

1381 and the Malthus Delusion

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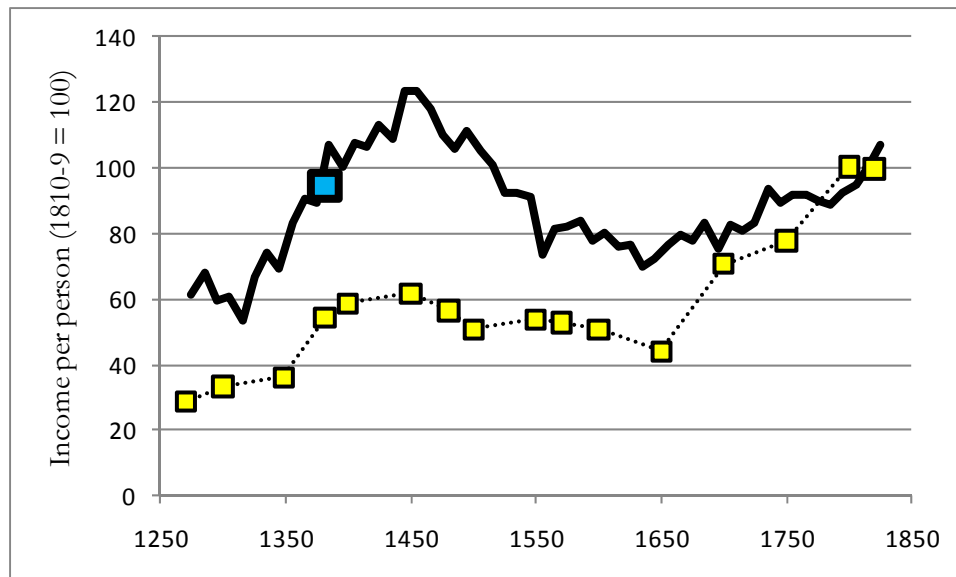
What were income trends before the Industrial Revolution? Clark (2007b) argued on both theoretical and empirical grounds that pre-industrial income was fluctuating but trendless, a position Gunner Persson has labeled “the Malthus Delusion.” Steve Broadberry and Bruce Campbell, in support of the Persson position, have recently estimated that English per capita income grew more than three-fold between 1270 and 1800. Here I use the Poll Tax returns to estimate income in 1379-81 from the farming share of employment. England in 1381, with only 55 percent of the population engaged in farming, was at income levels close to those of 1817.

A Farewell to Alms (Clark, 2007b) argued that before 1800 the logic of the Malthusian Economy implies that there should be no upward trend in incomes. In particular it presents evidence that England in 1800 was not much richer than in most of its history since 1200.¹ Figure 1 summarizes these income estimates for 1270-1829, with 1810-19 set as 100.

The economic history profession has largely rejected this possibility. The overwhelming view has been that incomes in England grew substantially between 1200 and 1800, so that by 1800 England had achieved income levels far in advance of its earlier pre-industrial levels, and far in advance of the typical pre-industrial society: see Allen, 2009, Broadberry, Campbell et al., 2010, de Vries, 2008, Maddison, 2007, Mokyr, 2010, Persson, 2008, Wrigley, 1985. Gunnar Persson has indeed labeled the view of a Malthusian pre-industrial world of trendless incomes as “the Malthus delusion.”² Figure 1 also shows the latest, and still provisional, Broadberry et al. estimates (hereafter referred to as the BCKOV estimates) for benchmark dates with 1800-20 set as 100. These are a radically different vision of the course of income per person in England in the 530 years preceding the Industrial Revolution. For the years before 1500 the Clark estimates are typically double those of BCKOV. In particular for the 10 years centered on 1381 BCKOV estimate an income per person 54 percent of that in 1800-20. Clark estimates income 1372-81 to have averaged 94 percent of that in 1810-19.

² Persson, 2008.

Figure 1: Competing Income Estimates, England 1270-1820.



Notes: The solid line shows the Clark estimate for England. The square shows the income estimated by Clark for 1372-1381. The dotted line links the BCKOV benchmarks.

Sources: Clark, 2010a, figure 9, Broadberry et al., 2010, tables 19, 24 (and personal communication from Steven Broadberry on the 1381 estimate).

These very different estimates emerge because we know three seemingly contradictory facts about England before 1500:

- (1) Real day wages for men were high, both for farm and non-farm workers. They were higher in most of the years 1350-1500 than in 1800 (Clark, 2005, Clark, 2007a).
- (2) Implied labor productivities – physical output per day – at specific farm tasks such as threshing, reaping and mowing were also very high, and indeed in some cases higher than in 1800 (Clark, 2007a).
- (3) This was a largely rural society with small cities. There were only 23,314 taxpayers in London in 1379, 7,248 in York, and 6,345 in Bristol, the three largest towns, out of a national total of 1.36 million (Powell, 1896, 123-4).³ In total only 5 percent of the population lived in cities with 5,000 or more people. A lack of urbanization is normally the sign of a low income society where the bulk of production and consumption is of food.

³ The national return did not include any tax payments for the counties of Chester and Durham.

Faced with this apparent contradiction some scholars of medieval England, such as Bruce Campbell, and E.A. Wrigley have sought to construct a picture that suggests low levels of real income in spite of facts (1) and (2). It is that imperative which guides the BCKOV income estimates. However, to square the real wage evidence with the low estimated levels of income per person, BCKOV have to assume that the typical worker was employed for very few days per year in the period 1350-1500. This assumption is made despite the lack of any direct evidence for any such part time employment.

These radically different visions of the wealth of pre-industrial society should have left a clear trace in terms of the occupational structure of the society. Poor societies are those with a large share of the population employed in farming and fishing. Elsewhere Clark, Cummins and Smith (2010) show using modern data on income and farm shares across poorer countries that the two will be linked by the formula

$$\frac{y_1}{y_0} = \left(\frac{\theta_1 + \varphi_1}{\theta_0 + \varphi_0} \right)^{\frac{1}{\epsilon - 1}} = \left(\frac{\theta_1 + \varphi_1}{\theta_0 + \varphi_0} \right)^{-1.854} \quad (1)$$

where y is real income per person, ϵ is the income elasticity of food demand, θ the farm employment share, and φ imports of farm goods as a share of national income. This formula implies an income elasticity of food demand of 0.46, which is consistent with cross-sectional evidence for England in 1862.⁴

The effective farm share ($\theta + \varphi$) was 52 percent in 1817 in England. Farm, fishing (and coal mining) employment was 42 percent of all occupations, and net food and raw material imports were 10 percent of income. Based on this equation (1), if income in 1381 was at 54 percent of the level of 1817 then the farm share would have to be 74 percent (since farm raw material exports in England in 1381 were about 1 percent of income). Broadberry et al. (2008) indeed assume that 76 percent of the population in 1380 engaged in agriculture.⁵

I show below, however, that in fact rural areas in 1379-81 were full of non-farm workers, so that the national farm share was only 55 percent. Based on equation (1) and an income 94 percent of that in 1817, the farm share in 1381 should have been 54 percent. Thus the occupational shares

⁴ Clark, Huberman, and Lindert, 1995, 224, find an income elasticity of food demand for the poorest English families of 0.6. The overall income elasticity of food demand would be lower than this, since this elasticity declines with income.

