhat surprisingly, labour productivity fell in arable agriculture after the 1350s.[13]

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[11] Eileen Power, *The Wool Trade in English Medieval History* (Oxford, 1941), p. 35: 'It is difficult to find signs of that whole-sale substitution of pasture for arable farming which, according to textbooks, happened after the Black Death.' This view is explicitly repeated in J H. Clapham, *A Concise Economic History of Britain from the Earliest Times to 1750* (Cambridge, 1949), pp. 121-2, and in most subsequent textbooks; see for example, J.L. Bolton, *The Medieval English Economy, 1150 - 1500* (London, 1980), pp. 207-45.

[12] Bruce M. S. Campbell and Mark Overton, 'A New Perspective on Medieval and Early Modern Agriculture: Six Centuries of Norfolk Farming, c.1250 - c.1850', *Past & Present*, no. 141 (November 1993), 38 - 105; Ambrose Raftis, 'Peasants and the Collapse of the Manorial Economy on Some Ramsey Abbey Estates;' David Farmer, 'The *Famuli* in the Later Middle Ages;' and John Hatcher, The Great Slump of the Mid-Fifteenth Century', in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England* (Cambridge and New York: Cambridge University Press, 1996), pp. 191-206, 207-36, and 237-72.

[13] See David Farmer, 'The Famuli in the Later Middle Ages', and Ambrose Raftis, 'Peasants and the Collapse of the Manorial Economy on Some Ramsey Abbey Estates', in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England: Essays in Honour of Edward Miller* (Cambridge and New York: Cambridge University Press, 1996), pp. 207-36, 191-206. Similar views were expounded in David Stone, 'Managerial Problems and the Crisis in Demesne Farming after the Black Death': paper presented to

(6) **Also:** Campbell's study also indicates that despite an increase in the live-stocking-ratio on Norfolk estates, and also despite increases in legume cultivation, arable productivity, i.e., in terms of output per acre, fell rather than rose.

vii) **Summary of surprising conclusions about agricultural productivity in the later Middle Ages, following the Black Death:**

(1) that productivity in arable agriculture, in terms of output per acre, fell

(2) that labour productivity in arable agriculture also generally fell

(3) but that labour productivity in pastoral farming, in production of livestock products, above all in sheep raising, rose, and rose strongly.

viii) **The Evidence from Bruce Campbell's statistical data: in the following** tables: comparing quarter centuries from 1250 to 1450, concerning:

(1) Changes in manorial demesne land use for arable (crops) and pastoral (livestock): demonstrating a very marked shift to livestock, with higher stocking densities

(2) in particular, from 1350 to about 1400, the mean number of livestock units rose by 23%

(3) By 1400, manorial demesnes (those still in production) were stocking 25% more livestock units per 100 grain-acres, and 40% more in non-working livestock (i.e., excluding horses).

(4) marked shift in proportions of revenues gained from livestock

(5) falling grain yields per acre, even with a relative shift to barley and legumes

(6) Again, similar regional variations in this relative shift to livestock farming:

- shift was the weakest in the North, understandably, which had long been primarily pastoral, with a great abundance of grasslands
- strongest in the Midlands and the south-west, with lands equally suitable for livestock (especially sheep) and arable crop production.
- in eastern England, many of the arable lands were not readily convertible into grasslands for livestock raising

viii) **The Behaviour of Late 14th and early 15th century relative prices: in summary**

(1) The accompanying graph plotting the relative movements of grain and livestock prices

- so that an upward movement of the line would indicate prices movements that became more favourable for livestock production

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the Seventh Anglo-American Seminar on the Medieval Economy and Society, in Dublin, on 14 July 2001. See also David Stone, 'The Productivity and Management of Sheep in Late Medieval England', *Agricultural History Review*, 51:I (2003), 1-22.

- thus the graph indicates that livestock production would have been favoured in the late 14th century, at least until the 1390s;

(2) But afterwards there is no clear trend, until the mid-15th century, when the livestock prices move ahead of arable crop price: especially wool vs. wheat.

b) **Livestock Raising for Food: a reflection of relative price changes**

i) **insofar as relative grain prices fell (fell more than livestock prices) and insofar as real wages finally rose, we would expect a two-fold effect on demand for livestock products:**

(1) The fall in the relative price of wheat and other cereals grains should have liberated more consumer income to be spent on livestock products:

- i.e., on meat, milk, butter, and cheese
- fats (soap), leather from hides; textiles from wool

(2) **Engels Law** (as noted earlier in last day's lecture, on Italian agriculture)**:**

- with rising real wages, the income elasticity of demand for cereal grains should fall or remain low:
- so that, similarly, proportionately more income would be spent on such livestock product (with conversely a higher income elasticity of demand.

ii) **Indeed, from the early to the mid 15th century,** the now steadily rising real incomes amongst the middle and lower classes did lead to a growing demand for many livestock products, especially meat and dairy products:

iii) **There is much evidence to show that:** in 15th-century England

(1) there was a very marked increase in the consumption of meat, butter, and cheese,

(2) but especially meat, both beef and mutton (i.e., from cattle and sheep);

(3) and also of leather goods.

iv) **But this was not a demand to which all peasants** could have readily and easily responded:

c) **Obstacles/barriers facing peasants who wanted to increase production of livestock products:**

i) **Livestock represented a very large, heavy investment in capital;**

ii) **most peasants** lacked access to such capitals.

iii) **Access to capital**

(1) English peasants (or any, in northern Europe), lacked the advantages and connections available to, say, late-medieval Italian peasants, for acquiring capital, as we saw last in last week's lecture:

- through *census* or rent-contracts, by which wealthy urban (Italian) merchants invested capital sums in land, in a peasant's commercial farming enterprise, receiving a life-time or perpetual rental income: e.g., 5 florins per year, as a 5% return on an investment of 100 florins

- or the *mezzadria* share-cropping contracts, by which landless poor peasants received from a landlord both land and capital, in return for a 50% share of the harvest proceeds

(2) as we saw, both of these Italian (or Mediterranean-based) financial arrangements were specifically designed to promote capital-intensive forms of farming: livestock raising, olive groves, vineyards.

iii) **Even with some acquisition of capital,** English peasants found it took a long time to increase the size of their herds.

iv) **Livestock herds, especially with uncontrolled and unsegregated grazing in open-field communal farming,** were subject to ravages from disease, particularly murrain.

v) **Open-field communal livestock raising and grazing:**

(1) made it difficult to breed livestock for better meat production (i.e., breed larger and fatter sheep and cattle);

(2) open-field arable rotations also made it difficult to acquire sufficient fodder for stall-feeding.

vi) **Efficient livestock raising also required large amounts of land:** lands that could be devoted to pasture and grazing, preferably under single or unified management.

vii) **Most of the peasants who acquired land or acquired more land still had small holdings,** were still restricted by:

(1) inadequate supplies of or access to capital, as just stressed

(2) and also inadequate labour supplies:

- chiefly in the form of family labour;
- for consider that depopulation normally meant that families were now smaller in size.

viii) **Thus only the wealthier peasants with fairly large capitals at their disposal,** and some aggressive, profit-minded landlords, similarly with such capitals, could have effectively responded to these changes in market demand (and the changes in supplies of both land and labour).

ix) **That therefore leads me to the next topic in English agrarian history:** the origins and early stages of the Enclosure Movement.

4. <u>The Enclosure Movement in Early Tudor England (1460 - 1520) and Early-Modern Agrarian Capitalism: General Character</u>

a) **Definition of Enclosures**:

i) **Placing land under single management**:

(1) extinguishing any collective, common or village communal rights to the use of that land:

(2) and that usually meant fencing off that land to prevent either other villagers or village livestock from using

that land.

ii) **Enclosure could be undertaken by either the landlord or by his leading tenants**: and in most cases, enclosure would occur in a piecemeal fashion, probably beginning with the village commons, rather than all at once.

iii) **Landlords or tenants as commercial (capitalist) farmers?**

(1) To be sure, some landlords enclosed to work their own enlarged estates for profit, as capitalist farmers,

(2) but most manorial landlords in fact chose to rent out newly enclosed lands to tenants, by leases for stipulated number of years.

iv) **Enclosure in both England and the continent was nothing new**:

(1) Enclosure can be found as far back as the 13th century (as in: the Statute of Merton of 1235).

(2) Much of the densely populated south-east serving the London market (especially Kent and Essex) was already enclosed by the dawn of the modern era,

(3) as were many pastoral (livestock farming) regions in the north and west.

(4) But most (if not all) historians agree that the first major, socially significant Enclosure Movement began in the mixed-farming regions of the English Midlands,

- during the mid to late 15th century, especially with the accession of the Tudor kings (Henry VII),
- and lasted until the Civil War of the 1640s and execution of Charles I (in 1649)

(4) For now, in this Fall term, we are going to be concerned only with the early Tudor Enclosures, from the 1460s to the 1520s;

(5) and we shall return in the second term to the later Tudor and Stuart Enclosures, whose forms and character were somewhat different, especially from the 1560s.

b) **The Physical Forms of Enclosure**:

i) **Enclosure of the Village Commons**:

(1) Enclosing, more narrowly defined,

- as fencing off the village common lands: the pasture, meadow, and woodlands and common waste
- for the exclusive use of just one tenant or the landlord.

(2) It was generally for livestock,

- both cattle and dairy-farming,
- but especially for sheep-raising, to produce the wool for cloth exports

(3) Such enclosures often meant the physical suppression of communal livestock grazing rights: i.e., the villagers lost their access to wood and other forest products.

(4) So dependent on such lands were many small peasants,

- especially those called ‘cottagers’ or cottars, those with just a few strips in the arable fields,
- that loss of the Commons forced them to give up their tenancy strips as well;
- and this form of Enclosure perhaps caused the greatest injury to peasants.

ii) **Engrossing of the Arable Open Fields**:

(1) The redistribution and consolidation of those scattered, intermingled tenancy strips into compact, unified farms -- that were either

- absorbed into the landlord's estate
- or more usually leased to just one tenant.

(2) Such engrossing was usually followed by withdrawal of these lands from the common rotation and then by fencing.

(3) That did not necessarily mean peasant displacement;

- for indeed peasants on many manors had long engaged willingly in engrossing:
- buying, selling, trading strips into order to achieve more unified holdings.

(4) But certainly in Tudor-Stuart era, engrossing ultimately did mean consolidating arable lands into many fewer hands, especially as richer peasants bought out poorer peasant.

(5) In the 15th and early 16th century, engrossing was also often followed by the conversion of arable lands into pasture for sheep-raising. (Even in later periods, as well.)

(6) Consolidation and conversion of arable lands into pasture thus meant the eviction of some peasants:

- because sheep farming is very land intensive,
- using lots of land for sheep but much less labour than in grain farming.

c) **Socially Disruptive Enclosures**:

i) **In the Tudor Stuart era (ca. 1485 - ca. 1640), those enclosures that were socially disruptive,** and thus better known to us,

(1) were largely if not entirely those involving conversion of arable fields to pasture lands,

(2) and those conversions took place chiefly in the Midlands of England;

ii) **That area constituted about a dozen counties:** in the central and eastern Midlands.

d) **Enclosures in the Midlands: Why were such enclosures so localized to the Midlands?** Because of the following reasons and factors:

i) **Region of Mixed Farming**:

(1) this was the region was almost equally suitable for both arable and pasture,

(2) a traditional zone of mixed farming (Scarp and Vale Topography: Highland and Lowland: the former pastoral; latter mixed farming zones)

ii) **Region with some of the densest population in England**:

(1) this Midlands region, perhaps because it enjoyed some of best agricultural lands, was the most densely populated region of England.

