

A SAMPLING APPROACH TO HISTORY: THE ENCLOSURE OF ENGLISH COMMON LANDS, 1475-1839¹

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Using samples of charity land we estimate the amount of land subject to some type of communal control in England from 1475 to 1839. Our estimates suggest three things. First only about 20 percent of land had common rights in 1750, so that after 1750 enclosure on charity plots is overwhelmingly by Parliamentary means. Second only about four percent more charity land was common in 1600 than would be implied by the records of Parliamentary enclosure. From 1600 to 1750 there was little enclosure by individuals or by private agreements. Modern property rights predominated even in 1600. Finally only about four percent of land even in 1600 was common with potentially open access. Most of the common land even in 1600 was controlled and regulated.

Historians have long debated the timing and the mechanism of enclosure of common land in England, in part as an index of the modernization of English agriculture, and in part out of concern for the social effects of enclosure. “Common land” here refers to any land subject to some form of common control or access. Thus common includes open field arable and open field meadow which were common for only part of the year, stinted pastures, and “waste.”² “Waste” was the only type of land that was common in the modern sense of having free access, and which thus the landless had access to.³ The Parliamentary enclosure movement is estimated to have removed common rights on 22 percent of all land in the years after 1750. But historians believe much more than 22 percent of land was common in the middle ages. Gray noted of medieval

¹ The authors thank Robert Allen, John Chapman, Leigh Shaw-Taylor, and Michael Turner for comments and suggestions, without implicating them in the conclusions of the paper in any way. The authors thank Brian Harris for excellent research assistance.

² While most common land was physically open, there were also forms of common where the land was fenced as in lammas land and michaelmas land.

³ Supposedly in some cases even access to the waste was stinted.

England, for example, “Of enclosed land held in severalty...there was little.”⁴ When and how was this other common enclosed? Did it occur alongside Parliamentary enclosure, before that in the seventeenth century, or even earlier in the late middle ages? And how much access to land was lost by the poor in this process?

Chapman and Seeliger have recently given fresh impetus to the view, expressed earlier by Slater, Chambers and Mingay, and McCloskey, that large amounts of land was enclosed by private agreements and by piecemeal methods in the years after 1750, and that consequently much more than 22 percent of land was common in 1750.⁵ In a parish by parish study of Sussex they find that while there were only 32 Parliamentary enclosures, at least 101 “open field systems” existed in 1700, so that Parliamentary enclosure accounted for less than one third of all enclosures. Of the 69 systems enclosed by non-Parliamentary means, at least 55 survived until 1750 (and the other 14 may still have been operating then). Thus non-Parliamentary enclosure in Sussex seems to have occurred not before Parliamentary enclosure, but instead along with it. In only four of these 69 cases is there evidence of a formal agreement ending the system. In others the system was ended by one person buying or renting all the land, or by piecemeal enclosure of individual strips and blocks of strips with the tacit consent of the owners of the common rights. There is little evidence, however, on the areas of these open-fields not enclosed by Parliamentary. Some of them may have been quite small by 1700. Thus when Clapham open field was enclosed by agreement in 1811 it covered only 19 acres. Earlier in 1773 it covered 38 acres, but this is still a very small amount of land in a parish whose total area was 1,794 acres.⁶ In Hampshire

⁴ Gray , English Field Systems, p. 8.

⁵ See for example, Slater, English Peasantry, Chambers and Mingay, Agricultural Revolution, p. 78, McCloskey, “Enclosure,” p. 15. McCloskey estimates as much was enclosed by private agreement as by Parliamentary means.

⁶ Chapman and Seeliger, “Open Fields,” p. 90.

Chapman and Seeliger find more evidence of private formal agreements. But while roughly 15.4 percent of Hampshire was enclosed by Parliamentary means, only 2.8 percent was enclosed by agreement. Chapman and Seeliger thus conclude that “it seems highly likely that the neglected formal agreements are themselves merely the tip of a far greater hidden iceberg of eighteenth- and nineteenth-century enclosures.”⁷

Other studies have supported Wordie’s contention that private enclosure occurred before rather than alongside Parliamentary enclosure, and that consequently the seventeenth century was the great age of enclosure.⁸ Robert Allen looking at a variety of sources - Parliamentary Enclosure awards, terriers and Chancery decrees - in the heart of the open-field area of the South Midlands finds that after 1750 96 percent of enclosure was by Parliamentary act. Allen’s chronology also suggests that in the South Midlands 77-82 percent of land was common in 1575, compared to 55 percent in 1750. There was thus extensive enclosure in the south Midlands in the seventeenth century, though less than half as extensive than the later Parliamentary movement. Hodgson finds in Durham that while Parliamentary procedures enclosed 106,785 acres after 1750, private agreements and Chancery decrees enclosed only 3,964 acres. However, between 1551 and 1750 private agreements and Chancery decrees enclosed 74,999 acres. Again while only two thirds of what was enclosed later this represents a large enclosure movement in the seventeenth century.⁹

Thus the timing of enclosure is unresolved. The conclusion of Chapman and Seeliger that piecemeal enclosure, leaving no documentary trace, was the most important source of enclosure

⁷ Chapman and Seeliger, “Formal Agreements,” p. 44.

⁸ Wordie, “Chronology.”