⁵ Broadberry et al. (2008) gives some more detail on their estimation procedures than the later Broadberry et al. (2010).

revealed in the Poll Tax returns are consistent with the high levels of income estimated in the Clark series for 1379-81.

It is also possible to show with the Poll Tax evidence that even in rural England in 1379-81 many workers were engaged in highly 'urban' occupations. The different character and role of urbanization in England before 1500 is what reconciles the high income estimates with the lack of urbanization.

The Poll Tax Returns

The Poll taxes of 1377, 1379 and 1381 were in principle a tax on everyone, male and female, who was not indigent or in clerical orders, aged 14 and above in 1377, and 15 or above in 1379 and 1381. Many lists of the taxpayers have survived for individual parishes and groups of parishes. These lists sometimes, at the whim of local administrators of the tax, contained details of the occupations of the taxpayers. These occupation lists are idiosyncratic in how they classify people's occupations. Only some can be used to infer the farm/non-farm split. Here I use a sample of 342 returns, about 3 percent of the total, with useful information on the split of occupations between farming, fishing and other occupations, to estimate the national farm share in employment in 1379-81.⁶

The problem is that most of the surviving poll tax returns for parishes classify a large fraction of the population under the terms "laborares" or "operares" or "serviens". Wives are typically described just as "ux.". And sons and daughters living with parents as called just "filio." or "filia." Finally widows are typically denoted just as "vidua." Some people just have no label. But searching through the extent poll tax lists (Fenwick, 1998, 2001, 2005) we do find a modest number of hundreds and parishes, covering more than 800,000 acres, where it is possible to narrow the uncertainty about the fraction of the population in agriculture sufficiently to get estimates of the overall farm share. To do this each person in the tax record was assigned one of four statuses: farm and fishing (f), non-farm (nf), unknown (u), and not counted. The not counted category includes people for whom the fading of the original poll tax returns left no record of their occupation. It also includes those described just as wife ('ux'), widow ('vidua') or daughter ('filia'). To this secular population share in farming we need to add clerics resident in the affected parishes, N_c , to get the

⁶ The 1381 returns record a total of taxpayers only two-thirds that of 1377, so there must have been much evasion by 1381. There is sign that the evaders tended to be younger and female. But such evasion will not lead to an underestimate of the share of the population in farming unless farmers were somehow more likely to evade than non-farmers.

overall farm employment share. The clerical population is estimated from the clerical poll tax of the same period.⁷ The fraction in engaged in farming can then be calculated in two ways. The first assumes that the unknown share in the secular population is distributed between farm and non-farm in the same proportion as the known. This gives as the overall farm share,

$$FARM = \frac{N_f + N_u \left(\frac{N_f}{N_f + N_{nf}} \right)}{N_f + N_{nf} + N_u + N_c}$$

The second method assumes the unknown occupations are all in farming

$$FARM_{max} = \frac{N_f + N_u}{N_f + N_{nf} + N_c + N_u}$$

$FARM_{max}$ shows the maximum potential share of the population in farming, and $FARM$ the preferred estimate. To get a reasonable range of estimates we need to have the poll tax records from areas where the collector did not assign too much of the population to an ‘unknown’ employment category. Thus the records for the hundred of Thingoe in Suffolk in 1381 showed 36 tax payers with farm occupations, 67 with non-farm occupations, and 461 with an unknown occupation. The maximum potential share in farming was thus 84 percent, and the minimum 6 percent. Such records do not provide useful information. Below I only use records for parishes in 1379 and 1381 where no more than one third of the population had an unknown employment.

Tax payers were assigned to one of four categories as in table 1. The reason women who had indefinite occupations such as ‘laborares’ or ‘serviens’ were all assigned to non-farm occupations is that it was rare for women with definite occupations who were not land occupiers to be listed with farm occupations. Almost all such women were listed as spinners, weavers, brewers, or dressmakers. Figure 2 shows a sample of a poll tax list for Thaxted in Essex in 1381. This gives usable information on the share of people employed in farming, because most people are ascribed an occupation, and the numbers described just as “laborer” or “servant” are modest.

⁷ In Leicester we have the clerical payers by parish. Elsewhere Powell, 1896, 123-4 gives the total numbers of clerics recorded in 1381. Where I do not have specific information on the numbers of clerics by parish, I assume that they are distributed in proportion across the population.

Table 1: The assignment of tax payers to occupational categories

Gender	Descriptor	Category
Male	'cult', 'curac' (plowman), 'firmar', 'terr ten', 'nat ten', 'agricola', shepherd or 'bercar', 'nethird', 'swynhird', 'thresher', 'tasker,' 'baly,' 'serviens' where master is in farming	Farm
Male	'filio' of man or woman with farm occupation	Farm
Male	'armiger', 'squire,' 'laborar', 'operar', serviens (masters occupation unknown), no stated occupation	Unknown
Male	'filio' of man or woman with unknown occupation	Unknown
Male	'artifex', or any other occupation, or "serviens" of master with non-farm occupation	non-farm
Male	'filio' of man or woman with non-farm occupation	non-farm
Male	occupation obscure on parchment, 'leper', 'impotent'	not counted
Female	'ux', 'vidua', 'filia,' or occupation obscure	not counted
Female	'cult' or 'terr ten' or 'agricola'	Farm
Female	'laborar', 'operar', 'serviens,' 'filat', 'spynnere', 'bras', any other occupation	non-farm
Female	no occupation or family status stated	Unknown