(2) Though East Anglia and the Home Counties of the SE were equally densely populated but had much less Open Field farming (and thus was already in effect enclosed).

(3) In the Open Fields area of the Midlands, the changes involved in enclosure or engrossing could be socially disruptive.

iii) **Highly Manorialized Region**: as noted, this same zone was also the most thoroughly manorialized region in England, and the one with the most dependent or formerly servile peasantry.

iv) **Region of classic Open Field Farming**:

(1) for these three reasons this was also the zone of classic Open Field Farming; i.e., because of mixed farming, dense populations, and manorialism.

(2) Open Field farming, as noted earlier, was designed to accommodate both arable and livestock with high population densities (both people and livestock):

(3) in striking contrast to the usually rigid divisions between arable farming and livestock raising in southern Europe (but also in north-eastern England, non-manorial).

v) **Other Regions of England**: were weakly manorialized, without common field farming, or with only imperfectly developed common field farming.

(1) Even those regions with mixed farming, in the east and SE, were characterized by small individual compact farms, which had long been enclosed: especially in Kent and Essex, as noted.

(2) The many other non-manorialized regions of England were thinly populated and chiefly pastoral (sheep and cattle): in north and west, where land was again long enclosed or where enclosures obviously meant no conversion in land use and took place quietly without social disruption.

5. <u>Economic Factors in Early Tudor Enclosures</u>: <u>Demography, Wool, and the Cloth Trade</u>

a) **The role of demography: population decline**

i) **In late-medieval England,** the fall in population evidently continued until the very end of the 15th or beginning of 16th century;

ii) **and the first wave of Enclosures** coincides precisely with the last phase of that late-medieval population decline.

iii) **Most textbooks suggest -- wrongly in my view -- that the Tudor-Stuart enclosures were:**

(1) in response to population growth, in response to the law of diminishing returns (since these authors

thought that English demographic recovery had begun in the mid-15th century);

(2) and that these enclosures were socially disruptive and harmful because they threw peasants off the land just when their numbers were growing: i.e., that they caused regional depopulation during a supposed period of population growth.

(3) It is therefore absolutely vital to understand the contrary, *that the early enclosures took place during continued depopulation or at least demographic stagnation.*

iii) **Indeed, as two economic historians (Maurice Beresford and Ian Blanchard) have argued,** depopulation was the primary cause rather than the consequence of the early Tudor Enclosures.[14]

b) **The Beresford-Blanchard thesis on early Tudor Enclosures:**

i) **Their thesis is based on the following quite simple (non-economic) arguments:**

(1) that continuous, long-term demographic decline, and ultimately drastic depopulation in the countryside finally meant far too many vacated, abandoned tenancies:

(2) even at low rents, few people were available and willing to take up vacated lands for grain farming.

(3) Thus, even though a landlord might have preferred to maintain arable fields and maintain a village of arable farmers,

- ultimately, in finding no takers to rent his arable tenancies, the landlord would have finally decided that his only choice was to throw them together into large unified blocks of land, as purely pasture lands,
- and decided to lease that block of enclosed land to just a single sheepherder or dairy farmer, who had the capital and resources to raise livestock;

(4) In some cases, an enterprising landlord might himself engage in livestock raising, rather than let his arable lands lie idle, paying no rents or manorial dues.

(5) We might therefore see the early Tudor Enclosures as an attempt by landlords to regain their demesnes, or fuller control over what used to be their central demesne holdings-- though this thesis is not suggested by either historian.

ii) **Criticisms of the Blanchard-Beresford Model:**

(1) It does not fully or satisfactorily explain why the land itself is physically converted from grain growing (arable crops) to sheep raising;

(2) and why it was indeed principally sheep-raising (rather than other forms of livestock raising).

(3) It does not fully explore all the economic incentives to explain why landlords would engage in these

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[14] M.W. Beresford, *The Lost Villages of England* (London, 1954); Ian Blanchard, 'Population Change, Enclosure, and the Early Tudor Economy', *Economic History Review*, 2nd ser. 23 (1970), 427-45.

enclosures and why farmers would lease these lands, i.e., why they would themselves seek to profit from farming these lands.

(4) Furthermore, the model implicitly ignores the possibility that the richer peasant tenants themselves sought to engage in enclosures by engrossing their strips and withdrawing lands from communal rotation -- principally to engage in sheep farming.

iii) **Economic theory based on demographic decline may provide some explanations for such a conversion of arable into pasture:**

(1) Depopulation and consequently the altered land:labour ratio lowered land rents but raised real wages -- and we did see that real wages finally did rise by the later-14th, early 15th century.

(2) The agricultural labour supply, as we have seen, suffered a double decline:

- from depopulation in general, and
- from the entry of former labourers into the ranks of full-time tenants farming their own holdings.

(3) Rising labour and capital costs, combined with depressed grain prices, i.e., a price-cost scissors, thus encouraged an agrarian shift to less-labour intensive but more land-intensive forms of agriculture.

(4) As noted or argued earlier, depopulation tended to lower grain prices, relative to other prices, while raising (increasing) the relative prices of livestock products:

- essentially because grain supplies are historically less elastic, more inelastic, than are supplies of livestock products (which can be more readily stored: wool, leather, etc).
- so that a fall in demand leads to sharper price falls (sharper declines in grain prices than livestock prices).

(5) As also noted earlier, however, and as the graph shows, those changes in relative prices favouring wool ended in the 1390s, because of the afflictions to the wool trade (burden of taxation)

iv) **The Economics of Livestock Farming (Sheep) under Depopulation:**

(1) Livestock farming in contrast to grain farming requires a lot of vacant land and relatively much less labour:

- thus if land is cheap and labour is dear,
- it makes better economic sense to engage in land-intensive agriculture, with livestock, rather than labour intensive agriculture, in arable crop cultivation.

(2) Secondly, this shift to livestock raising would have been all the more attractive if:

- the changes in relative prices favoured livestock prices;
- and if wool prices were no longer so favourable after the 1390s,
- and evidently the prices for meat and other livestock products continued to be so favoured, from that

period, and well into the 15th century.

(3) As just argued, livestock products, especially food products, enjoy a higher price-elasticity and income elasticity of demand than do cereal grains.

(4) Supply flexibility:

- while farmers could not easily expand their livestock herds, they could contract them in response to changing demand;
- and furthermore, they could more easily hold supplies of livestock products (wool, leather, bone) off the market than could grain farmers.

v) **Blanchard:** however, does not utilize these arguments:

(1) without being so explicit, he suggests that neither a change in relative prices for wheat and wool nor labour costs were important enough to encourage a shift from grain to sheep farming.

(2) The labour costs for a shepherd given in his appendix seem surprisingly high, though he has no comparable wage costs for grain farming.

vi) **The Behaviour of Wool Prices from the 1450s:**

(1) The statistical problem, however, lies in the fact that we lack adequate prices for both wool and grain in those areas of the Midlands then undergoing enclosure.

(2) The wool prices usually cited come from Durham in the NE, while the wheat prices come from Exeter in the SW – and both of these areas were far from those being enclosed.

(3) Up to the 1450s, however, we do have fairly good wool prices from the Winchester estates in the southern Midlands.

(4) From the graph on wool and wheat prices shown on the screen, you may judge for yourself: they do suggest that wool prices were generally more favourable than wheat prices from the 1460s to about 1515.

(5) Nevertheless, even apart from any changes in relative wheat and wool prices, it still would have made greater economic sense to convert vacated tenancies, tenancies yielding nothing to the landlords, into pasture lands, for enclosed sheep farms.

vi) **Population Decline and physical 'depopulation:'**

(1) Thus if demographic decline, with depopulated farmlands, was the fundamental cause of these early Tudor enclosures,

(2) let us also recognize and admit that enclosures for pasture probably did result in further 'depopulations', i.e., in the displacement of those few remaining tenants holdings strips in arable lands so converted into enclosed pastures.

c) **Why were these enclosures so late?** Why did the enclosure movement begin so late, from the 1460s,

rather than from a century earlier (i.e., the 1360s), or immediately after the Black Death:

i) **Possibly because depopulation of tenancy lands and adverse economics had not become so severe until well into 15th century;**

(1) i.e., not until the 1460s had the problem of permanently vacated and unleased tenancies become sufficiently severe for the landlords.

(2) in that landlords, who normally preferred tenants in arable cultivation, finally and reluctantly decided upon alternative land uses.

ii) **Not until the 1460s did English wool prices improve sufficiently,** relative to grain prices, to provide the incentive to alter land use.

iii) **We therefore must look at changes in the demand for English wool,** based upon English cloth production and the cloth-export trade.

d) **The English Cloth Trade and the Demand for Wool**: [15]

This is the oldest theory to explain enclosures, but one that has fallen out of favour in the last 60 or 70 years (and I am in a distinct minority in resurrecting this thesis).

i) **The taxation of wool exports and cloth exports:**

(1) as we have already seen the foolish royal fiscal policy of imposing exorbitant taxes on the English wool trade led to a very sharp decline in English wool exports by the beginning of the 15th century (see graph on the screen again).

(2) The English crown evidently thought that foreign demand for wool was inelastic,

- like the demand for salt: cf. the French *gabelle* or salt tax;
- but the demand for wool is derived from the demand for woollen cloth -- and the demand for such textiles, with many substitutes, was quite elastic.

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[15] For further discussion of this topic, see John H. Munro, 'Anglo-Flemish Competition in the International Cloth Trade, 1340 - 1520', *Publication du centre européen d'études bourguigonnes*, 35 (1995), 37-60. Annual volume published as: Jean- Marie Cauchies, ed., *Rencontres d'Oxford (septembre 1994): L'Angleterre et les pays bas bourguignonnes: relations et comparaisons, XVe - XVIe siècle* (Neuchâtel, 1995); and John Munro, 'The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270 - 1570', *The Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 3:1 (February 1999), 1-74; and the various studies in J.H. Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries* (London, 1994); and, finally, John Munro, 'Medieval Woollens: The Western European Woollen Industries and their Struggles for International Markets, c.1000 - 1500', in David Jenkins, ed., *The Cambridge History of Western Textiles* (Cambridge and New York: Cambridge University Press, 2003), chapter 5, pp. 228-324, 378-86 (bibliography); John Munro, 'Spanish *Merino* Wools and the *Nouvelles Draperies*: an Industrial Transformation in the Late-Medieval Low Countries', *Economic History Review*, 2nd ser., 58:3 (August 2005), 431-84.