⁹ Beresford used the terriers of glebe lands in Leicester, Buckingham and Yorkshire as another way to study enclosure in the years 1600-1730. He finds evidence of such activity, but his method makes it hard to derive any quantitative assessment of its importance.

in Sussex suggests that it will be very difficult to locate enclosure. Given the costs of trying to reconstruct the enclosure history of particular counties or areas, and the difficulty of trying to measure the amount of common land parish by parish at any given date such as 1700, there seems little prospect that the issue will be resolved within the lifetimes of any of the participants.

In this paper we try a new approach to the problem. Instead of attempting to measure acre by acre the amount of common land at any date in the 26.5 million acres of agricultural land in England, we construct quasi-random samples of individual plots of land by half centuries - 1575-1624, 1625-74, and so on – and estimate the fractions of these samples which are common.¹⁰ While such a sample reveals little about the enclosure history of any specific place or even any county, it is easy to show that even a relatively small random sample will typically reveal with close accuracy the proportion of all land which was common in each of these epochs.

A SAMPLING METHOD

Suppose we had a random sample of N plots of land in 1700 in England, where each plot was observed to be either common or enclosed. Suppose that in fact a fraction p of all plots were common land. Then on average the fraction \hat{p} of the plots observed to be common in the random sample will equal p . The best estimate of the mean fraction of land that was common in the country as a whole would be \hat{p} . But more importantly the variance of this estimate of p around the true value is:

$$\text{Var}(\hat{p} - p) = \frac{p(1-p)}{N}$$

¹⁰ The land area is the area of farms, nursery and wood from the 1888 agricultural statistics.

Since we do not directly observe p we have to also estimate this variance, and the best estimate of the standard error of our estimate around the true value is:

$$\sqrt{\frac{\hat{p}(1-\hat{p})}{(N-1)}} \quad (1)$$

This implies that even small numbers of random observations on the enclosure status of plots can produce relatively accurate information on the fraction of the land that was common as a whole. Suppose for example that the fraction of the sample observed to be common is 0.3, and samples of sizes 50, 100, 300, 600, 1000, and 1500 plots had been obtained. Then based on the above formula for the standard error we could conclude for each sample size that the true fraction of common land lay within the bounds shown in table 1 99 percent of the time. Table 1 implies that with a truly random sample as small as 600 plots of land we should be able to estimate the fraction of land in England open in any epoch to within a 5 percent margin with 99 percent confidence that the true fraction falls in that interval. With as few as 300 observations we should still be able to estimate the percentage to within 7 percent with the same degree of accuracy.

The sample of plots we use below, however, is not fully random. It oversamples some counties, from parishes with greater population densities, and in various other ways. The solution to the problem of over sampling is just to re weight the observations in estimating the average fraction of land which is common at any time so that each county and parish type gets a weight proportional to its area in estimating the average percentage of land common. Thus if $fcom_{it}$ is the fraction of the land in any plot i that is common we can construct a measure of the average fraction of land common in the country as

$$fcom = \sum_i f_i fcom_i$$

where f_i is a weight for each observation designed to correct for over sampling (for the simple average the weight is $1/N$ for each observation). The weights are constructed so that

$$\sum_i f_i = 1$$

For the period 1675-1724, for example, we have 1,594 observations on the fraction of land common in individual plots. If these were weighted equally to form a grand average of the amount of land enclosed each observation would get a weight of .00063. Because of the different frequency of sampling relative to the farm area of different types of parishes, however, an observation in Twickenham, Middlesex gets a weight of only .00002, while a plot in Newcastle parish in Northumberland gets a weight of .016, 800 times as much.

The cost of adopting such a weighting scheme is that it increases the potential sampling error associated with the estimate of the overall fraction of land common. The variance of the estimated fraction common will be

$$Var(fcom) = \sum_i f_i^2 Var(fcom_i)$$

This variance will be minimized when the ϕ_i for each observation are the same. The more unequal the weights the higher the variance.

The plots in our sample are not of equal size. Thus of the 1,594 observations circa 1700, the plots size ranged from 0.04 acres to 1,620 acres. Another way to estimate the average fraction common would be to sum up the common area across plots in each period and divide it by the total area of all plots. Thus

$$fcom = \frac{\sum com_i}{\sum area_i}$$

where com_i is the area of common land in plot i , and $area_i$ is the total area of plot i , and This estimator, however, gives a huge weight to large plots and almost no weight to the smallest plots. If large plots and small plots tend to have the same fraction common then such an average will be expected to be the same as the one we obtain, but will have a much higher sampling error. We show below that the fraction of a plot observed to be common is independent of the plot size. Thus the average percent common in 1700 by our preferred method is 26.3, and by the alternative 27.7.¹¹

THE CHARITY COMMISSION DATA

Our sample of observations on the amount of common is from 18,944 plots of charity land observed some time in the period 1475-1839. The core of this sample was constructed to measure both average rents in England in these years, and the rent gains that came from enclosure.¹² But once constructed it became clear that the sample could serve also to measure the timing of enclosure.

The information we have on charity land was generated mainly from the published report of the a detailed and elaborate investigation into the activities of charitable trusts in England and Wales called The Charity Commission or The Brougham Commission which Parliament launched in 1818. This initial inquiry eventually lasted for nineteen years, and the 32 reports published contain 26,987 pages of material. 28,880 endowments for charity were reported upon. These

¹¹ If smaller plots have a higher variance of percent common then it would make sense to give larger plots more weight in making an estimate of the average share common. But in 1700 the standard deviation of the

charities held 443,000 acres of land, about 2 percent of the agricultural land in England and Wales.¹³ The commissioners would typically report on the current status of land owned by charities. But they would often give some history of the land also, because they were interested in checking that the assets had been preserved over time, and because they needed to check what the original intention of the donor was. Thus they often report details about land from the will of the donor, or details of the property evident from legal documents created to effect the land transfer.