Figure 2: An Example of a Poll Tax list, Thaxted, Essex, 1381

Willelmus Hale	ux' cultell'	Johannes Webbe	cisc'
Thomas Wodeward	ux' nat' ten'	Johannes Taylour	ux' cissor'
Johannes Pipere	labor'	Alexander Chapman	
Johannes Crak***	***	Stephanus Taylour	cissor'
Thomas Hardy	ux' cultell'	Emma Gauge	
Thomas Saward	ux' cartere	Galfridus Banstrat	cissor
Johannes Blunt	ux' barkere	Rogerus Burre	carpent'
Johannes Spryngold	ux' nat' ten'	Johannes ate Grene	labor'
Robertus Stapelowe	ux' frank ***	Johannes Astel	carpent'
Willelmus Alman	barkere	Johannes Alman	labor'
Johannes Colyn***		Symon Baron'	tomour
Alanus Sponere		Johannes Fischer'	labor'
Johannes Brond	coupere	Johannes filius Thome Godard	ux' nat' ten'
Johannes State jun'	labor'	Johannes Serle	ux' frank ten'
Johannes Wrighte	ux' nat' ten'	Willelmus ate Grenc	ux' labor'
Willelmus Saward	ux' labor'	Johannes Plasch'	ux' cissor
Johannes Bode	labor'	Willelmus Dawe	labor'
Thomas Herde	ux' barkere	Henricus Gener'	labor'
Robertus Avenant'	pedder'	Thomas Ewayn	ux' labor'
Johannes Richeman sen'	ux' frank ten'	Willelmus Colle	pult'
Johannes State senior	ux' labor'	Johannes filius Ade Henry	ux' boch'
Willelmus de Kent	cultell'	Johannes Hardy jun'	cissor
Willelmus Stevens	labor'	Willelmus Wale	ux' cissor
Edmundus Venour	ux' nat' ten'	Willelmus Ilger	boch'
Willelmus Wightlove	ux' cultell'	Henricus Asser	ux' merc'
Willelmus Brymnyng	labor'	Willelmus Godard	***
Walterus Fausor	***	Walterus Hardy	nat' ten'
Johannes Whitlove	ux' culi'	Willelmus Herde	cartere
Johannes ***		Johannes Proude	ux' ***
Johannes Richemond	ux' parker	Johannes Whatrich	dryvere
Willelmus Burstyng	ux' carpent'	Johannes filius Ricardi Godard	ux' cultell'
Johannes Sybely	ux' frank ten'	Johannes Steyleman	tylere
Johannes Avenant	ux' tyler'	Johannes Throwere	ux' nat' ten'
Walterus Crowe	carter'	Johannes Godard	ux' nat' ten'
Thomas Wal***	***	Johannes Boytone	ux' frank ten'
Robertus Grubbok	labor'	Nicholaus Richemond	ux' frank ten'
Johannes Coupere	***	Rogerus Bronnd	labor'
Walterus Paykyn	labor'	Johannes Druey	labor'
Willelmus Gyle	***	Johannes Eustace	ux' labor'
Johannes ate Fen	ux' frank ten'	Ricardus Meller'	ux' labor'
Johannes Aleyn	cartere	Johannes Boyton'	ux' labor'
Willelmus Rust	labor'	Symon Hobbe	carpent'
Johannes Smyth'	faber	Duic' Goldsmyth	ux' aurifab'
Johannes Pamphilon	***		
Johannes Clerk	ux' frank ten'		
		Summa omnes personarum 416 [417]	

Source: Fenwick, 1998, 238.

Parishes with Occupational Information

Only some parishes have surviving individual Poll Tax returns for 1379 or 1381, and only a minority of these meet the requirement of having 33 percent or less of people with unknown occupations according to the schema in table 1. To calculate the overall share in farming it is useful to divide the parishes into “rural” and “urban.” Classed among the urban places were towns with 1,000 or more taxpayers in 1377. These locations constituted 7.8 percent of the taxpayers in England in 1377. The overall farm share is calculated below as the rural farm employment share times .922 plus the urban share times .078.

Table 2 summarizes, by county, the information on occupations from the rural parishes in 1379 and 1381. The rural parishes in the table are drawn from 16 of 43 counties, and constitute nearly 3 percent of the area and taxpayers of England in 1381.⁸ Figure 3 shows the distribution of the parishes in the rural sample across England. As can be seen in the figure, there is a wide geographic distribution of these parishes: from Lancashire and Yorkshire in the north, to Dorset and Hampshire in the south. The most urbanized location in the rural sample is Reading with 583 taxpayers, and an estimated total population of 993 people. But since Reading had an area of 4,700 acres, there were still nearly 5 persons per acre in Reading in 1381. Also shown in the table are two towns from the “urban” locations – Oxford and York. Both these towns had populations of 4,000 or more in 1377, though they were both very small towns by modern standards.⁹

Column 2 of table 2 shows the total area of these parishes in 1841 in acres. Column 3 shows the number of taxpayers recorded for each of the counties in 1379/1381, and column 4 the taxpayers per acre standardized to 1381. The overall density of taxpayers per acre in England in 1381 was 0.030 per acre, and for rural England 0.028 taxpayers per acre. The density for the rural sample in table 2 is 0.031 per acre, so the sample should be reasonably representative of conditions in England as a whole.¹⁰ But I adjust below to correct for the slightly higher population density of my rural sample than rural locations as a whole in calculating the overall employment share.

⁸The numbers of tax payers in England fell by one third between the 1379 collection and that of 1381, presumably largely because of evasion. So taxpayers per acre for the counties with 1379 returns – Hampshire, Lancashire, and Yorkshire - East Riding - is calculated as two thirds of the 1379 value to make them comparable to the figures for the other counties for 1381.

⁹ Detailed occupation lists are available for some other towns such as Canterbury, Salisbury and Southwark, but for the purposes here there was enough data from Oxford and York.

¹⁰ The appendix lists all the parishes employed.

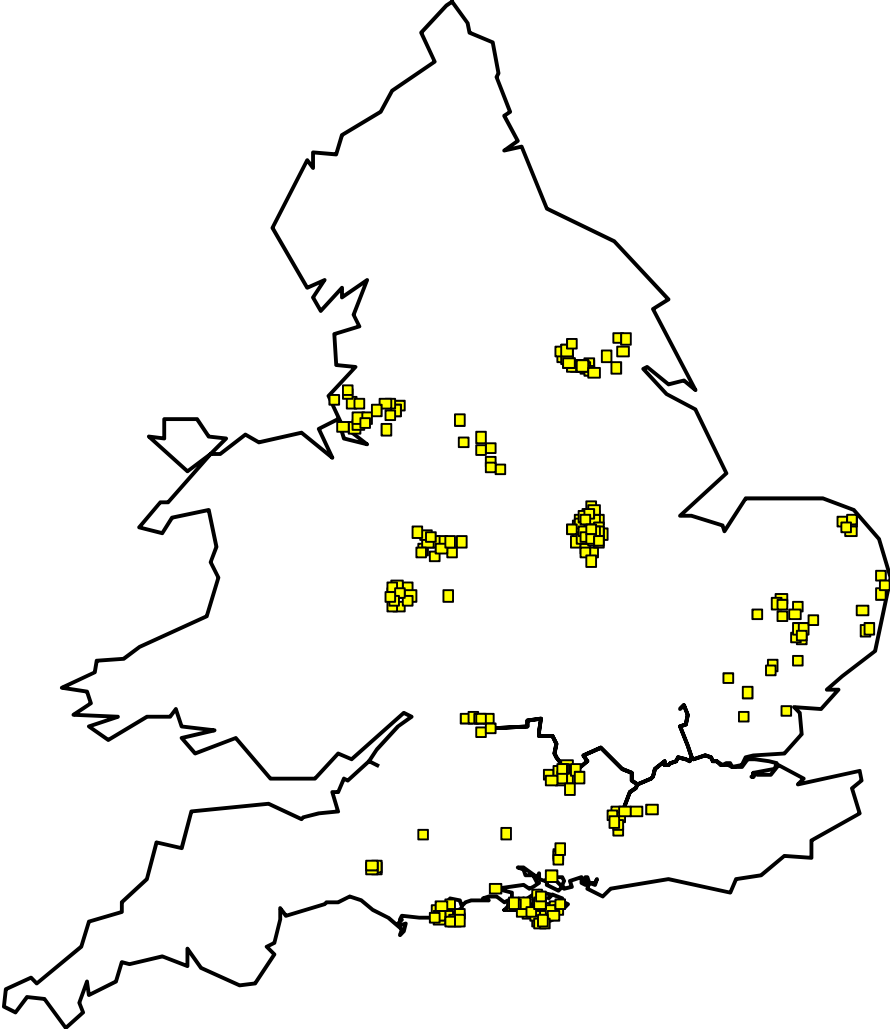
Table 2: Summary Statistics, by county, 1379-1381