(3) Cloth production based on English wools fell in the Low Countries and Italy.

ii) **The other effect of royal taxation was to spur within England the development of a native woollen cloth industry (broadcloths)**

(1) Within England itself, the domestic use of wool was not taxed;

(2) nor was the sale of wool subjected within England to any Staple organization – instead a free market in wool prevailed within the domestic economy

(3) English woollen cloth exports were first taxed, and then only for alien exports, by the New Custom and *Carta Mercatoria* of 1303): at 12d per cloth

(4) Not until the Cloth Custom of 1347 were cloth exports by domestic merchants (denizens) first taxed by the crown:

- at 14d per cloth exported by denizens
- but still only 12d per cloth, by the German Hanseatic merchants, who refused to pay anything more than that prescribed by the 1303 New Custom
- other aliens had their export taxes raised to 33d per cloth (2s 9d)

(3) from 1347 to 1558, cloth exports remained very lightly taxed,

- especially in the hands of English merchants (since, as just noted, foreign merchants paid more than double):
- export taxes paid by denizen and Hanseatic merchants rarely amounted to more than 3% of the export price.

(3) In view of the fact that this raw material wool accounted for such a very high proportion of total production costs (65% - 70%, and labour for less than 20%),

- the unintended consequence of royal fiscal policy, of this very large differential between wool and cloth export duties,
- was therefore to give the native English cloth industry an important if unplanned advantage over continental rivals (who used the same wools).

(4) Almost immediately, from the 1350s, English cloth exports began to expand.

iii) **Nevertheless, the rise of the English cloth trade did not then compensate for the even greater fall in wool exports, as suggested earlier, not until much later in the 15th century:** because of:

(1) depressed European markets, depopulated by successive plagues

(2) and disrupted as well by seemingly never ending warfare,

(3) which also raised transaction costs in international trade,. [See graph on the screen]

iv) **Trends in English Cloth Exports, 1390 - 1460**

(1) After an initial expansion, peaking in the 1390s, the English cloth trade:

- began to falter in the early 15th century, and then (after a brief recovery) suffered a very severe slump,
- suffering a very severe commercial depression, ca. 1435 - 65 -- for reasons to be seen later in the topic on foreign trade.

(2) In brief, not until the 1460s did the English cloth trade had finally succeed in vanquishing their chief rivals, especially in the Low Countries, and so displace them in the major European markets.

(3) So, until that English victory in the cloth trade,

- economic circumstances did not strongly favour commercial sheep-farming for wool production,
- not until the 1460s, which marks the beginning of the first major wave of new enclosures.

v) **The English Cloth Trade Boom from the 1460s:** From the 1460s, as the graph (and table) on the screen demonstrates, the English cloth trade embarked on a remarkable boom and continuous upswing that lasted about 80 years, up to the 1540s.

(1) that boom was reflected in rising wool prices: wool prices rose relative to grain prices from 1460s to 1520s (when overtaken by grain prices -- reflecting population growth).

(2) **The Antwerp Market:** The boom in the English cloth trade (to be treated later under foreign trade) was part of the European economic recovery and the rise of Antwerp from the mid 15th century.

(3) The cloth trade boom at the Antwerp market, from beginning to end, coincides almost exactly with the first major phase of the Tudor enclosure movement, chiefly for sheep-raising; and the first phase of Enclosures similarly ends with the end of the cloth trade boom in the 1550s.

e) **Monetary Factors in the English Cloth Trade boom on the Antwerp market**

i) **the South German silver-copper mining boom:** As previously seen, that Central European or South-German mining boom, which also began in the 1460s, played a very major role in the sudden expansion of the Antwerp market during this very same era..[16]

(1) South German merchant-bankers,

- who controlled the Central European mines (in Bavaria, the Tyrol, now largely in NE Italy, Austria, Bohemia, Slovakia, and Hungary) following the Rhine route,
- brought both of these metals -- certainly the greater part of the newly mined silver -- and their

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[16] See lecture no. 4, at http://www.economics.utoronto.ca/munro5/04MONEY.pdf; and also see John Munro, 'The Monetary Origins of the "Price Revolution:" South German Silver Mining, Merchant-Banking, and Venetian Commerce, 1470-1540', in Dennis Flynn, Arturo Giráldez, and Richard von Glahn, eds., *Global Connections and Monetary History, 1470 - 1800* (Aldershot and Brookfield, Vt: Ashgate Publishing, 2003), pp. 1-34.

banking facilities to the Antwerp market,

- which soon became the commercial and financial capital of Europe.

(2) The South German merchant-bankers needed return cargoes, goods to sell in South Germany and Central Europe:

- their major return cargo soon was almost entirely English cloth,
- which had become the cheapest of the higher quality or luxury-class woollens (much cheaper than those produced in the Low Countries).

ii) **English monetary policy, in 1464-65:**

(1) First, in 1464-65, King Edward IV debased the English coinage, devaluing the pound sterling by 20%, certainly gave English cloth exports an important advantage:[17]

(2) i.e., English cloths were priced in pound sterling; and the devaluation made English sterling about 20% cheaper on the Antwerp market (i.e., the foreign exchange market).

(3) Since no domestic or internal inflation followed this debasement in England, the English cloth gained an even better price advantage in Antwerp.

iii) **Burgundian monetary policy, in 1466, played a complementary role:**

(1) for in 1466, the duke of Burgundy (Philip the Good), ruler of the Low Countries, abruptly changed the mint ratios:

- from a pro-gold to a pro-silver policy,
- so that its mints offered much higher prices for silver (relative to both gold and goods) than elsewhere.

(2) Thus South Germans came to Antwerp to sell overvalued silver and to buy undervalued English woollens for re-export into Central Europe: hence the cloth trade boom, which we will understand more fully when we do the section on foreign trade.

6. <u>The Economic Significance of Tudor Enclosures:</u>

Potentially, at least, enclosures provided possibilities for the more rational and efficient use of land, with much more market-oriented production, irrespective of actual land-ownership.

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[17] The amount of pure silver in the penny fell from 0.899 gram in the previous debasement, of 1411-12, to 0.719 grams – a reduction of exactly 20%. The official value of a kilogram of pure silver rose correspondingly from £4.6.34 sterling to £5.793. As noted earlier, in the lecture on money, debasement, however achieved, always results in an increase in the number of coins of the same face value struck from the Tower Pound, and thus in official nominal value of a Tower Pound (=349.9133 g) or kilogram of fine silver. Whether or not commodity prices would rise correspondingly depends upon a variety of other factors discussed in that lecture. Remember that this era was one of general deflation.

a) **Enclosure, the Market, and Private Property Rights:**

i) **Reconsider the definition of enclosure with which we began this section:**

to change the use of land from communal village control to private individual control or ownership, thus extinguishing any communal or collective rights to the use of the land.

ii) **Thus private property rights, protected and enforceable under law, meant:**

(1) the right of the owner to exclude anybody else access to the land, by legal force if necessary; but also the right to lease the land to a tenant of his own choosing.

(2) the right of the owner to bequeath, sell, transfer, trade, lease the land.

(3) The right of the owner to pledge the land as collateral for a loan, in the form of a mortgage:[18]

- obviously no peasant village community could pledge the entire village loans to secure investments.
- whether or not individual peasants could pledge their strips, to which were still attached many communal rights of use, seems most doubtful.

(4) the right of the owner to appropriate the income, the stream of rents from the use of this land:

iii) **but if the owner leased the land, then normally, over time:**

(1) the economic rent that accrued on the land would be shared between owner and tenant, during the life of the lease when land-rents were fixed;

(2) and the owner could only attempt to capture the (entire) economic rent on renewing the lease.

b) **Enclosures and Capital Investment:** Thus private property and enclosures were vitally important for increased investment in the economy, in three respects:

i) **privately held land as collateral for capital investments:** for mortgages and other loans

ii) **privately held land as a source of capital gains:** by selling land in the market, for a price higher than the acquisition price, especially if the land had been improved, or had benefited from improved transportation facilities connecting the land to markets.

iii) **privately held land as an incentive to engage in productive capital investments.**

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[18] For a later period, see the relationship between enclosures and mortgages in: See Patricia Hudson, 'Land Markets, Credit and Proto-Industrialization in Britain and Europe', in Simonetta Cavaciocchi, ed., *Il mercato della terra, seccoli XIII - XVIII*, XXXV Settimana di Studio, Istituto Internazionali di Storia Economic "Francesco Datini', vol. 35 (Florence: 2003), pp. 721-42. She states: 'The period of expansion of domestic manufacturing of woollen and worsted cloth in Yorkshire in the later eighteenth century was accompanied by a quickening of the pace of enclosure and enfranchisement and by increasing activity in the land market. It is probable that the pressure for enclosure in this period was partly a result of the desire of artisan clothiers and putting-out employers to acquire fixed title to land and hence to a greater call upon loan capital and credit....Land mortgages were often the preferred security. Land was tangible and useful and a mortgage also carried greater liquidity than other forms of investment, such as stocks and bonds'.

c) **Potential Economic Gains from Single (Unified) Management of the land:** innovation and productivity gains:

i) **Unified or Single management**:

(1) so that one person, whether landlord or his tenant, made all the decisions on land use,

(2) and was able to effect change without having to gain communal consent, as with Open Field manorial farming.

ii) **Ralph Davis (*Rise of the Atlantic Economy*, p. 115): on the peasantry and agricultural innovation**:

> No class of users of the land was less able to innovate [than the peasantry]; and great numbers of them were subsistence farmers who grew [grain], not for the market except in years of unusually good harvest, but for their own families. Though peasants were by no means unwilling to innovate if the practical advantages were clear and the risks small, they had the least facilities for information, the least resources to bear the costs and risks of change, the least capacity to co-ere their slow-moving fellows into the cooperative effort that was usually necessary for large-scale changes. It was not easy for landlords to compel the peasant community of a village to try new ways so long as most tenures gave the peasants security at more or less fixed rentals, and the key to extensive rural change had to be found eventually in the breaking down of old tenures so that peasants could be subjected to economic pressures, or alternatively forced out in favour of market-oriented farmers.

iii) **Examples of changes that could be better effected by individual control**:

(1) to decide on division of land between arable and pasture

- or indeed decision to adopt that much advanced form of farming called convertible husbandry, with periodic alternation between arable and pasture
- to be explained later, in the second term lecture on early-modern English agriculture: in the section on technical change, without fallow.

(2) similarly, on arable lands, to adopt much more complex crop rotations, with a crop diversification away from dependence on grains, with goal of reducing the fallow.

(3) pasture and livestock: to engage in the selective breeding of livestock (impossible with communal grazing of livestock).

d) **Potential Gains from Land Consolidation and Economies of Scale:** Reorganization of tenancy lands into large compact unified farms with much greater operating efficiency:

i) **Labour Economies:**

(1) On overcrowded lands, enclosure provided greater labour efficiencies: by displacing the surplus population, by getting rid of disguised unemployment.