The procedures of the board in investigating each specific charity were generally the same and were as John Wrottesley, one of the commissioners, described in 1835:

Having taken the abstract of the original deed or will, the first point is to trace the legal estate into the then existing trustees, and that completes one part of the report. Then we examine into the property, the tenants, the rents at which the property is let....and also examine the leases of the property.

The next point is the application of the revenue.¹⁴

Land described with terms such as “a close,” “inclosed,” “a croft,” “a field,” or “a paddock,” was counted as enclosed.¹⁵ We hence use the fact that while common land was land subject to any kind of common rights in England common land was overwhelmingly unfenced or “open” to identify “enclosed” land. Thus the following plots recorded in the ninth report were counted as enclosed: “a close, containing, by estimation, two acres” (1670 deed, p. 8), “a field, called Wester

fraction common on the smallest plots, those under 5 acres, was 0.42, which was also the standard deviation of the largest plots, those over 50 acres.

¹² See Clark, “Commons Sense.”

¹³ See Clark, “Reports.”

¹⁴ Quoted in Tompson, Charity Commission, p. 136.

¹⁵ Land described through use such as an “orchard” or “garden” was counted as enclosed as long as it was a minor share of the area of a holding.

Twitchen, containing, by estimation, three acres and a half” (1822 description, p. 39), “a pasture called Ridgeway, inclosed among other lands of Mr. Pettin,” (1721 survey, p. 479), “all those lands and grounds lying in sundry closes” (1622 indenture, p. 192). As can be seen from the sample of descriptions of land in the seventeenth century from the ninth report of the charity commissioners reproduced in table 8 in the appendix the great majority of land counted as enclosed was described explicitly as “closes.” Large single plots of ground with names were also counted as enclosed even if not explicitly called a close or a field. Thus “all that parcel of land, commonly called Ellis Ridings, alias Rudd’s, containing by estimation 12 acres” (1668 indenture, p. 312) was classified as enclosed.

Land described with such terms as “common land,” “land in the common field,” “land in the common meadow,” “a cowgate,” “a common right” was classified as common. Thus the following plots from the ninth report were classified as common: “nine acres of land, lying in the common fields of Stanwell” (1670 indenture, p. 312), “a meadow, lying in the common mead of Sturminster” (1721 survey, p. 478). Land described using more ambiguous descriptions such as “an acre of land situate in South Field” (1649 indenture, p. 222) was also classified as common, as was land measured in units typical of the open fields (yardlands, oxgangs).¹⁶ Where common grazing land was measured in “cowgates,” “beastgates,” cattlegates,” “horsegates,” and “sheepgates” we get estimates of the average size of these units in acres from the cases where such land was converted into private holdings on enclosure.¹⁷

¹⁶ Classifying all land measured in oxgangs and yardlands as common undoubtedly means that here we are including some common land.

¹⁷ In lowland England there are 17 cases where the area of a cowgate is thus given in the charity records, averaging 1.31 acres, while for upland England in 22 cases the average area of the cowgate was 2.34 acres. Almost all the sheepgates were from the upland areas, and in eight cases overall the average area was 1.27 acres.

We also identify as a separate category land that was “common waste”, defined as common land which was used only for rough grazing and fuel gathering, and where generally all members of the village had access. This is identified for plots differently than was regular common, because it would not be listed in the description of lands in indentures or deeds before an enclosure of the waste occurred. To identify this common waste we use the fact that we are able to follow the history of plots from their original purchase or donation to a later observation some time after 1818. Common waste shows up in these later observations as land that was added to plots upon an enclosure.

When stinted pastures or waste was enclosed the lord of the manor typically received some of the land in compensation for his rights over the soil. The actual share received was a matter of negotiation, but has been quoted as typically 1/12 to 1/16 of the land. To correct for this missing area we have inflated the areas of common pasture and common waste recorded in charity plots by 7.8 percent.

Table 8 in the appendix shows how each plot in Devon and Middlesex in the ninth report of the Charity Commission where details were given for seventeenth century was classified when the data was coded. For the 34 plots described in sufficient detail the fraction of common land is 0.53. While slightly tighter or looser standards on coding the descriptions would change this by a point or two, the amount of error introduced here by the ambiguities of coding will not be enormous. The enclosed nature of land in Devon and its common nature in Middlesex shines through.

As can be seen at any time some plots are described with insufficient detail to calculate the share of the land that is common. Mainly this is because the land is described in very terse ways: “lands,” “10 acres of land,” “a messuage and tenement,” “a farm,” “parcels of land.” As table 2

shows the fraction of land lacking enclosure information is somewhat greater in earlier years. By the early nineteenth century only 21 percent of plots are of uncertain enclosure status, but before 1800 this is 26 percent. The reason for this decline seems mainly to be that over time the deeds, indentures, and wills describing the land at earlier dates were more likely to have been lost. But the number of plots without specific descriptions also varies by region. Thus in the open-field region of the Midlands plot descriptions generally include their enclosure status. Even in the seventeenth century we have information on the enclosure status of 84 percent of the plots in the Midlands. In the South East in contrast, particularly in East Anglia, the fraction of plots whose enclosure status is uncertain is much higher.