County	Area (acres)	Taxpayers 1381	Taxpayers /Acre	Fraction Unknown Occ.	FARM	FARM _{max}
1379						
Hampshire	114,629	4,158	0.025 ^a	0.12	0.68	0.73
Lancashire	73,514	1,354	0.015 ^a	0.12	0.86	0.87
Yorks – ER	47,182	2,734	0.042 ^a	0.20	0.41	0.52
1381						
Berkshire	26,763	1,404	0.052	0.15	0.48	0.57
Derby	134,526	2,796	0.021	0.04	0.59	0.61
Dorset	43,315	590	0.014	0.17	0.56	0.63
Essex	20,537	872	0.042	0.16	0.31	0.42
Gloucester	24,262	478	0.020	0.19	0.58	0.67
Leicester	83,967	3,226	0.038	0.08	0.71	0.74
Norfolk	11,260	795	0.071	0.06	0.27	0.32
Shropshire	40,888	811	0.020	0.15	0.71	0.75
Somerset	5,001	164	0.033	0.25	0.37	0.53
Stafford	82,929	2,005	0.024	0.15	0.66	0.71
Suffolk	52,686	3,325	0.063	0.22	0.39	0.53
Surrey	39,953	2,069	0.052	0.21	0.57	0.65
Wiltshire	7,400	368	0.049	0.15	0.53	0.59
All	819,104	27,265	0.031	0.14	-	-
1381, Urban						
Oxford	580	2,005	3.456	0.02	0.02	0.04
York	12,099	4,005	0.332	0.13	0.04	0.17

Notes: ^aReduced to a 1381 basis.

Source: Fenwick, 1998, 2001, 2005.

Figure 2: Distribution of 1381 rural locations with occupation details



Column 5 of table 2 shows the share of taxpayers in these counties who have no assignable occupation. Columns 6 and 7 show the “best” and maximum estimators of the fraction of the population engaged in farming and fishing in 1381. The ‘best’ estimate is the one that assigns those of unknown occupation to farm and non-farm occupations in the same ratio as those with known occupations. The maximum estimate assumes all the ‘unknowns’ were engaged in farming.

These columns tell a consistent story. England in 1381 had a surprisingly large number of people employed in other than farm occupations, even outside the 8 percent of the population living in towns. What is the best estimate of the national share in farming and fishing? This is a weighted average of the rural and urban farm shares. Since the simple urban farm share was 3 percent, and the rural farm share 56 percent, the simple weighted average would be a mere 52 percent in farming (with a maximum of 59 percent).

However, as noted, the rural areas observed had a somewhat higher population density than rural England in 1381 as a whole. If we take the county data and graph the farm share by county, as is done in figure 3, against the population densities of the sampled parishes we see a clear and statistically significant negative relationship. The figure also shows the OLS estimate of this relationship which is

$$\text{FARM} = 0.775 - 6.38 (\text{TAXP/AC})$$

(1.79)

$$N= 16, R^2 = 0.48$$

where TAXP/AC is the number of taxpayers per acre normalized to 1381, and the number in parentheses is the standard error. If I use a weighting which gives too much weight to more densely populated areas of the country I will underestimate the farm share.

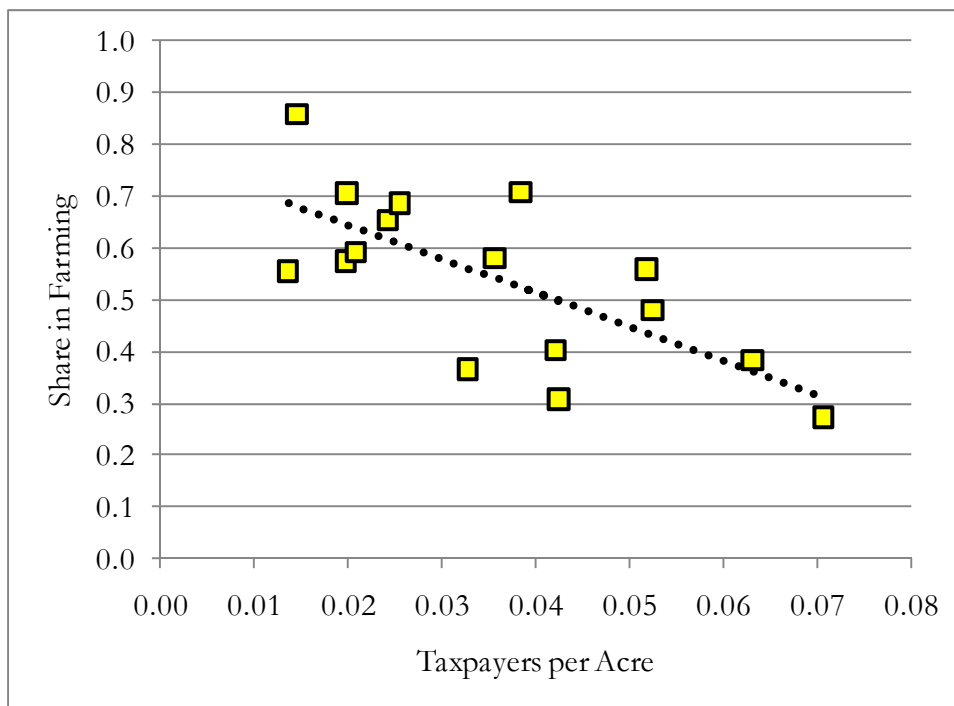
This suggests a better way to estimate the national share in farming, which is to take it for the rural population from the regression line at a taxpayer density per acre of 0.0278, which was the average taxpayer density in 1381 outside towns with 1,000 or more tax payers. This produces an estimated overall farm occupation share of 55 percent, with a corresponding maximum of 62 percent. So the preferred estimate of the share employed in farming in 1379-81 is 55 percent.