(2) In so far as that did mean 'depopulation' (though it never meant total depopulation), it also meant some increased productivity of labour.

ii) **Land Efficiencies:** Conversely, on underpopulated lands where arable farming was not efficient, because of scarce labour, enclosure here meant greater economic efficiency by transforming some or all of the land to livestock farming (sheep raising, dairying, etc.).

iii) **Capital to Land Ratios:** Large unified farms permitted more capital investment in farming (especially with one capitalist farmer deciding on investments): particularly in term of livestock raising, artificial irrigations, land drainage, land reclamation and other technical improvements; but that is true only to a certain size, beyond which capital became inefficiently utilized, so some recent studies are suggesting.

iv) **Meant possibility of achieving increasing returns or greater economies of scale in both production and marketing,** where much larger marketable outputs justified increased investments.

e) **But enclosure did not guarantee more rational land use and economic advancement**:

i) **at best,** enclosure made it much easier for an enterprising landlord or tenant farmers to effect changes and realize these goals.

ii) **Nor did larger farms in any way necessarily mean more efficient farming**:

(1) Many studies show that very small farms can be very efficient: especially evidence from the Low Countries.

(2) But Enclosures may have been economically beneficial in breaking up some very large estates into more manageable sized capital farms.

f) **The subsequent history of the Tudor-Stuart enclosures and the English cloth trade** will have to wait until the second term, when I necessarily will have to repeat these observations about potential gains and then provide evidence about actual gains. Now we must turn to the cloth industry itself, with this background on

agriculture, sheep, the wool and the cloth trades.

AN APPENDIX ON WOOL PRICES, CLOTH EXPORTS, AND ENCLOSURES:

A Reply to Cohen and Weitzman's 'Refutation' of the Wool-Based Theories on Tudor Enclosures:

In two articles published in 1975, Jon Cohen and Martin Weitzman attack the thesis that 'Tudor enclosures were a response to a rise in the demand for wool' [as argued by Tawney, Bowden, Ramsay, myself, etc.], by stating that:[19]

> A major problem with the wool trade explanation is that the price data simply do not support the argument. If the analysis were correct, we would expect the price of wool to rise relative to the price of grain. On close inspection of the available data we can find no systematic difference in the trend of wool and grain prices between 1450 and 1550. If anything, the price of wool declines relative to the price of grain. The data so blatantly contradict the standard analysis that it is difficult to understand how it has managed to maintain such general acceptance.

And in their footnote (n. 62, p. 318) that state that: 'a regression was run of the form Pw/Pg = a + but for the 101 years from 1450 to 1550 where Pw is the price of wool, Pg is the price of grain, and t is time. The coefficient b was negative with a t-statistic greater than three'. Their data were based on tables I and V in Bowden's statistical appendix in Thirsk (1967).

My Response:

Apart from their failure to distinguish between the earlier (1460-1530) and later enclosures (1580-1615), they have adopted a method that, in my view, is deficient both in approach and its argument, explicit and implicit. In ascending order of importance:

i) **their use of time-series regression analysis was invalid**: in trying to interpret the behaviour of those engaging in enclosure in the later 15th century on the basis of a times series half of whose data came from the subsequent period, i.e., the first half of the sixteenth century. In any event, it is absurd to regress price changes against time for a full century and then expect to find a statistically significant trend line.

ii) had they regressed the price data for the period 1450-99, i.e., just for the second half of the 15th century when the major enclosures evidently took place, they would have found an entirely different result:

$$Y = Pw/Pg\ (1450\text{-}99) = a + bT = 0.9327 + 0.0049 \text{ (with } R = 0.1211)$$

And even more favourable results can be obtained for shorter periods, before 1500, as in the accompanying table.

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[19] Jon Cohen and Martin Weitzman, 'A Marxian Model of Enclosures', *Journal of Development Economics*, 1 (1975), 287-336; and also their 'Enclosure and Depopulation: A Marxian Analysis', in W.M. Parker and E.L. Jones, ed., *European Peasants and Their Markets* (Princeton, 1975), pp. 161-76.

iii) **The price data are, in any event, not really relevant to the issue of Tudor Enclosures in the Midlands district**: i.e., concerning the issue of converting arable to pasture in this region, because they are not from the Midlands: the grain data are heavily weighted by Exeter wheat prices (i.e., from Devonshire, in the South-West); and the wool prices are entirely from the Bishopric of Durham in the North-East. Obviously for any such regression to have validity it must involve grain and wool prices in the specific districts of the Midlands that underwent enclosure primarily to provide more pasture land for wool production: i.e., Leicestershire, Northamptonshire., Warwick, Worcester, Hunts., Bedfordshire, etc

iv) **Their wool-price data are even less relevant, furthermore, because**:

(1) Durham wools were amongst the very worst produced in England -- only Cornish wools were worse: Durham wools, exempted from the Staple, were normally not exported (except occasionally to Zealand, to be made into cheap cloths for the poorer classes); and

(2) they were certainly never used to make the medium to fine quality woollens that constituted the bulk of English cloth exports in this era.

v) **Otherwise, I would make the following observations to respond to the Cohen-Weitzman challenges to the traditional market model:**

(1) That price changes over time reflect more and more the consequences of such changes (i.e., the evident shift from arable to pasture).

(2) Production decisions and decisions on land utilization are based just as much on changes in factor costs, and relative factor costs, as in changes in relative prices of alternative products being produced.

vi) **Subsequently, of course,** from the later 16th century we find the slow diffusion of convertible husbandry, which expanded both livestock production (including wool) and grains -- so that they were more and more joint products, i.e., less and less alternative products in enclosures.

vii) **But again, in analysing enclosures,** one must be very careful to distinguish between the periods and regions of enclosures.

viii) **Finally, the suggestion that enclosures caused the woollen cloth trade boom is absurd:** that export boom was largely produced by external trading factors, involving South Germany and the Low Countries especially (as I have tried to outline briefly above: more on foreign trade below).

Regressions of Bowden's Grain and Wool Price Data

Linear Regression Wool Prices/Grain Prices against time:

Y = Pw/Pg = a + Bt

Pw = Price of Wools (in the Bishopric of Durham)

Pg = Price of Grains (Wheat, Rye, Barley, Oats) dominated by Exeter wheat

T = time in years, from 1450 to 1519 (1450-99 = price index base 100)

Decade	**a (intercept)**	**b (slope)**	**R**	**R^2**
1450-59	0.7149	0.0307	0.5414	0.2931
1460-69	1.1563	0.0005	0.0034	0.00001
1470-79	1.0970	-0.0052	-0.1020	0.0104
1480-89	0.9151	0.0250	0.3415	0.1166
1490-99	0.9314	0.0166	0.2608	0.0680
1500-09	0.6066	0.0556	0.7623	0.5811
1510-19	1.0986	-0.0110	-0.2766	0.0765
		.....		
1450-69	0.7510	0.0268	0.4413	0.1221
1450-79	0.8724	0.0108	0.3103	0.0963
1450-89	0.9327	0.0049	0.2017	0.0407
1450-99	0.9695	0.0022	0.1211	0.0147
1450-1509	1.0191	-0.0008	-0.0518	0.0027
1450-1519	1.0025	0.0000	0.0024	0.0000

Table 1:

Trends in the Mean Sown Acreage of Demesne Lands
Retained 'In Hands' by Manorial Lords

Acres per demesne (domain): mean

Period	England	% change	Norfolk	% change	FTC Counties*
1275 - 1324	193.4		171.1		223.7
1325 - 1374	156.4	-19.13%	132.8	-22.38%	
1375 - 1424	144.7	-7.48%	136.9	3.09%	178.4
Overall change		-25.18%		-19.99%	-20.25%
1300 - 1349	172.1		146.0		
1350 - 1399	147.1	-14.53%	126.8	-13.15%	

* FTC: Feeding the City Counties: those ten counties supplying grains to London: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Northamptonshire, Oxfordshire, Surrey.

Bruce Campbell, 'Matching Supply to Demand: Crop Production and Disposal by English Demesnes in the Century of the Black Death', *Journal of Economic History*, 57:4 (December 1997), Tables 4-5, pp. 837, 840.

Table 2: Changes in Crops Sown in England: by crop and by region from 1250-1349 to 1350-1449, on demesne lands only

PLACE	Crops		From 1250		From 1350		Percent
	Mean percentage sown		to 1349		to 1449		Change
ENGLAND	Wheat		33.7		30.4		-9.79%
all	Rye		4.9		2.9		-40.82%
counties	Barley		15.0		22.6		50.67%
	Oats		31.3		23.5		-24.92%
	Mixed Grains		6.4		6.2		-3.13%
	Legumes		8.7		14.1		62.07%
	Mean Total Sown Acres		188.6		151.6		-19.62%
	No. of Demesnes		473.0		308.0		-34.88%
FTC *	Wheat		32.9		32.1		-2.43%
COUNTIES	Rye		6.1		2.2		-63.93%
[1288-	Barley		10.7		18.4		71.96%
1315]	Oats		30.4		22.5		-25.99%
	Mixed Grains		10.5		10.2		-2.86%
	Legumes		9.4		14.6		55.32%

Table 2: Changes in Crops Sown in England: by crop and by region from 1250-1349 to 1350-1449, on demesne lands only

PLACE	Crops		From 1250		From 1350		Percent
	Mean percentage sown		to 1349		to 1449		Change
	Mean Total Sown Acres		224.9		177.5		-21.08%
	No. of Demesnes		196.0		125.0		-36.22%
NORFOLK	Wheat		15.7		15.1		-3.82%
	Rye		11.9		6.9		-42.02%
	Barley		41.4		47.9		15.70%
	Oats		16.1		15.2		-5.59%
	Mixed Grains		1.5		2.1		40.00%
	Legumes		13.5		12.8		-5.19%
	Mean Total Sown Acres		152.3		131.3		-13.79%
	No. of Demesnes		130.0		112.0		-13.85%

Table 2: Changes in Crops Sown in England: by crop and by region from 1250-1349 to 1350-1449, on demesne lands only

PLACE	Crops		From 1250		From 1350		Percent
	Mean percentage sown		to 1349		to 1449		Change
*	Feeding the City : those ten counties sending grains to London						

Bruce Campbell, 'Matching Supply to Demand: Crop Production and Disposal by English Demesnes in the Century of the Black Death', *Journal of Economic History*, 57:4 (December 1997), Tables 4-5, pp. 837, 840.