As long as common and enclosed land is equally likely not to have its nature identified then the missing observations do not create a difficulty for the sampling method used here. Fortunately we can show that the missing plots must have the same amount of common land as the included plots using the plots the rental value per acre we have for many of the plots. All through the period 1600 to 1839 common land rented on average for about 33 percent less per acre than enclosed land, as is shown in Clark, “Commons Sense”. We thus estimate the coefficients of the regression

$$\begin{aligned} \text{Log}(\text{RENT PER ACRE}) = & \mathbf{b}_0 \text{Log}(\text{AREA}) + \mathbf{b}_1 \text{PDEN} + \mathbf{b}_2 \text{FCOM} + \mathbf{b}_3 \text{DNINFO}_{1600} \\ & + \mathbf{b}_4 \text{DNINFO}_{1750} + \mathbf{b}_5 \text{DNINFO}_{1800} + \sum_i \text{DCNTY}_i + \sum_t \text{DDEC}_t \end{aligned}$$

AREA is the plot area, PDEN the parish population density in 1801, FCOM is the fraction of a plot which was common land (set to 0 if the common status is unknown), DNINFO₁₆₀₀ is a dummy variable which is 1 if the plot has an uncertain enclosure status between 1600 and 1749,

and $DNINFO_{1750}$ and $DNINFO_{1800}$ are the same dummies for the years 1750 to 1799 and 1800 to 1839. $DCNTY$ is a dummy variable for each county, and $DDEC$ is a dummy variable for each decade. The variables $AREA$, $PDEN$, $DCNTY$ and $DDEC$ are just controls for the variation of rents across decades, counties, parishes, and plot types.

The estimated value of β_2 , the coefficient on $FCOM$, is -0.39, implying that common land rents for only 67 percent of the value of enclosed land. If the land whose enclosure status was unknown was all common in 1600, then the estimated value of β_3 should also be -.39. In fact the estimated values of β_3 , β_4 , and β_5 are -0.11, -0.11, and -0.03. This implies that the share of the land which was of uncertain enclosure status that was common in each period was as is shown in Table 3. We shall see below that these numbers are consistent with the estimated fractions common of the plots that we can observe directly. In the years 1600-49, and 1800-39 the fraction of the missing plots estimated as common is very close to the fraction for the plots whose enclosure status is observed. In 1750-99 the fraction of the missing plots estimated to be common is higher than for the observed, but not significantly so. The missing observations are not going to bias the sample in any important way.

THE BIASES IN THE RAW CHARITY SAMPLE

The sample has five significant biases from random, but only three of these require any correction in estimating the fraction of common land. First multiple observations occur more frequently in a single parish than would be expected by chance, because records were preserved in some parishes and not others, and a single charity would often own multiple pieces of land. We correct for this by giving each parish observed in each period an equal weight overall no matter how many individual observations come from this parish.

Second some areas are underrepresented. Figure 1, for example, shows the location of observations by parish in the years 1675-1724. As can be seen even from the figure the data under samples from the north, the south west, and the south central. Figure 2 shows similar data for 1575-1624. Again the under sampling of the north is very evident. We correct for this by giving observations in each county a weight proportional to the county agricultural area in 1888. Thus the northern and western observations are given a higher than average weight.

Third the charity plots are drawn more frequently than would be expected from parishes which had Parliamentary enclosures. Thus 43 percent of land in England was in parishes without a Parliamentary enclosure, but only 28 percent of the observations are from such parishes. Most of this over sampling is a consequence of the charity land being more concentrated in the Midland enclosure region and less concentrated in areas like Cornwall which had little Parliamentary enclosure and will be corrected by the county weights. But to make sure that the overall average proportionately weights parishes with and without Parliamentary enclosures we further weight the observations so that parishes in each county are weighted proportional to the area of land in each county which never experienced a Parliamentary enclosure. We also estimate separately the proportion of land common over time in parishes with and without Parliamentary enclosures.

The last two types of bias turn out to need no correction. First because there were more charitable endowments where there were more people, there are more observations per acre from more densely populated parishes. While 27 percent of the land in England (but probably less than 27 percent of farmland) was in parishes with less than one inhabitant per 10 acres in 1801, only nine percent of observations by parish in the years before 1800 are from these least densely populated parishes. Similarly parishes with more than one person per two acres were only nine percent of the land area, but 18 percent of charity observations. But this over sampling of more

densely populated parishes will have only effect the fraction of land estimated to be common if more densely populated parishes have more or less common land. When we run a regression for the years before 1800 on the fraction of plots observed to be common as a function of the parish population density controlling for county and for whether the parish had a Parliamentary enclosure we find no significant relationship between parish population density and the fraction of land common. Thus we do not make any correction for this over sampling.

Finally charity plots were smaller than the average land holding. Though plots described as “farms” held by charities in the years 1820-39 were about as large as the average farm holding in the 1851 census, much charity land was held as smaller plots rented to farmers and not occupied as a farming unit themselves. If smaller plots of land tended to be more enclosed or more common than average plots then the Charity data might misrepresent the overall situation in England. Fortunately again there is no correlation in any period between plot size and the fraction of land that was common. If we regress the fraction of a plot that is common in the years pre-1800, and 1800-39 on both the plot area and the fraction of the parish still to be enclosed by Parliamentary means. This gives the results:

$$1800-39 \ FCOM = .039 - \frac{0.0000018AREA}{(.000027)} + \frac{0.49FPARLENC}{(.012)}$$

$$pre-1800 \ FCOM = .092 + \frac{0.0000062AREA}{(.000041)} + \frac{0.60FPARLENC}{(.015)}$$

where *FCOM* is the fraction of any plot that was common, *AREA* is the area of the plot in acres, and *FPARLENC* is the fraction of the land in the parish where the plot is located that was enclosed by Parliamentary means subsequent to the date of the observation. The numbers in brackets are the standard errors of the coefficient estimates. As can be seen the association between plot size and the fraction common is both quantitatively and statistically insignificant

once we control for the amount of common land in a parish later enclosed by parliamentary means. In the years before 1800 a plot of size 1,000 acres would typically have 0.6 percent more common land than a plot of 1 acre. Thus there is no need to correct for this bias in the charity sample, and by not correcting we will get less sampling error in our estimates.