Table 4 shows what this calculated primary share means in terms of income. Column 2 shows the estimated farm share along with those for 1560-79, 1652-60, and 1817 (Clark, Cummins, and Smith, 2010, table 6). To link the primary share of employment to income we also need to take into

Table 3: National Farm Share, 1381

Locale	Implied Tax Payers per acre	FARM	FARM _{max}
Urban	0.596	0.03	0.11
Rural – simple average	0.031	0.57	0.63
Overall Average	0.033	0.53	0.59
Rural – adjusted to taxpayer density of 0.0278	0.028	0.60	0.66
Overall Average adjusted to taxpayer density	0.030	0.55	0.62

Figure 3: Share in farming versus population density, 1381



account net imports or exports of primary products. In 1379-81 England was a large exporter of wool, mainly in the form of cloth. England in these years typically exported wool in this cloth equivalent to 20,000 sacks, or 7.3 million lbs of wool, worth £0.25 million, about 1 percent of English income then (Rorke, 2006, 275, figure 3. Income from Clark, 2010). The other net import figures are from Clark, Cummins, and Smith, 2010, table 6.

Column 4 of table 4 thus shows the *effective* primary sector share in employment, which is roughly the share of primary products in expenditure. Using equation (1) I can translate this into incomes relative to 1810-19. This implies an income in 1379-81 of 93 percent that of 1817, close to the Clark series estimate of 94 percent for 1372-81.

Table 5 shows the BCKOV income estimates relative to 1800/1820 for 1381, 1550/70 and 1650. Also shown are the implied effective primary shares. Observed primary shares in employment would have to be much higher in all these years to make the BCKOV income estimates plausible. In particular in 1650 the actual primary share of 59 percent is 22 percent below what the BCKOV income estimates would imply.

The surprisingly non-rural character of rural England in the late middle ages has been noted by others. Christopher Dyer has thus argued that medieval England had an unusual urban structure with many more small urban locations, that would not easily be distinguished from later purely rural settings. He concluded that if all towns are included, then even in 1300 15-20 percent of England was urbanized.¹¹

¹¹ Dyer, 1994, 207.

Table 4: Primary Shares in Employment and Incomes, 1379-1817

Date	Primary Share	Net Import Share	Effective Primary Share	Implied Relative Income	Relative Income (Clark)
1379-81	0.55	-0.01	0.54	93	94
1560-79	0.61	-0.01	0.60	77	82
1652-60	0.59	0.00	0.59	79	78
1817	0.42	0.10	0.52	100	100

Table 5: BCKOV Income Estimates and Implied Primary Shares, 1379-1817

Date	Effective Primary Share	Relative Income (BCKOV)	Implied primary share
1381	0.55	54	73
1550/70	0.60	53	73
1650	0.59	44	81
1800/20	0.52	100	100

Non-Farm Employments in England, 1379-81

The Poll Tax records also give a rough picture of what the 45 percent of people in 1381 not engaged in farming or fishing were doing. To estimate this I calculate overall employment shares separately for urban areas and for rural areas for non-farm employments, from 6,118 occupation statements, then take a weighted average with weight of 7.8 percent for urban areas, and 92.2 percent for rural areas. Table 6 shows the shares of the rural and urban employed under the major occupations, and the implied national shares.

One problem in this earlier estimation of occupation shares is that it is impossible to estimate the numbers of people employed as domestic servants. Many craftsmen have servants listed, but with no indication as to whether they were employees in the business, or domestic workers. In calculating non-farm occupation shares I have assigned such servants to the occupations of their masters. By 1841 domestic servants were 17 percent of all employees. To make allowance for domestic servants in 1379-81 I assume that such servants were 10 percent of the labor force in both town and country. This is less than in 1841, but at lower income levels we would expect a lower proportion of such workers. If domestic servants were 20 percent of the labor force the shares listed for the other secular occupations would be reduced by about one quarter. If they were 0 percent then the other secular occupations would rise as a share of the labor force by close to a quarter.

The proportion of clergy paying tax in 1381 was only 3 percent of all taxpayers. But only 60 percent of secular tax payers have occupations, because of the large numbers of wives, widows and daughters listed without any occupations among the secular population. The clerical population was at least officially without these large numbers of women without occupations, so that is why they represented 5 percent of the employed overall.

These assumptions imply that the non-farm, not clergy, non servant rural labor force was 30 percent of the population, while in the city it was 82 percent of the labor force. Table 6 shows the most common occupations, their share of the labor force in rural and urban areas, and their overall labor force share. The table also shows the corresponding occupational shares in 1841. The occupational structures in 1381 support the idea that this was a relatively high income society. The largest occupation in 1381 was the production and distribution of clothing, which accounted for about 10 percent of the labor force. The corresponding share in 1841 was about 14 percent. But by 1841 England's major export was textile fabrics. 3.2 percent of the employed were engaged in

Table 6: The Non-Farm Occupations of England, 1379-81

Occupation	1379-81 Rural (% of employed)	1379-81 Urban (% of employed)	1379-81 National (% of employed)	1841 (% of employed)
Domestic servants	(10)	(10)	(10)	16.7
Cloth manufacture: weavers, spinners, fullers, dyers, clothworkers	6.2	8.5	6.3	9.6
Clergy	5.0	5.0	5.0	0.3
Tailor, dressmaker, seamstress, hatter, hosiers	2.9	6.6	3.2	4.3
Brewer, maltster	2.5	2.7	2.5	0.3
Carpenter	2.3	1.8	2.2	2.4
Shoemaker	1.4	3.3	1.6	3.2
Smith	1.7	0.6	1.6	1.4
Butcher	1.1	2.1	1.2	0.8
Merchant	0.8	2.4	1.0	0.2
Baker	0.6	2.7	0.8	0.7
Draper/Mercer/Haberdasher	0.3	4.8	0.8	0.5
Cutler	0.6	0.3	0.6	0.1
Miller	0.5	0.4	0.5	0.4
Laborer	0.0	6.2	0.5	5.8
Mason	0.4	0.9	0.4	1.0
Skinner	0.3	1.6	0.4	0.0

Notes: The clergy are assumed to be equally distributed per occupied person across the rural and urban areas.

making the actual cloths, as opposed to 4.3 percent in 1841. Thus these must have been carefully constructed and elaborate garments, not some bundle of loosely fitting plain cloth.