Table 3. Agrarian Changes in Late-Medieval England

Land Use in Terms of Arable and Livestock in Manorial Demesne Agriculture

Years	ENGLAND: Manorial (Seigniorial) Demesne Lands							
	Mean Cropped Areas:			Mean Livestock Units		Mean Stocking Densities per 100 grain acres		
	Sown Acres	Grain Acres	Grain as % of Total	All Livestock[a]	Non-Working[b]	All Livestock[a]	Non-Working[b]	Index NWL 1300-49=100
1250 - 1299	189.2	176.7	93.39%	64.2	36.2	40.6	21.8	63.0
1300 - 1349	172.1	155.7	90.47%	64.8	39.0	59.0	34.6	100.0
1350 - 1399	147.1	124.9	84.91%	75.0	51.4	63.7	47.2	136.4
1400 - 1450	142.8	117.4	82.21%	89.3	62.8	92.1	66.6	192.5
	Norfolk: Manorial (Seigniorial) Demesne Lands							
1250 - 1299	172.9	149.2	86.29%	45.6	29.5	30.5	19.8	74.2
1300 - 1349	146.0	126.6	86.71%	45.9	33.8	36.3	26.7	100.0
1350 - 1399	126.8	110.6	87.22%	49.3	39.4	44.6	35.6	133.3
1400 - 1450	158.6	140.7	88.71%	43.5	34.7	30.9	24.7	92.5

Years	ENGLAND: Manorial (Seigniorial) Demesne Lands							
	Mean Cropped Areas:			Mean Livestock Units		Mean Stocking Densities per 100 grain acres		
	Sown Acres	Grain Acres	Grain as % of Total	All Livestock[a]	Non-Working[b]	All Livestock[a]	Non-Working[b]	Index NWL 1300-49=100
	FTC Counties[c]							
1288 - 1315	224.4	205.9	91.76%	66.4	40.4	40.1	26.0	
1375 - 1399	172.0	146.4	85.12%	79.3	58.3	68.6	52.5	

a. All Livestock: Horses (1.0) + Oxen and Adult Cattle (1.2) + Immature Cattle (0.8) + Sheep & Swine (0.1)

b. Non-Working Livestock: All Livestock minus Horses

c. **FTC:** Feeding the City (of London) Counties: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Northamptonshire, Oxfordshire, Surrey

Based upon: Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450*, Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge University Press, 2000), Table 4.07, pp. 174-75.

Table 4.

Late Medieval England: Disposal of Net Crop Receipts * within the FTC Counties

values in quarters (of 8 bushels) and £ sterling

Crops	No. of Manors	Total Crop Receipts in quarters	Percent of Total Quantity	Average Value per bushel in d sterling	Value of Total Crop Receipts in £ sterling	Percent of Total Value
1288 - 1315						
Wheat	188	13,328	29.50%	8.6	3,820.7	40.95%
Rye	99	2,640	5.84%	7.1	624.8	6.70%
Winter Mixtures	55	1,596	3.53%	6.9	367.1	3.93%
Barley	156	7,971	17.64%	6.5	1,727.1	18.51%
Dredge	111	3,866	8.56%	5.1	657.2	7.04%
Oats	189	12,911	28.57%	3.7	1,592.4	17.07%
Misc. Grains	10	302	0.67%	6.0	60.4	0.65%
Legumes	177	2,506	5.55%	5.6	467.8	5.01%
Legumes + Grain Mix	10	65	0.14%	5.4	11.7	0.13%
All Crops: Totals in quarters	995	45,185	100.00%			
Value of Manorial Output	190				9,329.1	100.00%
1375 - 1400						
Wheat	126	6,144	26.65%	7.9	1,617.9	36.79%
Rye	25	1,351	5.86%	4.1	184.6	4.20%

Crops	No. of Manors	Total Crop Receipts in quarters	Percent of Total Quantity	Average Value per bushel in d sterling	Value of Total Crop Receipts in £ sterling	Percent of Total Value
Winter Mixtures	26	560	2.43%	5.8	108.3	2.46%
Barley	113	6,067	26.32%	6.0	1,213.4	27.59%
Dredge	65	2,261	9.81%	4.6	346.7	7.88%
Oats	122	4,212	18.27%	3.4	477.4	10.86%
Legumes	121	2,287	9.92%	5.5	419.3	9.53%
Legumes + Grain Mix	21	172	0.75%	5.2	29.8	0.68%
All Crops: Totals in quarters	619	23,054	100.00%			
Value of Manorial Output	128				4,397.4	100.00%

*: receipts are net of both seed and tithe payments

1 quarter = 8 bushels = 290.95 litres

FTC: Feeding the City (of London) Counties: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Northamptonshire, Oxfordshire, Surrey

Based upon: Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450*, Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge University Press, 2000), Table 4.07, pp. 174-75.

Note: Campbell gives the total value of manorial net crop output as £9,136 for the period 1288-1315 and £4,289 for 1375-1400.

Table 5:

Relative Contributions of Arable Crops and Livestock to Estimated Gross Revenues of the Manorial Demesne Economics within the FTC counties of southern England: 1288 -1315 and 1375-1400

Period	No. of Manors	Percentage of Gross Revenues from:		Mean Gross Revenues
		Crops	Livestock	in £ sterling
1288 - 1315:				
Conventual and Collegiate Manors	111	54.70	45.30	13.23
Episcopal Manors	18	71.30	28.70	33.42
Lay Manors	31	71.10	28.90	29.99
Royal Manors	43	66.70	33.30	27.84
TOTAL	**203**	**64.40**	**35.60**	**20.70**
1375 - 1400:				
Conventual and Collegiate Manors	88	45.30	54.70	27.09
Episcopal Manors	13	51.60	48.40	42.24
Lay Manors	38	46.00	54.00	29.03
Royal Manors	2	65.20	34.80	14.72
TOTAL	**141**	**47.8**	**52.20**	**28.87**

FTC: Feeding the City (of London) Counties: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, Northamptonshire, Oxfordshire, Surrey

Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450,* Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge

University Press, 2000), Table 4.10, pp. 184-85.

Table 6:

Agricultural Yields in Late Medieval and Early Modern Norfolk
Gross Yields per Seed and Gross Yields per Acre

Indices: Mean of 1275-99 = 100

Period	Wheat Yield per seed in bushels	Wheat bushels per acre	Barley Yiels per seed	Barley bushels per acre	Oats Yield per seed	Oats bushels per acre	WAGY Yield per seed	WAGY bushels per acre
1275-99	4.6	14.9	3.1	15.8	2.4	13.8	2.7	10.3
	Indices = mean of 1275-99=100							
1275-99	100	100.0	100.0	100.0	100.0	100.0	100.0	100
1300-24	105	100.0	106.0	102.0	109.0	96.0	106.0	107
1325-49	109	105.0	110.0	109.0	116.0	109.0	114.0	119
1350-74	86	77.0	101.0	97.0	99.0	86.0	93.0	82
1375-79	90.0	87.0	117.0	109.0	117.0	101.0	99.0	97
1400-24	91	85.0	105.0	94.0	119.0	101.0	91.0	79.0
1425-49	82.0	72.0	105.0	97.0	123.0	105.0	97.0	86.0
1584-99		79.0		74.0		112.0		80.0
1628-40		116.0		75.0		133.0		91.0

Period	Wheat Yield per seed in bushels	Wheat bushels per acre	Barley Yiels per seed	Barley bushels per acre	Oats Yield per seed	Oats bushels per acre	WAGY Yield per seed	WAGY bushels per acre
1660-79		86.0		88.0		95.0		80.0
1680-1709		99.0		97.0		145.0		83.0
1710-1739		113.0		139.0		191.0		125.0
1836		156.0		203.0		263.0		201

WAGY: weighted average grain yields:

Source: Bruce M. S. Campbell, *English Seigniorial Agriculture, 1250 - 1450,* Cambridge Studies in Historical Geography no. 31 (Cambridge: Cambridge University Press, 2000), Table 7.13, p. 374.

Table 7. Norfolk: Gross Crop Yields, in Bushels per Acre

1250 - 1740

Years	Wheat	Rye	Barley	Oats	W.A.G.Y.	Index
1250 - 74	13.2	8.8	15.7	13.5	9.3	100
1275 - 79	14.9	10.3	15.8	13.8	10.3	111
1300 - 24	14.9	10	16.1	13.3	11	118
1325 - 49	15.6	10.5	17.2	15	11.9	127
1350 - 74	11.4	8.9	15.3	11.9	8.6	92
1375 - 99	12.9	10.1	17.3	14 .0	9.7	104
1400 - 24	12.7	9.9	14.9	13.9	8	86
1425 - 49	10.7	12	15.4	14.5	8.9	96
1584 - 99	11.7	11.9	11.7	15.4	8.2	85
1628 - 40	17.3	11.6	11.9	18.4	9.4	98
1660 - 79	12.8	14.1	13.9	13.1	8.2	85
1680 - 1709	14.7	9	15.3	20	8.5	89
1710 - 39	16.9	14.4	22	26.4	12.9	134

WAGY: weighted average grain yields

Source: Bruce M. S. Campbell and Mark Overton, ‘A New Perspective on Medieval and Early Modern Agriculture: Six Centuries of Norfolk Farming, c.1250 - c.1850', *Past & Present*, no. 141 (November 1993), 38 - 105.

Table 8:

Official Money Wages for Building Craftsmen for the Kingdom of England and the City of London: by Parliamentary Statute or Ordinance, for the Summer and Winter Seasons, in pence sterling, 1290 - 1495

Summer Season: Easter to Michaelmas (29 September), 'without meat and drink'

Winter Season: Michaelmas to Easter, 'without meat and drink'

Year	LONDON Summer	LONDON Winter	NATIONAL Summer	NATIONAL Winter
c.1290	5d[a] 4d[b]	3d[a] 4d[b]		
1349-51	6d	5d	3d 4d[c]	[c]
1360			4d[d]	[not stated]
1362	6d	5d		
1372	6d	5d		
1378	6d	5d		
1382	6d	5d		
1444			5½d[e]	4½d[e]
1495			6d[f] 7d[g]	5d[f] 7d[g]

a. 1290: 2d daily in the summer with food in drink; 1d daily in the winter with food and drink

b. 1290: 4d daily or 1.5d with food and drink, from Michaelmas (29 September) to Martinmas (12 November), and from Candlemas (Purificatio: 2 February) to Easter

c. 1350-51: 25 Ed III stat. 2 c. 3: rates of 4d for master free-masons; 3d for other master masons and carpenters; for all, from Michaelmas 'less according to the rate and discretion of the justices'.

d. For the chief master masons and carpenters; but 3d or 2d for the others 'according as they be worth'

e. 1444-45: 23 Henry VI c. 12: 4d daily with food and drink in the summer and 3d daily with food and drink in the winter.

f. 1495: 11 Henry VII c. 22: 4d daily with food and drink.

g. 7d daily, summer and winter, for those master masons and master carpenters having charge of six or more men; and 5d daily with food and drink.

Sources*:* *Statutes of the Realm*, I, 311-12; II, 337-39, 585-87; H. T. Riley, ed., *Munimenta Gildhallae Londoniensis:* Vol. II: *Liber Custumarum* (London, 1860), I, 99-100; ii, 541-43; H. T. Riley, ed., *Memorials of London and London Life, in the XIIIth, XIVth, and XVth Centuries: From the Archives of the City of London, A.D. 1276-1419* (London, 1868), pp. 253-55; R. R. Sharpe, ed., *Calendar of Letter-Books Preserved Among the Archives of the City of London at the Guildhall: Letter-Book G., c.A.D. 1352-1374* (London, 1905), pp. 148, 301; *Letter Book H., c.A.D. 1375-1399 (London, 1907)*, p. 184.