Apart from the tendency to over sample some counties and parishes with greater population density, which we correct for as above, the charity plots can be shown to be likely representative of the typical piece of agricultural land in England. Thus the charity plots sample in a very representative way from the different soil types – clay, loam, sand, gravel and chalk - present in England. John Chapman has elsewhere argued that charity land was less likely to undergo private non-parliamentary enclosure than land in general, but it can be shown that this hypothesis is not consistent with the data in the charity sample.¹⁸

THE PROPORTION OF COMMON LAND

Table 4 shows the numbers of observations by 50 year periods, the numbers of counties with observations, and the calculated proportion of common land estimated for the country as a whole by weighting the observations in various ways to control for the various types of over sampling. As can be seen the unweighted sample produces an estimated proportion of common land that is not dramatically different from the sample weighted by county area and the proportion of parishes which experienced a Parliamentary enclosure. Table 5 shows the 95 percent confidence limits around the estimated fraction common controlling for parish type with our preferred set of weightings.

¹⁸ See Chapman, “Charities” and Clark, “In Defense.”

The conclusions this data implies are quite stark. The first is that in the years 1700 and later when we generally have coverage from the whole country little common land is observed beyond that which would be expected from the records of Parliamentary enclosure. 21.5 percent of farmland in 1675-1724 is estimated to be common, while Parliamentary methods enclosed an estimated 21.9 percent of land in these same parishes. Even taking into account sampling error, there was only one chance in 40 that the amount of common in England circa 1700 exceeded 24 percent. The second conclusion is that the amount of common land in 1600 is estimated to be greater than in 1750, but by only a modest margin. 26.6 percent of charity land is common in 1600 compared to 19.5 percent in 1750, a 7.1 percent decline. In 1600, however, we do not have any information from Cheshire, Monmouth or Northumberland. We can control for these omissions to some extent by comparing the average amount of common observed with the amount that would be predicted from the records of Parliamentary enclosure. The charity observations in 1600 come from parishes which on average had somewhat more Parliamentary enclosure than those of 1750. Thus there is only an estimated 3.4 percent more common in these plots than would be predicted from Parliamentary enclosure. Given the margins of error we cannot be precise about the exact amount of common land on charity plots in 1600 relative to what Parliamentary enclosure would predict. But there is only one chance in 40 that there was more than 8.5 percent more common on charity land than would be predicted from later Parliamentary enclosure.

Earlier than 1600 we have few observations, and thus much more possibility of large sampling errors. In 1500 and 1550 we do consistently find more common land on the charity plots than was subsequently enclosed by Parliament in the same parishes. But this number is still only in the region of 5-10 percent.

ENCLOSURE BY PARISH TYPE

We can also examine with the charity data the timing and extent of enclosure separately in parishes which had no Parliamentary enclosure ever, and those which had at least one Parliamentary enclosure. Chapman and Seeliger would predict that the parishes with no Parliamentary enclosure would have significant amounts of common land in the years before 1750 that were later enclosed by non-parliamentary means. Table 6 shows the amount of common land separately by each type of parish, weighting as in table 5.

For the 43 percent of the country which lay in parishes and townships with no recorded Parliamentary enclosure, we find that in 1750 only an estimated 5.6 percent of land had common rights. The estimated proportion common also fell by only 0.8 percent between then and 1830, though sampling error means that the fall may have been as great as 2.5 percent, or may have been nothing. The proportion of land common is estimated to be somewhat higher in 1600, but the estimate is still only 8.6 percent. Even though Tate ascribes no Parliamentary enclosure to these parishes, it is possible that some of the land here was indeed enclosed by Parliamentary means. For the area ascribed to Parliamentary enclosures in other parishes sometimes exceeds by a considerable margin the area of the parish, so that such enclosures may have included land from other parishes. Thus the charity data suggests that all the way from 1600 to 1830 only about four percent of the land in the 43 percent of England without Parliamentary enclosure was being

enclosed piecemeal or by Parliamentary means. Chapman has suggested that charity land would be slow to enclose by these means because of its unclear legal status. But that would still imply that at best 8.6 percent of land in these parishes enclosed between 1600 and 1830, adding little to the total of land enclosed for the country as a whole.