Brewing beer occupied one adult in forty, suggesting alcohol consumption was at high levels. 1.2 percent of the occupied were butchers, compared to only 0.8 percent in 1841. Meat was clearly a major component in the diet. Meat eating is a sign of a high income society. A reflection of the importance of meat consumption in late medieval England appears in the numbers of butchers found in medieval markets. By the 1390s butchers occupied 35 percent of the food retailing stalls in Sudbury market in Suffolk (compared to 24 percent in the 1340s before the onset of the Black Death) (Bailey, 2007, 268). By the 1420s and 1430s the income of the meat and leather trades in Dunwich market was twice that of grain traders. By the 1440s the income from butcher stalls in Woodbridge market was four times that of bakers and grocers combined (Bailey, 2007, 269).

Other rarer occupations also bespeak a prosperous society. Goldsmiths (0.12%) were found in numbers both in town and country, as were spicers (0.15%). There were also some very infrequent occupations that suggest a high degree of trade specialization such as mustarder, garlic monger, and saucemaker. However, there were other activities that were surprisingly limited among the secular population (perhaps because they were carried out by the clergy). Thus the 6,118 people with identified non-farm occupations included only one schoolmaster, and two attorneys. Interestingly there were also almost no people with explicitly military functions.

Farm Employment Shares over time at Particular Locations

For some of the locations in figure 2, particularly the parishes in Essex, Suffolk and Surrey, I can estimate the share of employment in farming over the years 1550-1857 using the occupations of testators recorded in wills. Will occupations can be shown to reflect well the farm/non-farm employment division.¹² Figure 4, for example, shows for the Essex parishes in the 1381 sample the implied farm share also between 1381 and 1857. For 1381 the preferred estimate is shown, along with the minimum and maximum possible farm shares that would result from different allocations of the share with unknown occupations (all farming at the max, all non-farming at the minimum).

¹² Clark, Cummins and Smith, 2010, details why the will occupation statements correctly record the farm, non-farm division of employments. It also gives the sources for the wills data.

Figure 4: Share in Farming in Essex Parishes from 1381

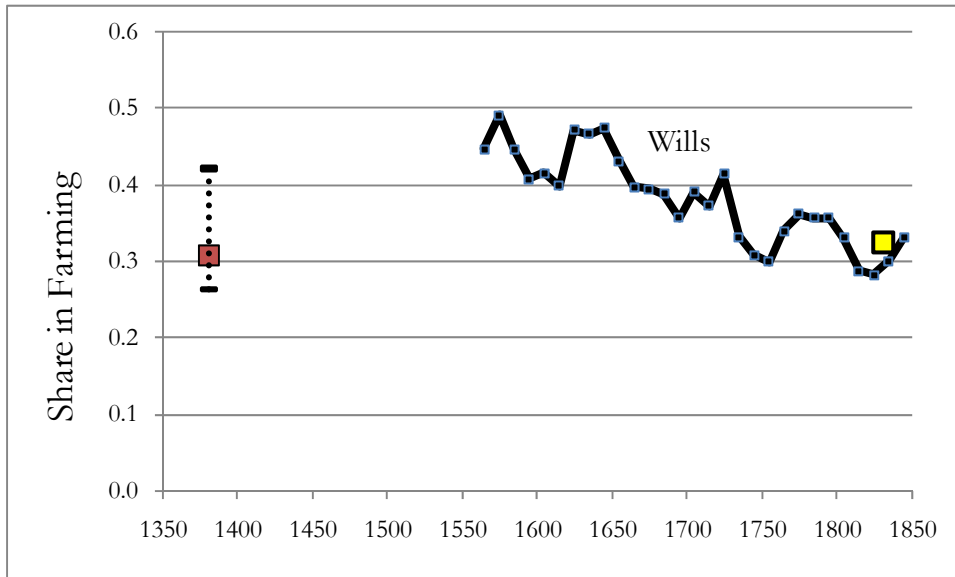


Figure 5: Share in Farming in Suffolk Parishes from 1381



For 1550-1857 the occupation share in men's wills is shown, as a 30 year moving average to control for random fluctuations of this share created by small numbers.¹³ Finally the share of men employed in farming as recorded in the 1831 census is also shown.¹⁴ Interestingly the farm employment share for these parishes in Essex in the period 1550-1700 exceed that of 1381 by substantial margins. Only in the years 1700-1857 does the occupational share in farming in these Essex parishes again come close to that of 1381.

Figure 5 shows the same information for the group of parishes with occupational details in Suffolk in 1381. In Suffolk, however, the wills data is only available up until 1700. The farm employment share for these Suffolk parishes is higher for exactly the same locations in Suffolk in all the years 1550-1700, and also in 1831. While only 39 percent of the employed in these parishes were in farming in 1381, by some of the decades in the early seventeenth century this share had risen to nearly 70 percent. Rural Suffolk was more "industrialized" in 1381 than in any years observable 1550-1700 up till 1831. Rural Suffolk seems to have experienced "de-industrialization" between 1381 and 1600.

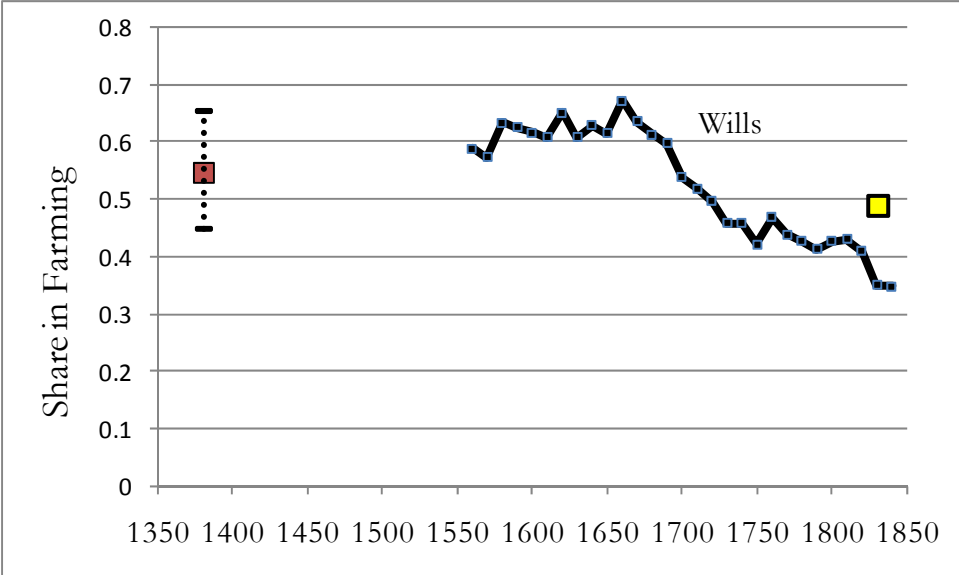
Lastly figure 6 gives the same farm shares for the Surrey group of parishes of 1381. Here the wills data again suggest a rising share in farming from 1550-1650, with the associated implied decline in income. However, for the Surrey group of parishes there was a substantial decline in will reports of farming occupations between 1650 and 1850, so that after 1700 the farm share had seemingly fallen below that of 1381. However, the farm share for these parishes reported in the 1831 census, well into the Industrial Revolution, was little below that of 1381. In Surrey there is, however, around 1831 a mismatch between the will reports of the farm/non-farm occupation split and the census reports for the same parishes.