Table 9. Prices of English Wools, in Pounds Sterling per Sack of 364 lb., Export Taxes in shillings per sack and Price Indices for English Wools, for Phelps Brown & Hopkins Composite Price Index and for the Farinaceous and Livestock Indices, with the mean of 1451-75 =100

1211-15 to 1496-1500, in quinquennial means

Year	Mean Price per Sack All wools £3.4917	Index 1451-75 = 100.00	Mean Price per Sack Better Quality Wools £4.8544	Index 1451-75 = 100.00	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100
1211-15	2.399	68.70	2.616	53.89			
1216-20	2.586	74.06	2.645	54.48			
1221-25	2.766	79.21	2.970	61.17			
1226-30	2.570	73.61	2.713	55.89			
1231-35	3.903	111.77	3.988	82.16			
1236-40	3.679	105.36	3.832	78.95			
1241-45	3.839	109.96	3.809	78.46			
1246-50	3.784	108.38	4.052	83.46			
1251-55	3.251	93.12	3.610	74.37			
1256-60	3.930	112.55	3.948	81.32			
1261-65	4.950	141.77	4.184	86.19	82.44	80.00	88
1266-70	4.634	132.72	4.689	96.59	81.25	95.01	76.6
1271-75	4.887	139.97	5.061	104.25	103.84	130.06	96.6
1276-80	6.692	191.64	6.791	139.90	96.61	110.67	100.8
1281-85	5.616	160.83	5.700	117.41	104.80	133.83	93.2
1286-90	6.059	173.53	6.281	129.39	80.52	90.42	84.53
1291-95	5.107	146.26	5.402	111.28	107.45	148.28	82.27
1296-1300	5.520	158.10	5.508	113.47	102.34	124.21	91.60
1301-05	5.498	157.47	5.441	112.08	92.35	106.11	90.00
1306-10	7.063	202.27	7.006	144.32	109.81	126.33	104.17
1311-15	5.775	165.39	6.087	125.39	115.33	120.66	122.53
1316-20	6.734	192.84	7.012	144.44	161.91	215.74	132.00
1321-25	7.446	213.25	7.834	161.37	137.97	167.84	122.07

Table 9. Prices of English Wools, in Pounds Sterling per Sack of 364 lb., Export Taxes in shillings per sack and Price Indices for English Wools, for Phelps Brown & Hopkins Composite Price Index and for the Farinaceous and Livestock Indices, with the mean of 1451-75 =100

1211-15 to 1496-1500, in quinquennial means

Year	Mean Price per Sack All wools £3.4917	Index 1451-75 = 100.00	Mean Price per Sack Better Quality Wools £4.8544	Index 1451-75 = 100.00	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100
1326-30	6.211	177.88	6.649	136.96	111.07	118.72	108.07
1331-35	5.031	144.08	5.370	110.61	114.12	131.16	104.47
1336-40	4.264	122.11	4.646	95.70	94.32	91.45	96.27
1341-45	4.498	128.83	4.947	101.91	90.06	90.32	93.47
1346-50	4.222	120.91	4.713	97.09	102.70	111.53	98.60
1351-55	3.923	112.36	4.446	91.58	132.18	146.68	115
1356-60	4.050	116.00	5.243	108.01	129.46	129.74	111.6
1361-65	4.306	123.31	5.606	115.47	146.64	168.60	123.80
1366-70	5.624	161.08	6.689	137.80	146.10	161.46	128.13
1371-75	6.422	183.92	7.895	162.64	135.26	130.45	134.13
1376-80	6.582	188.49	7.536	155.24	110.62	105.00	110
1381-85	5.097	145.96	5.995	123.49	112.90	114.19	109.13
1386-90	4.111	117.74	5.071	104.46	102.53	96.54	106.20
1391-95	4.266	122.17	4.953	102.04	106.33	110.89	102.80
1396-1400	4.814	137.86	5.241	107.97	110.84	117.42	109.00
1401-05	5.065	145.05	5.702	117.46	114.84	126.71	107.20
1406-10	4.974	142.44	5.759	118.64	111.23	114.81	108.47
1411-15	5.426	155.38	5.954	122.65	108.11	106.66	107.53
1416-20	4.155	119.00	4.592	94.59	113.40	121.80	107.50
1421-25	4.205	120.42	5.269	108.54	101.48	106.80	94.26
1426-30	4.613	132.11	5.015	103.30	112.27	119.95	102.38
1431-35	4.928	141.13	5.613	115.63	108.48	115.53	101.40
1436-40	4.440	127.16	5.322	109.63	122.01	143.87	106.80

Table 9. Prices of English Wools, in Pounds Sterling per Sack of 364 lb., Export Taxes in shillings per sack and Price Indices for English Wools, for Phelps Brown & Hopkins Composite Price Index and for the Farinaceous and Livestock Indices, with the mean of 1451-75 =100

1211-15 to 1496-1500, in quinquennial means

Year	Mean Price per Sack All wools £3.4917	Index 1451-75 = 100.00	Mean Price per Sack Better Quality Wools £4.8544	Index 1451-75 = 100.00	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100
1441-45	4.188	119.93	5.201	107.15	92.53	80.40	98.80
1446-50	4.119	117.96	5.379	110.80	100.90	96.21	106.2
1451-55	3.184	91.19	4.699	96.79	100.25	103.53	97.40
1456-60	2.923	83.71	3.775	77.77	97.06	92.02	100.8
1461-65	4.056	116.17	5.186	106.82	102.73	107.04	100.00
1466-70	4.387	125.65	5.645	116.28	106.75	101.47	111.80
1471-75	2.908	83.29	4.968	102.34	97.76	98.94	96
1476-80	2.974	85.18	5.847	120.46	90.06	94.25	79.2
1481-85	5.473	156.74	8.621	177.59	127.38	145.47	120
1486-90	3.357	96.16	7.462	153.71	102.77	97.84	105.8
1491-95	3.230	92.51	5.768	118.82	106.80	104.36	111.8
1496-1500	3.376	96.69	5.265	108.46	96.70	95.61	95.8

Table 9. Prices of English Wools, in Pounds Sterling per Sack of 364 lb., Export Taxes in shillings per sack and Price Indices for English Wools, for Phelps Brown & Hopkins Composite Price Index and for the Farinaceous and Livestock Indices, with the mean of 1451-75 =100

1211-15 to 1496-1500, in quinquennial means

Year	Mean Price per Sack All wools	Index 1451-75 = 100.00 £3.4917	Mean Price per Sack Better Quality Wools	Index 1451-75 = 100.00 £4.8544	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100

Table 10. Prices of Better Quality English Wools, in Pounds Sterling per Sack of 364 lb. and Price Indices for English Wools, for Phelps Brown & Hopkins Composite Price Index and for the Farinaceous and Livestock Indices, with the mean of 1451-75 =100 in quinquennial means, 1211-15 to 1496-1500

Year	Mean Price per Sack (364 lb)	Index 1451-75 = 100.00 £4.8544	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100	Ratio of Wool Prices to Grain Prices (Wool/Grain)	Ratio of Wool Prices to PBH CPI (Wool/CPI)
1211-15	2.616	53.89					
1216-20	2.645	54.48					
1221-25	2.97	61.17					
1226-30	2.713	55.89					
1231-35	3.988	82.16					
1236-40	3.832	78.95					
1241-45	3.809	78.46					
1246-50	4.052	83.46					
1251-55	3.61	74.37					
1256-60	3.948	81.32					
1261-65	4.184	86.19	82.44	80.00	88.00	107.732	104.549
1266-70	4.689	96.59	81.25	95.01	76.60	101.662	118.883
1271-75	5.061	104.25	103.84	130.06	96.60	80.157	100.398
1276-80	6.791	139.9	96.61	110.67	100.80	126.409	144.813
1281-85	5.7	117.41	104.80	133.83	93.20	87.732	112.033
1286-90	6.281	129.39	80.52	90.42	84.53	143.091	160.693
1291-95	5.402	111.28	107.45	148.28	82.27	75.048	103.564
1296-1300	5.508	113.47	102.34	124.21	91.60	91.352	110.875
1301-05	5.441	112.08	92.35	106.11	90.00	105.631	121.370
1306-10	7.006	144.32	109.81	126.33	104.17	114.241	131.423
1311-15	6.087	125.39	115.33	120.66	122.53	103.922	108.724
1316-20	7.012	144.44	161.91	215.74	132.00	66.952	89.213
1321-25	7.834	161.37	137.97	167.84	122.07	96.147	116.959
1326-30	6.649	136.96	111.07	118.72	108.07	115.370	123.313

Year	Mean Price per Sack (364 lb)	Index 1451-75 = 100.00 £4.8544	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100	Ratio of Wool Prices to Grain Prices (Wool/Grain)	Ratio of Wool Prices to PBH CPI (Wool/CPI)
1331-35	5.37	110.61	114.12	131.16	104.47	84.332	96.928
1336-40	4.646	95.7	94.32	91.45	96.27	104.649	101.467
1341-45	4.947	101.91	90.06	90.32	93.47	112.835	113.158
1346-50	4.713	97.09	102.70	111.53	98.60	87.056	94.541
1351-55	4.446	91.58	132.18	146.68	115.00	62.432	69.280
1356-60	5.243	108.01	129.46	129.74	111.60	83.249	83.430
1361-65	5.606	115.47	146.64	168.60	123.80	68.490	78.749
1366-70	6.689	137.8	146.10	161.46	128.13	85.346	94.318
1371-75	7.895	162.64	135.26	130.45	134.13	124.677	120.240
1376-80	7.536	155.24	110.62	105.00	110.00	147.851	140.342
1381-85	5.995	123.49	112.90	114.19	109.13	108.150	109.386
1386-90	5.071	104.46	102.53	96.54	106.20	108.205	101.885
1391-95	4.953	102.04	106.33	110.89	102.80	92.015	95.965
1396-1400	5.241	107.97	110.84	117.42	109.00	91.946	97.412
1401-05	5.702	117.46	114.84	126.71	107.20	92.699	102.277
1406-10	5.759	118.64	111.23	114.81	108.47	103.335	106.658
1411-15	5.954	122.65	108.11	106.66	107.53	114.993	113.455
1416-20	4.592	94.59	113.40	121.80	107.50	77.656	83.407
1421-25	5.269	108.54	101.48	106.80	94.26	101.627	106.959
1426-30	5.015	103.30	112.27	119.95	102.38	86.115	92.011
1431-35	5.613	115.63	108.48	115.53	101.40	100.091	106.600
1436-40	5.322	109.63	122.01	143.87	106.80	76.198	89.851
1441-45	5.201	107.15	92.53	80.40	98.80	133.265	115.801
1446-50	5.379	110.80	100.90	96.21	106.20	115.159	109.808
1451-55	4.699	96.79	100.25	103.53	97.40	93.495	96.553
1456-60	3.775	77.77	97.06	92.02	100.80	84.509	80.128
1461-65	5.186	106.82	102.73	107.04	100.00	99.802	103.983
1466-70	5.645	116.28	106.75	101.47	111.80	114.592	108.930
1471-75	4.968	102.34	97.76	98.94	96.00	103.431	104.687
1476-80	5.847	120.46	90.06	94.25	79.20	127.809	133.759

Year	Mean Price per Sack (364 lb)	Index 1451-75 = 100.00 £4.8544	Phelps Brown & Hopkins Composite 1451-75=100	PB&H Farinaceous Index 1451-75=100	PB&H Livestock Index 1451-75=100	Ratio of Wool Prices to Grain Prices (Wool/Grain)	Ratio of Wool Prices to PBH CPI (Wool/CPI)
1481-85	8.621	177.59	127.38	145.47	120.00	122.083	139.421
1486-90	7.462	153.71	102.77	97.84	105.80	157.116	149.572
1491-95	5.768	118.82	106.80	104.36	111.80	113.852	111.261
1496-1500	5.265	108.46	96.70	95.61	95.80	113.435	112.159

* Prices for wools from Wiltshire, Hampshire, and St. Swithin's manors of the Bishop of Winchester, Wiltshire and the Berkshire Downs, the Vale of White Horse to Thames Valley; Oxfordshire, Berkshire, and adjacent Wiltshire; Worcestershire, the Cotswolds (Oxfordshire, Gloucestershire, and adjacent Wiltshire); the Chilterns (Oxon, Bucks, Herts); NE Oxfordshire and north Bucks.