As would be expected we see lots more common land in the parishes enclosed by Parliament. An estimated 40 percent of the land in such parishes is common in 1600. The fraction of land common in these parishes in 1600 is not any more than would be expected from Tate's summary of Parliamentary enclosure. Thus the implication is that there was little common land in these parishes in 1600 beyond what was later enclosed by Parliament. We have to be cautious with this interpretation, however, since in the years 1700 to 1800 we find 3-5 percent less common land in these parishes than would be predicted from Tate. This may be again simply because enclosures Tate ascribes to one parish in fact covered parts of other parishes which were not listed. It may also be because the area listed as enclosed included old enclosure that was reallocated in the enclosure process. We have, for example, observations on 60 parishes that Tate suggests should be entirely common land at this time. In a full 40 of these 60 cases the charity observations show at least some enclosed land. Thus Tate reports the area enclosed by Parliament in 1810 in Dullingham, Cambridge to be 5% greater than the area of the parish. Yet the Charity Commission reports show clearly that as early as 1590 there were substantial enclosed fields in the parish.¹⁹

If we compare the amount of common observed in this class of parishes in 1750 with 1600, using the amount we would expect from Parliamentary enclosure, there is an estimated decline of 5.8 percent in common land in these parishes, about a fifth of the decline that occurs in the Parliamentary enclosure period. The implication is that in parishes with Parliamentary enclosure

¹⁹ Parliamentary Papers, "31st Report of the Charity Commission," pp. 133-135.

there was modest enclosure in the years 1600-1750 before the Parliamentary enclosure movement, but little or no enclosure alongside Parliamentary enclosure in the years after 1750.

ENCLOSURE BY REGION

Figure 5 shows the results of another exercise like that conducted in table 6, where this time we have split the country into the twelve Midlands counties which had the highest fraction of land enclosed by Parliament – Bedford, Berkshire, Buckingham, Cambridge, Huntingdon, Leicester, Lincoln, Northampton, Nottingham, Oxford, Rutland, Yorkshire – East Riding – versus the rest of the country. These counties represent just under a quarter of the farmland area of England. The estimated proportion of land common at each date back to 1575-1624 is shown for the Midlands counties, and for the rest of the country, along with the 95% confidence intervals. Our best estimate for the Midlands in 1600 is that only 53 percent of land even then was common. Once we correct for the proportion of the parishes we happen to sample from which were later enclosed by Parliament we see little sign of much non-Parliamentary enclosure in the years 1600 to 1750 in either region. Our best guess is that four percent of land was enclosed between 1600 and 1750 in the Midlands, and 4.5 percent in the rest of the country.

WASTE ENCLOSURE

Above we have lumped together enclosures of all different types. From the perspective of social historians the enclosure that mattered more than others was that of the village “waste.” Other types of common rights – grazing rights on the arable fields after harvest, on the common meadow after mowing, and on pasture areas – were generally carefully limited and defined. Though these lands were cultivated in common for part of the year, the rights of access were

tradable private rights. The only land the landless poor had hope of access to was this common waste. The charity sources allow us to also estimate what happened to this type of land. From the point of view of economists open access commons are also the most interesting. Economic theory predicts that the value of open access commons to users will generally be quickly driven to zero. Consequently in any well functioning community access rights to common areas will be limited to maximize the value of the resource to the users, unless the land is of such marginal value that it is not worth the costs of limiting access rights.

Table 7 shows the percentage of common waste observed in each period, for parishes with and without Parliamentary enclosures. The share of this potentially free access common is always estimated to be small. Overall in the years before 1725 about four percent of the land is such common. The standard error of this estimate is small enough that we can 99 percent confident that there was no more than five percent common waste in England in either 1750 or even in 1600. This implies that only about 1.1 million acres of what was later farmland in England was free access common in the years before 1725. Given that the population of farm laborers and their families in England in the years before 1750 was probably in excess of two million people, the amounts of common waste per person were thus always fairly small. The implication is that from fairly early on communities restricted access to common lands so that access rights became tradable properties. Again property rights in English agriculture are very modern and “rational” by 1600.

CONCLUSION

There are three main conclusions. First in the years of Parliamentary Enclosure, between 1750 and 1840, there is very little additional enclosure by private means on charity plots. Second while there was private enclosure in the years 1600 to 1750 it was limited. Our best guess is that no more than one acre was enclosed by these means from 1600 to 1760 for every four acres later enclosed by Parliamentary means. The third is that even as early as 1600 the amount of common waste to which even the formally landless poor had access to was small. No more than five percent of all land was such common access waste even then.

These findings have several implications. Firstly it implies that the form of property rights in most of English agriculture was “modern” as early as 1600. Second it implies that, at least after 1600, the major period of institutional change in English agriculture was at the height of the Parliamentary Enclosure phase in 1760 to 1820. The third implication of this paper is that sampling methods, which historians are generally loathe to pursue in a formal manner, can provide quite powerful results with relatively modest amounts of information. The advantage of such formal sampling over the informal sampling that historians employ through presenting exemplary cases for the trends they infer is that the reliability of the sample can be subject to test, and adjustments can be made if it is non-representative.

The finding that there was little private enclosure in the period 1600-1750 accords with evidence on the likely profitability of enclosure presented in Clark, “Common Sense.” There it was argued that enclosure in the years 1750-1840 was always at best a modestly profitable activity, whose costs would overwhelm the gains unless wages and the interest cost of capital was low, while land rents were high. The interest cost of capital went through a long decline between 1650 and 1740, from about 5.5 percent to 3.5 percent. The rental value of land relative to wages

rose substantially between 1740 and 1800. Thus the prediction of that paper was that enclosure would generally not be profitable in the years 1600 to 1740, but profitable in the period 1740 to 1840. The record of enclosure uncovered here accords reasonably well with those predictions. The amounts of enclosure carried out between 1600 and 1750 is very modest. Thus enclosure was an institutional change seemingly induced by real cost changes. The close connection between the onset of enclosure and the Industrial Revolution arose in part from the great increase in English population after 1760, which drove up the value of land relative to wages.²⁰

APPENDIX: PLOT DESCRIPTIONS FOR 1600-1699 IN THE NINTH REPORT

²⁰See Clark, "Commons Sense."