But overall, looking at these specific areas in Essex, Suffolk and Surrey there is little sign that rural England, all the way from 1381 to 1857 was becoming a much higher income locale, with more people employed in service occupations than it was in the late middle ages.

¹³ Clark, Cummins, and Smith, 2010 gives the sources of this will occupational data.

¹⁴ This share is calculated as the number of men age 20 and above reporting farming occupations, divided by the total number of men aged 20 and above minus those reporting no specific occupation.

Figure 6: Share in Farming in Surrey Parishes from 1381



Other Evidence of High Incomes in 1381

There was a regional dimension to the fraction of the population employed outside farming. In particular this fraction is high even in rural areas in East Anglia: Norfolk, Suffolk and Essex. There is other evidence that these were indeed prosperous areas in the late fourteenth and fifteenth centuries. In East Anglia in 1381, the poll tax returns suggests 14 percent of the rural population were engaged in cloth production, compared to 6 percent for rural England as a whole.

Suffolk has 500 surviving medieval churches. A fine example is that of St Mary's in Hadleigh, shown in figure 7, which was constructed progressively from 1250-1450, when it assumed its present size. In 1381 the estimated population of Hadleigh from the poll tax returns, allowing for evasion, was under 1,800 people (by 1801 Hadleigh still had only 2,332 inhabitants). That 1,800 people could build and maintain a church of this size is testament to the fact that they were living at an income level well above that where food was their dominant expenditure, as suggested by the BCKOV income estimates.

Little Saxham, was about one tenth the size of Hadleigh, a rural village of 180 people in 1381. Yet its church, completed in its current form just before the Reformation of the Church in the 1530s, is also an impressive edifice as figure 8 shows. The 180 inhabitants, theoretically living on the verge of physical subsistence were able to construct and maintain a building more than 3,000 square feet in floor area, with an interior height of at least 30 feet, and large area of glass windows. Could these communities have afforded such edifices if, as imagined by BCKOV they were part of a subsistence society where nearly 75 percent of consumption was for farm raw materials?

An even more spectacular church is that in Lavenham, built around 1486-1525, and shown in figure 9. We do not have precise population figures for medieval Lavenham from the Poll Tax returns, but its population in the fifteenth century cannot have exceeded 2,000 (by 1801 its population was only 1,776). Not only was the church large in size, with the tower 141 feet tall, but it was filled with elaborately carved stonework and woodwork, as figures 10 and 11 show. In addition to its church, Lavenham supported a substantial guildhall that survives to this day, built in 1529 by the Guild of Corpus Christi, one of four medieval guilds operating in the town.

The BCHOV income estimates for pre-industrial England suggest that incomes per capita before 1700 were at the level of much of modern day sub-Saharan Africa: Uganda (72.5% in farming), Zambia (73%), Tanzania (73.5%), Kenya (75%), Burundi (78%), Ethiopia (79%), Rwanda

Figure 7: St Mary's, Hadleigh



Source: Simon Knott, <http://www.suffolkchurches.co.uk/hadleigh1.jpg>

Figure 8: St Nicholas, Little Saxham



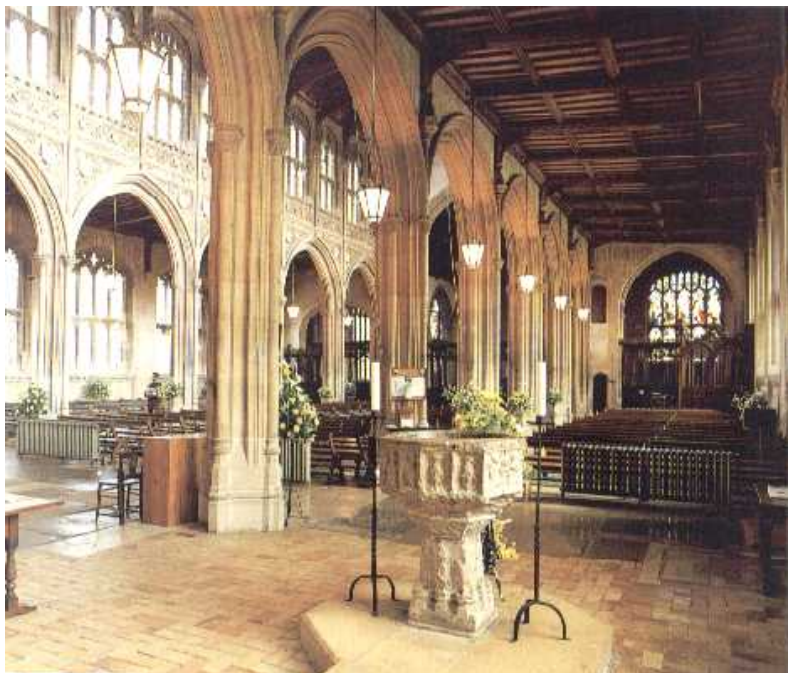
Source: Simon Knott, <http://www.suffolkchurches.co.uk/littlesaxham.htm>

Figure 9: St Peter and St Paul, Lavenham



Source: Simon Knott, <http://www.suffolkchurches.co.uk/Lavenham.htm>

Figure 10: St Peter and St Paul, Lavenham, interior details



Source: Simon Knott, <http://www.suffolkchurches.co.uk/Lavenham.htm>

Figure 11: St Peter and St Paul, Lavenham, carved wooden screen, 1530



Source: Simon Knott, <http://www.suffolkchurches.co.uk/Lavenham.htm>

Figure 12: Malawi Village, 1988.



Source: Clark, 2007b, figure 3.2.

(79%), Mozambique (81%), Malawi (83%).¹⁵ I venture the hypothesis that the typical community of 180 people, or even 2,000 people, in any of these countries would not contain any communal religious or social edifices comparable the local parish churches and guildhalls of medieval Suffolk. The aerial picture below of a typical village in rural Malawi in 1988 (figure 12), of a population likely equivalent to Little Saxham in 1381, shows no structures that would survive for more than a few years, never mind a structure of the size and permanence of Little Saxham church. England in 1350-1550 and such societies as Malawi now are based just on this physical evidence, societies at very different levels of income per person.