Sources: Terence H. Lloyd, *The Movement of Wool Prices in Medieval England*, Economic History Review Supplements no. 6 (Cambridge, 1973), Statistical Appendix, cols. 2-5, 10-13; pp.35-51

Table 11. **Customs and Subsidies as Export Duties on English Woolsacks in shillings per sack of 364 lb, in quinquennial means, 1271-75 to 1496-1500 with woolsack prices (better quality) in £ sterling per sack**

Michaelmas Year (29 Sept)	Denizens Customs	Subsidy	Total	Calais duty	Total	Aliens Customs	Subsidy	Total	Price in £ Woolsack (Better) Wools)	Denizen Duty as % of Wool Price	Alien Duty as % of Wool Price
1271-75	5.334	0.000	5.334		5.334	5.334	0.000	5.334	5.061	**5.27%**	5.27%
1276-80	6.667	0.000	6.667		6.667	6.667	0.000	6.667	6.791	**4.91%**	4.91%
1281-85	6.667	0.000	6.667		6.667	6.667	0.000	6.667	5.700	**5.85%**	5.85%
1286-90	6.667	0.000	6.667		6.667	6.667	0.000	6.667	6.281	**5.31%**	5.31%
1291-95	6.667	8.000	14.667		14.667	6.667	8.000	14.667	5.402	**13.58%**	13.58%
1296-1300	6.667	16.000	22.667		22.667	6.667	16.000	22.667	5.508	**20.58%**	20.58%
1301-05	6.667	0.000	6.667		6.667	8.667	0.000	8.667	5.441	**6.13%**	7.96%
1306-10	6.667	0.000	6.667		6.667	10.000	0.000	10.000	7.006	**4.76%**	7.14%
1311-15	6.667	0.000	6.667		6.667	6.667	0.000	6.667	6.087	**5.48%**	5.48%
1316-20	6.667	1.666	8.332		8.332	6.667	2.499	9.166	7.012	**5.94%**	6.54%
1321-25	6.667	1.333	8.000		8.000	9.333	2.667	12.000	7.834	**5.11%**	7.66%
1326-30	6.667	5.560	12.227		12.227	10.000	5.560	15.560	6.649	**9.19%**	11.70%
1331-35	6.667	3.706	10.373		10.373	10.000	4.559	14.559	5.370	**9.66%**	13.56%
1336-40	6.667	22.889	29.556		29.556	10.000	31.501	41.501	4.646	**31.81%**	44.67%
1341-45	6.667	33.580	40.247		40.247	10.000	33.333	43.333	4.947	**40.68%**	43.80%
1346-50	6.667	33.333	40.000		40.000	10.000	33.333	43.333	4.713	**42.43%**	45.97%
1351-55	6.667	33.333	40.000		40.000	10.000	33.333	43.333	4.446	**44.99%**	48.74%
1356-60	6.667	33.333	40.000		40.000	10.000	33.333	43.333	5.243	**38.14%**	41.32%
1361-65	6.667	36.109	42.776	1.333	44.110	10.000	36.110	46.110	5.606	**39.34%**	41.13%
1366-70	6.667	40.000	46.667	2.983	49.650	10.000	40.000	50.000	6.689	**37.11%**	37.37%
1371-75	6.667	43.333	50.000	1.583	51.584	10.000	43.333	53.333	7.895	**32.67%**	33.78%
1376-80	6.667	43.333	50.000	1.583	51.584	10.000	43.333	53.333	7.536	**34.22%**	35.38%
1381-85	6.667	43.333	50.000	1.583	51.584	10.000	43.333	53.333	5.995	**43.02%**	44.48%
1386-90	6.667	41.849	48.516	1.583	50.100	10.000	42.166	52.166	5.071	**49.40%**	51.43%
1391-95	6.667	43.163	49.830	1.583	51.414	10.000	43.163	53.163	4.953	**51.90%**	53.66%
1396-1400	6.667	43.333	50.000	1.583	51.584	10.000	46.555	56.555	5.241	**49.21%**	53.95%
1401-05	6.667	44.521	51.187	1.583	52.771	10.000	51.187	61.187	5.702	**46.28%**	53.66%

Table 11. **Customs and Subsidies as Export Duties on English Woolsacks in shillings per sack of 364 lb, in quinquennial means, 1271-75 to 1496-1500 with woolsack prices (better quality) in £ sterling per sack**

Michaelmas Year (29 Sept)	Denizens Customs	Subsidy	Total	Calais duty	Aliens Total	Customs	Subsidy	Total	Price in £ Woolsack (Better) Wools)	Denizen Duty as % of Wool Price	Alien Duty as % of Wool Price
1406-10	6.667	43.333	50.000	1.583	51.584	10.000	50.000	60.000	5.759	**44.78%**	52.09%
1411-15	6.667	43.333	50.000	1.583	51.584	10.000	50.000	60.000	5.954	**43.32%**	50.39%
1416-20	6.667	43.333	50.000	1.583	51.584	10.000	58.000	68.000	4.592	**56.17%**	74.05%
1421-25	6.667	37.174	43.841	1.583	45.425	10.000	52.658	62.658	5.269	**43.11%**	59.46%
1426-30	6.667	33.333	40.000	1.583	41.584	10.000	43.333	53.333	5.015	**41.46%**	53.18%
1431-35	6.667	33.333	40.000	1.583	41.584	10.000	47.103	57.103	5.613	**37.04%**	50.86%
1436-40	6.667	33.333	40.000	1.583	41.584	10.000	52.267	62.267	5.322	**39.07%**	58.50%
1441-45	6.667	33.333	40.000	1.583	41.584	10.000	53.333	63.333	5.201	**39.97%**	60.88%
1446-50	6.667	33.333	40.000	1.583	41.584	10.000	53.333	63.333	5.379	**38.66%**	58.88%
1451-55	6.667	36.314	42.981	1.583	44.564	10.000	67.244	77.244	4.699	**47.42%**	82.19%
1456-60	6.667	43.333	50.000	1.583	51.584	10.000	100.000	110.000	3.775	**68.32%**	145.69%
1461-65	6.667	42.166	48.833	1.583	50.416	10.000	96.110	106.110	5.186	**48.61%**	102.31%
1466-70	6.667	33.333	40.000	1.583	41.584	10.000	66.667	76.667	5.645	**36.83%**	67.91%
1471-75	6.667	34.533	41.200	1.583	42.783	10.000	70.667	80.667	4.968	**43.06%**	81.19%
1476-80	6.667	33.333	40.000	1.583	41.583	10.000	66.667	76.667	5.847	**35.56%**	65.56%
1481-85	6.667	33.333	40.000	1.583	41.583	10.000	66.667	76.667	8.621	**24.12%**	44.46%
1486-90	6.667	33.333	40.000	1.583	41.583	10.000	66.667	76.667	7.462	**27.86%**	51.37%
1491-95	6.667	33.333	40.000	1.583	41.583	10.000	66.667	76.667	5.768	**36.05%**	66.46%
1496-1500	6.667	33.333	40.000	1.583	41.583	10.000	66.667	76.667	5.265	**39.49%**	72.81%

Sources for Tables 1 - 2:

* Prices for wools from Wiltshire, Hampshire, and St. Swithin's manors of the Bishop of Winchester, Wiltshire and the Berkshire Downs, the Vale of White Horse to Thames Valley; Oxfordshire, Berkshire, and

adjacent Wiltshire; Worcestershire, the Cotswolds (Oxfordshire, Gloucestershire, and adjacent Wiltshire); the Chilterns (Oxon, Bucks, Herts); NE Oxfordshire and north Bucks.

Sources: Terence H. Lloyd, *The Movement of Wool Prices in Medieval England*, Economic History Review Supplements no. 6 (Cambridge, 1973), Statistical Appendix, cols. 2-5, 10-13; pp.35-51; *Calendar of the Fine Rolls, Edward II - Henry VII*, Vols. IV (*1327-1337*) to XXI (*1471-1485*); *Rotuli parliamentorum ut et petitiones et placita in Parliamento*, 6 vols. (London, 1767-77), Vols. II - V; F.R. Barnes, 'The Taxation of Wool, 1327-1348', in G. Unwin, ed., *Finance and Trade Under Edward III* (London, 1918), pp. 137-77; N.S.B. Gras, *The Early English Customs System* (Cambridge, Mass., 1918), pp. 76-80; E.M. Carus Wilson and Olive Coleman, eds., *England's Export Trade, 1275-1547* (Oxford, 1963), pp. 194-96; W.M. Ormrod, 'The Crown and the English Economy, 1290-1348', in Bruce M.S. Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester, 1991), pp. 149-83; E.H. Phelps Brown and S.V. Hopkins, 'Seven Centuries of the Prices of Consumables Compared with Builders' Wage-Rates', *Economica*, 23 (Nov. 1956), reprinted in their *A Perspective of Wages and Prices* (London, 1981), pp. 24-50, containing additional statistical appendices.

Table 12. **Price-Relatives of Grains, Wool, and the Phelps-Brown & Hopkins 'Basket of Consumables' in Decennial Averages, 1450-9 to 1640-9**

Average of 1450-9 = 100 (base of the indices)

Decade	Grains Price Index	Wool Price Index	Wool Index ÷ Grains	'Consum-ables' Index	Wool Index ÷ Consumables
1450-9	100	100	100	100	100
1460-9	101	133	132	105	127
1470-9	95	121	127	95	127
1480-9	116	138	119	117	118
1490-9	99	117	118	102	115
1500-9	114	113	99	105	108
1510-9	117	145	124	112	129
1520-9	157	135	86	149	91
1530-9	164	149	91	156	96
1540-9	191	187	98	194	96
1550-9	348	251	72	291	86
1560-9	322	250	78	281	89
1570-9	378	285	75	318	90
1580-9	463	274	59	360	76
1590-9	602	384	64	476	81
1600-9	571	424	74	479	89
1610-9	668	430	64	533	81
1620-9	655	432	66	520	83
1630-9	806	496	62	621	80

1640-9	802	483	60	622	78

SOURCES:

Peter Bowden, ‘Agricultural Prices: Statistical Appendix’, in Joan Thirsk, ed., *Agrarian History of England and Wales*, IV: *1500-1640* (Cambridge, 1967), pp. 857, 861; E.H. Phelps Brown and Sheila Hopkins, ‘Seven Centuries of the Prices of Consumables’, in *A Perspective of Wages and Prices* (1981), pp. 13-59.