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**TABLE 1: 99 PERCENT CONFIDENCE INTERVAL SAMPLING FROM A
POPULATION WITH A MEAN OF 0.3**

Sample size	Lower bound	Mean	Upper Bound
50	.12	.3	.48
100	.18	.3	.42
300	.23	.3	.37
600	.25	.3	.35
1,000	.26	.3	.34
1,500	.27	.3	.33

Source: Equation (1).

TABLE 2: CHARITY PLOTS WITH INFORMATION ON VALUES

Region	1600-1799 Numbers of Land Values	1600-1799 Percentage lacking enclosure information	1800-39 Numbers of Land Values	1800-39 Percentage lacking enclosure information
North	763	28	2,727	20
Midlands	1,382	16	6,040	12
South-East	1,163	36	4,733	31
South-West	1,100	27	3,397	26
All	4,408	26	16,897	21

Source: Land Values Data Set. See Clark, “Reports.”

TABLE 3: IMPLIED SHARE OF MISSING OBSERVATIONS WHICH IS COMMON

Period	Share of plots <u>with</u> information which were common	Implied Share of plots <u>without</u> information which were common		
		Minimum	Mean	Maximum
1600-1749	26	17	29	40
1750-1799	16	13	29	45
1800-1839	7	2	7	13

Source: See text.

TABLE 4: FRACTION COMMON ESTIMATED IN DIFFERENT WAYS

Period	Charity Observations	Counties Represented	Fraction of land common (unweighted)	Fraction of charity land common – weighted by parish and county	Fraction of charity land common – weighted by parish, county, and Parliamentary Enclosure
1475-1524	61	9	32.5	32.8	34.8
1525-1574	129	31	37.0	35.9	32.5
1575-1624	428	39	33.0	27.4	26.6
1625-1674	912	41	27.8	26.7	24.3
1675-1724	1,594	42	26.3	23.4	21.5
1725-1774	1,527	42	22.3	21.5	19.5
1775-1824	6,791	42	7.9	7.7	7.5
1825-1839	7,498	41	6.9	5.2	5.3

Notes: The three ridings of Yorkshire are counted as distinct counties. The county missing in 1825-39 is Westmoreland, in 1625-74 Northumberland. The counties missing in 1575-1624 are Cheshire, Monmouth and Northumberland. The average date of observations in the 1775-1824 period is 1813.

Source: Enclosure Data Set.

**TABLE 5: THE 95 PERCENT CONFIDENCE INTERVAL FOR THE AMOUNTS OF
COMMON LAND**

Period	Estimated Percent Common	Standard Error Of the estimate	Lower Bound	Upper Bound	Percent of these parishes enclosed by Parliament
1475-1524	34.8	7.6	20.0	49.7	24.9
1525-1574	32.5	4.4	23.9	41.1	27.8
1575-1624	26.6	2.6	21.5	31.8	23.2
1625-1674	24.3	1.7	21.1	27.6	22.1
1675-1724	21.5	1.3	19.1	24.0	21.9
1725-1774	19.5	1.1	17.3	21.7	20.7
1775-1824	7.5	0.6	6.3	8.7	7.8
1825-1839	5.3	0.9	3.4	7.1	3.0

Note: The true fraction common in each period will be found between the minimum and maximums 95 percent of the time.

Source: Enclosure Data Set. Tate, "Doomsday."

TABLE 6: PARLIAMENTARY ENCLOSURE BY PARISH TYPE

Period	NO PARLIAMENTARY ENCLOSURE		PARLIAMENTARY ENCLOSURE		
	Parishes	Common	Parishes	Common	Enclosed by Parl.
1475-1524	15	11.2	25	52.7	43.4
1525-1574	30	8.1	69	51.0	48.6
1575-1624	111	8.6	210	40.2	39.9
1625-1674	217	8.0	428	36.7	37.4
1675-1724	332	7.7	779	31.9	37.6
1725-1774	328	5.6	736	30.0	35.5
1775-1824	724	3.8	1,504	10.2	13.6
1825-1839	893	4.8	1,944	5.7	5.3

Source: Enclosure Data Set. Tate, "Doomsday."

TABLE 7: COMMON WASTE BY PARISH TYPE

Period	Percent of Land Common Waste	Percent of Land Common Waste	Overall Percent Common Waste	Standard error of estimate in percent
1475-1524	0.0	1.8	1.0	0.9
1525-1574	3.4	4.1	3.8	1.5
1575-1624	0.6	4.5	2.8	0.8
1625-1674	0.4	7.0	4.1	0.6
1675-1724	1.6	6.2	4.2	0.4
1725-1774	1.3	5.2	3.5	0.4
1775-1824	0.2	1.3	0.8	0.1
1825-1839	0.4	0.1	0.3	0.2

Source: Enclosure Data Set.