Conclusion

The Poll Taxes of 1379-81 offer convincing evidence that per capita income levels in England around 1379-81 were close to their level in 1800. The best estimate of the share of the population employed in farming or fishing then is only 55 percent. Even if every person of unknown occupation turned out to be employed in farming there would still only be 62 percent of the population engaged in farming 1379-82. The share engaged in farming in 1379-81 is lower than that estimated for the years 1560-79 (61%), and 1652-60 (59%) (Clark, Cummins, Smith, 2010). Taking into account the fact that England in 1381 was a net exporter of farm raw materials, while in 1817 it was a substantial net importer, the *effective* share in farming and fishing in 1379-81 declined very modestly from 54 percent to 52 percent by 1817. Late medieval England was indeed as rich as the very high levels of real day wages would suggest.

¹⁵ Farm employment shares from the International Labor Organization, : <http://laborsta.ilo.org/STP/guest>

Appendix: Parish Details, 1379-1381

Berkshire: Beenham, Bradfield, Bucklebury, Burghfield Abbots, Burghfield Regis, Coley, Crookham, Englefield, Grazeley, Henwick, Nunhide, Padworth, Purley, Purley Parva, Reading, Sheffield Bottom, Hartley Dummer, Sulhampstead Abbots, Sulhamstead Bannister, Tidmarsh, Woolhampton.

Derby: Ashford, Bakewell, Baslow, Blackwell, Bowden, Buxton, Darley, Eyam, Glossop, Tideswell, Wormhill, Youlgreave.

Dorset: Afflington, Arne, Blashenwell, Bradle, Church Knowle, Corfe Castle, Creech, Egliston, Encombe, East Holme, Kingston, Langton Matravers, Ower, Povington, Renscombe, Rollington, Tyneham East, Tyneham West, Wareham.

Essex: Chelmsford, Middleton, Rayne, Thaxted, Tollesbury, Twinstead.

Gloucester: Barnsley, Bibury, Coln St Aldwyn, Eastleach Martin, Hatherop, Kempsford, Lechlade.

Hampshire (1379): Adgestone and Kern, Afton, Arreton, Ashe, Atherfield, Barnsley, Beech Hill, Bowcombe, Brading, Brook, Broughton, Burwell, Calbourne, Carisbrooke, Chale, Chillerton, Compton, Corhampton, Crockerhill, East Hoe, East Standen and Merston, Fareham, Freshwater, Gatcombe, Godshill and Stenbury, Hardley and Yaverland, Kingston, Knighton, Liss Abbas, Meonstoke, Mottistone, Newchurch, Newtown, Newport, Ningwood, Niton, Northwood, Pan and Fairlie, Rockley, Roud, Sandown, Shalfleet, Shanklin, Shide, North Shorwell, South Shorwell, Soberton, St Helens, St Lawrence and Nettlecomb, West Standen, Stratfield Saye, Swainston, Thorley, Warnford, Watchingwell, Week, Whippingham, Whitwell, Wootton, Wroxall, Yarmouth.

Lancashire (1379): Atherton, Aughton, Bickerstaffe, Eccleston, Formby, Halsall, Hindley, Huyton with Roby, Ince in Makerfield, Knowsley, Liverpool, Lowton with Kenyon, Parr, Pennington, Rixton with Glazebrook, Scarisbrick with Hurlston, Wavertree, Westleigh, Windle.

Leicester: Ab Kettleby, Barkestone, Bescaby, Bottesford, Branston, Brentingby, Buckminster, Burton Lazars, Cold Overton, Coston, Croxton Kerrial, Little Dalby, Eastthorpe, Eastwell, Eaton, Edmondthorpe, Eye Kettleby, Freeby, Garthorpe, Goadby Marwood, Harby, Harston, Holwell, Hose, Kirby Bellars, Knipton, Long Clawson, Melton Mowbray, Muston, Nether Broughton, Normanton, Plungar, Redmile, Saltby, Saxby, Scalford, Sewstern, Somerby, Sproxtton, Stapleford,

Stathern, Stonesby, Sysonby, Thorpe Arnold, Waltham on the Wold, Welby, Withcote, Wyfordby, Wymundham.

Norfolk: Crostwight, Ridlington, Smallberghe, North Walsham, Witton, Worstead.

Stafford: Acton Trussel with Bednall, Befcote, Blymhill with Brineton, Brewood and Gunstone, Brocton, Cannock with Membris, Church Eaton, Coven, Cowley, Dunston with Drayton, Gnosall, Haughton, High Onn, Knightley, Lapley and Wheaton Aston, Levedale, Little Onn, Longnor, Marston, Meretown, Mitton, Moreton and Wilbrighton, Norbury, Otherton and Rodbaston, Pentridge, Pillaton, Rugeley, Sharesill, Sheriff Hales, Stockton and Walton, Stretton, Weston Jones, Weston under Lizard, Whiston with Bickford, Woolaston and Shredicote.

Shropshire: Aldenham, Aston Botterell, Billingsley, Bransley, Chelmarsh, Chetton, Cleobury Mortimer, Doddington, Duddlewick, Dudston, Earnwood, Eudon Burnell, Eudon George, Halesowen, Hampton, Harcourt, Highley, Hopton Wafers, Kinlet, Neenton, Rudge, Sidbury, Stottesdon, Sutton, Timberth, Wheathill

Somerset: Closworth, Hardington Mandeville, West Coker.

Suffolk: Benacre, Bramfield, Bulcamp, Buxlow, Combs, Dagworth, Euston, Great Finborough, Flixton, Gipping, Hadleigh, Haughley, Hinderclay, Ixworth Thorp, Old Newton, Pakefield, Rushford, Sizewell, Stowmarket, Thwaite, Walsham Le Willows, West Creeting, Wordwell (plus 3 other unidentified locations).

Surrey: Artington, Betchworth, Catteshall, Chiddingfold, Compton, Dorking, Farncombe, Godalming, Gomshall, Hambledon, Hurtmore, Milton, Paddington, Peper Harow, Shalford, Shere, Westcote, Witley.

Wiltshire: Chadenwych, Mere, Woodlands, Zeals.

Yorkshire (East Riding) (1379): Asselby, Balkholme, Barlby, Barmby on the Marsh, Belby, Bowthorpe, Burland, Cliffe, Cotness, Eastrington, Gardham, Greenoak, Hemingbrough, Holme on the Wolds, Hotham, Howden, Kilpin, Knedlington, Laxton, Linton, North Duffield, Owsthorpe, Riccall, Sandholme, Scarborough, Skelton, Skipwith, Thorp, Walkington, Welton, West Cottingwith with Thorganby, Yokefleet.

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