Table 13. English Woolsack and Broadcloth Exports, in 5 year means, 1281-5 to 1541-45

Years (5) Michaelmas	Woolsacks: by Denizens	% of Total	Woolsacks: by Aliens	% of Total	Total Sacks	Equivalent Broadcloths	Broadcloth Exports	Total as Equivalent Broadcloth
1281-85					26,897	116,554		116,554
1286-90					26,041	112,843		112,843
1291-95					27,919	120,983		120,983
1296-00					23,041	99,845		99,845
1301-05					32,344	140,157		140,157
1306-10	23,042	59.30%	15,975	40.70%	39,016	169,070		169,070
1311-15	n.a.		n.a.		35,329	153,090		153,090
1316-20	n.a.		n.a.		26,085	113,033		113,033
1321-25	14,074	55.56%	11,242	44.44%	25,315	109,700		109,700
1326-30	17,889	70.76%	7,109	29.24%	24,998	108,323		108,323
1331-35	24,633	72.97%	9,013	27.03%	33,646	145,797		145,797
1336-40	13,180	69.44%	7,345	30.56%	20,525	88,941		88,941
1341-45	10,566	58.09%	7,510	41.91%	18,076	78,327		78,327
1346-50	n.a.		n.a.		27,183	117,793	2,556	120,349
1351-55	10,169	34.39%	20,581	65.61%	30,750	133,252	1,921	135,173
1356-60	n.a.		n.a.		32,666	141,554	9,061	150,615
1361-65	20,900	69.03%	9,229	30.97%	30,129	130,560	11,717	142,277
1366-70	16,346	56.81%	10,106	43.19%	26,452	114,624	14,527	129,152
1371-75	16,712	64.39%	9,156	35.61%	25,868	112,094	12,211	124,305
1376-80	16,898	82.67%	3,572	17.33%	20,470	88,704	13,643	102,347
1381-85	13,887	78.97%	3,631	21.03%	17,517	75,909	22,242	98,151
1386-90	15,574	80.07%	3,738	19.93%	19,312	83,685	25,610	109,295
1391-95	13,593	72.00%	4,921	28.00%	18,514	80,226	39,525	119,752
1396-00	14,516	86.15%	2,374	13.85%	16,890	73,188	38,775	111,963
1401-05	11,803	91.57%	1,101	8.43%	12,904	55,918	34,570	90,488
1406-10	13,393	89.41%	1,575	10.59%	14,968	64,862	31,746	96,608
1411-15	12,633	92.72%	960	7.28%	13,593	58,904	27,183	86,087
1416-20	13,355	92.98%	1,010	7.02%	14,365	62,248	27,977	90,225
1421-25	13,364	93.77%	882	6.23%	14,245	61,729	40,275	102,004
1426-30	12,429	92.60%	930	7.40%	13,359	57,887	40,406	98,293
1431-35	8,679	85.18%	705	14.82%	9,385	40,667	40,027	80,694
1436-40	4,198	41.65%	1,181	58.35%	5,379	23,308	47,072	70,380

Table 13. English Woolsack and Broadcloth Exports, in 5 year means, 1281-5 to 1541-45

Years (5) Michaelmas	Woolsacks: by Denizens	% of Total	Woolsacks: by Aliens	% of Total	Total Sacks	Equivalent Broadcloths	Broadcloth Exports	Total as Equivalent Broadcloth
1441-45	6,502	69.96%	1,527	30.04%	8,029	34,794	56,456	91,250
1446-50	9,177	88.50%	588	11.50%	9,765	42,316	45,847	88,163
1451-55	7,655	84.61%	1,136	15.39%	8,791	38,093	36,700	74,793
1456-60	5,247	81.17%	1,140	18.83%	6,386	27,674	36,489	64,163
1461-65	5,902	90.94%	484	9.06%	6,386	27,673	29,002	56,674
1466-70	8,509	91.12%	785	8.88%	9,294	40,272	37,447	77,720
1471-75	7,381	86.13%	1,072	13.87%	8,453	36,631	36,537	73,169
1476-80	7,823	81.99%	913	18.01%	8,736	37,856	50,441	88,297
1481-85	6,670	88.46%	952	11.54%	7,621	33,026	54,198	87,224
1486-90	8,924	91.51%	827	8.49%	9,751	42,254	50,005	92,260
1491-95	5,881	83.48%	874	16.52%	6,755	29,273	56,945	86,217
1496-00	8,677	96.98%	260	3.02%	8,937	38,728	62,583	101,311
1501-05	6,735	85.62%	1,072	14.38%	7,807	33,829	77,271	111,100
1506-10	6,230	83.97%	1,096	16.03%	7,326	31,747	84,803	116,549
1511-15	6,759	95.30%	328	4.70%	7,087	30,711	86,592	117,303
1516-20	7,522	92.23%	673	7.77%	8,194	35,509	90,099	125,608
1521-25	4,599	89.47%	533	10.53%	5,132	22,237	82,269	104,506
1526-30	4,491	92.91%	344	7.09%	4,835	20,951	93,534	114,485
1531-35	2,235	75.23%	770	24.77%	3,005	13,023	94,087	107,109
1536-40	3,816	96.90%	136	3.10%	3,951	17,123	109,278	126,401
1541-45	3,879	84.01%	697	15.99%	4,576	19,829	118,056	137,885

Sources: E.M. Carus Wilson and Olive Coleman, eds., *England's Export Trade, 1275-1547* (Oxford, 1963), pp. 36-119; A.R. Bridbury, *Medieval English Clothmaking: An Economic Survey* (London, 1982), Appendix F, pp. 118-22.

Table 14. **Exports of English Broadcloths of Assise in quinquennial means, 1346-50 to 1551-55**

Years: Michaelmas	Denizen Exports	Hansard Exports	Other Aliens Exports	TOTAL EXPORTS	London Denizens	London Hansards	London Other Aliens	London Total	London: % of Total
1346-50	2,246		310	2,556					
1351-55	1,586		335	1,921					
1356-60	7,376	174	1,511	9,061					
1361-65	9,099	1,020	1,598	11,717					
1366-70	10,978	1,310	2,240	14,527					
1371-75	9,102	1,240	1,869	12,211					
1376-80	9,673	1,383	2,586	13,643					
1381-85	13,949	2,800	5,493	22,242					
1386-90	17,192	3,125	5,293	25,610					
1391-95	22,974	6,346	10,205	39,525					
1396-00	23,318	5,646	9,811	38,775					
1401-05	19,450	6,548	8,571	34,570					
1406-10	12,997	6,568	12,181	31,746	4,889	3,406	5,956	14,251	44.89%
1411-15	12,284	4,980	9,919	27,183	4,295	2,426	7,771	14,493	53.31%
1416-20	14,051	5,722	8,205	27,977	3,869	2,862	5,967	12,698	45.39%
1421-25	21,180	6,935	12,160	40,275	6,076	3,857	6,879	16,812	41.74%
1426-30	20,334	5,304	14,768	40,406	4,975	3,995	8,528	17,498	43.30%
1431-35	25,474	4,062	10,492	40,027	11,034	2,958	3,077	17,069	42.64%
1436-40	22,864	9,145	15,063	47,072	6,485	5,036	6,603	18,124	38.50%
1441-45	28,163	11,336	16,957	56,456	10,071	7,831	6,035	23,938	42.40%
1446-50	25,286	9,301	11,259	45,847	6,356	5,721	2,152	14,229	31.04%
1451-55	20,785	8,214	7,701	36,700	8,484	6,749	1,186	16,419	44.74%
1456-60	18,911	10,017	7,562	36,489	7,829	7,643	690	16,162	44.29%
1460-65	16,046	8,584	4,371	29,002	8,965	6,407	668	16,041	55.31%
1466-70	21,255	5,807	10,386	37,447	13,789	4,357	2,642	20,788	55.51%
1471-75	20,705	3,415	12,417	36,537	13,727	3,061	6,540	23,328	63.85%
1476-80	32,185	8,226	10,030	50,441	19,283	7,033	8,128	34,444	68.29%
1481-85	29,191	13,439	11,568	54,198	16,160	12,434	7,700	36,293	66.96%
1486-90	25,892	13,740	10,373	50,005	14,369	12,465	8,288	35,122	70.24%

Table 14. **Exports of English Broadcloths of Assise in quinquennial means, 1346-50 to 1551-55**

Years: Michaelmas	Denizen Exports	Hansard Exports	Other Aliens Exports	TOTAL EXPORTS	London Denizens	London Hansards	London Other Aliens	London Total	London: % of Total
1491-95	29,513	15,100	12,332	56,945	14,135	13,868	7,890	35,893	63.03%
1496-00	35,668	17,175	9,740	62,583	20,047	16,282	6,417	42,746	68.30%
1501-05	44,803	17,638	14,830	77,271	21,224	16,819	8,567	46,611	60.32%
1506-10	46,832	16,984	20,987	84,803	27,352	16,473	8,566	52,390	61.78%
1511-15	49,110	21,621	15,861	86,592	33,493	20,739	8,025	62,257	71.90%
1516-20	51,128	20,411	18,559	90,099	36,485	19,766	6,834	63,084	70.02%
1521-25	48,675	18,457	15,137	82,269	35,565	18,120	8,170	61,854	75.19%
1526-30	56,942	20,402	16,190	93,534	42,657	19,486	10,207	72,350	77.35%
1531-35	53,966	24,274	15,847	94,087	40,988	24,083	10,431	75,503	80.25%
1536-40	61,008	30,747	17,523	109,278	46,704	30,666	14,360	91,731	83.94%
1541-45	n.a.	n.a.	n.a.	118,056	n.a.	n.a.	n.a.	101,550	86.02%
1546-50	n.a.	n.a.	n.a.	135,190	n.a.	n.a.	n.a.	123,780	91.56%
1551-55	n.a.	n.a.	n.a.	126,595	n.a.	n.a.	n.a.	110,888	87.59%

Notes:

a. The woolsack was a measure of weight: 364 lb = 165.45 kg

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b. The standard broadcloth measure of assize was 24 yards by 1.75 yards, finished (with about 60 lb. of wool per cloth). Three kerseys and two ‘dozens’ or ‘streits’ were reckoned as one broadcloth.

c. To compute the total exports in terms of cloths, wool-sacks were converted into cloths by the ratio of 4.333 cloths per sack.

d. Customs farmed without records of exports; or accounts missing for too many ports.

e. Average of cloth exports from 1490-4 and 1497-9 only, because the London accounts are missing for 1494-95 and 1495-96.

Sources: Eleanora Carus Wilson and Olive Coleman, *England's Export Trade 1275-1547* (Oxford, 1963), calculated from tables in pp. 1 - 114; Anthony R. Bridbury, *Medieval English Clothmaking: An Economic Survey* (London, 1982), Appendix F, pp. 118-22.

H.L. Gray, 'English Foreign Trade from 1446 to 1482', in Eileen Power and Michael Postan, eds., *Studies in English Trade in the Fifteenth Century* (London, 1933), pp. 12-14.