TABLE 8: THE CODING OF SOME PAGES FROM THE NINTH REPORT

Page	Year	Area	Description	Share Common
<u>Devon</u> (pp. 6-109)				
7	1624	101.0	“lands in the parish of Hartland”	-
8	1670	2.0	“a close”	0.00
9	1657	23.3	“tenement”	-
13	1674	7.0	“two quillets of land...and one piece of marsh”	-
16	1678	7.2	“three closes”	0.00
20	1632	8.5	“closes”	0.00
39	1672	3.5	“messuages, lands and tenements”	-
48	1690	1.5	“one sixteenth part of a tenement”	-
50	1615	25.6	“messuage and tenement and 10 closes”	0.00
70	1689	60.0	“messuage and tenement”	-
71	1689	13.0	“closes”	0.00
75	1629	26.0	“an estate”	-
80	1677	20.0	“three messuages and tenements”	-
81	1651	5.0	“garden and two closes”	0.00
88	1620	55.0	“messuage or tenement”	-
88	1620	16.7	“messuage or tenement”	-
93	1631	3.0	“garden and close”	0.00
102	1619	3.0	“two meadows or closes”	0.00
108	1659	5.0	“one fourth part of a tenement”	-
109	1667	10.5	“two closes”	0.00
<u>Middlesex</u> (pp. 175-324)				
179	1662	19.3	“premises”	-
185	1677	11.7	“nine acres of land in the common fields, and two acres in the marsh”	1.00
192	1622	30.0	“all those lands and grounds lying in sundry closes”	0.00
196	1612	3.1	“orchard and garden .. one acre being in the field there called Long Field, and 2 A. & 1 R. lying in two pieces in the common field there”	0.86
199	1620	3.6	common right attached to houses	1.00 ^a
201	1672	5.3	“two acres of land,...one acre and a half of meadow in Wild Marsh, ...one acre of land in Dung field, and two acres of land in the same field called Locker Croft, and five roods of land in long field”	0.62
206	1640	1.9	“close” plus common right	0.61 ^a

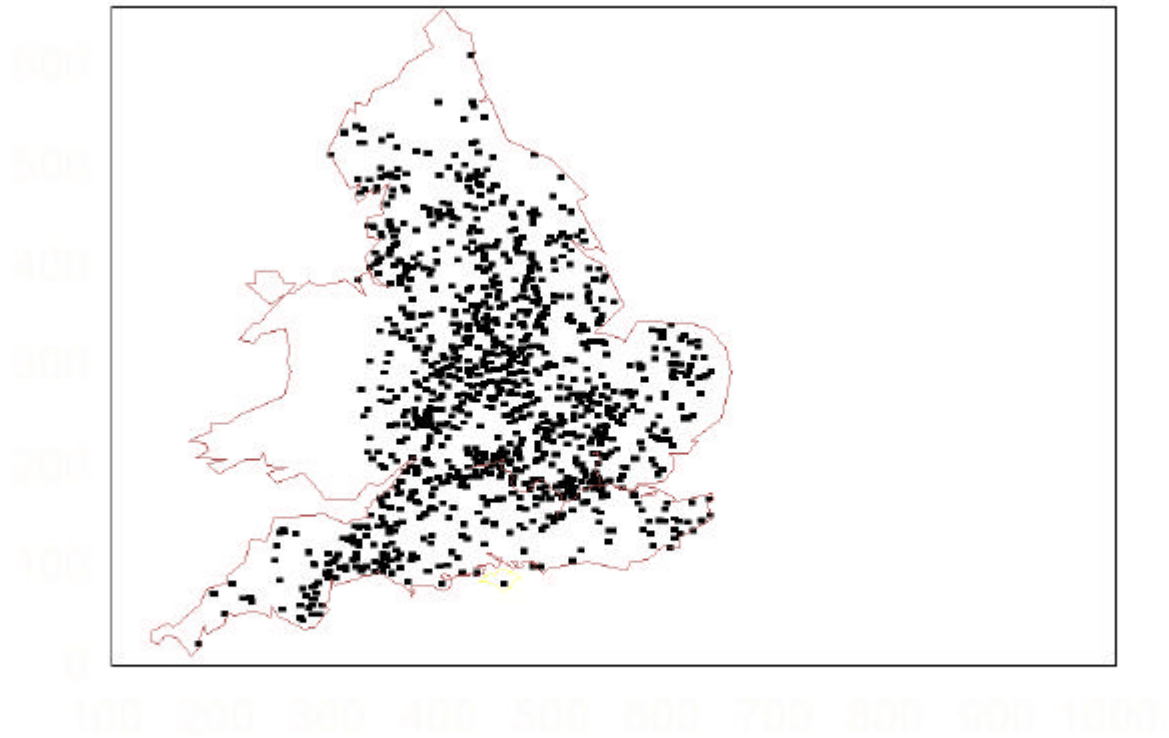
222	1649	1.0	“an acre of land situate in South Field”	1.00
223	1693	4.1	“nine or ten acres of land, lying dispersed in the common fields”	1.00
225	1692	0.5	common right	1.00 ^a
226	1677	9.2	“six acres of land, lying dispersed in Boothwood and Sipson fields”	1.00
226	1680	1.0	“one acre of arable land lying in a field called Boomer field, in a shott called Withey Stubbs”	1.00
229	1618	8.0	“orchard and garden ...containing an acre and an half, and 6½ acres of arable and meadow land lying dispersed in the common fields of Norwood”	0.81
230	1631	20.5	“one great close”	0.15 ^a
230	1686	7.0	“four acres of land in Hayes field, ..., 1½ acre in Osterley Park, and 1½ acre in Breterish haw, which was then an open field”	1.00
249	1648	4.0	“four acres of meadow, lying in More Fields”	1.00
251	1695	0.1	common right attached to house	1.00
259	1690	11.2	“closes of pasture and meadow”	0.00
277	1679	3.5	“four acres in the common field of Laleham”	1.00
277	1679	2.0	“three acres in the common field of Feltham”	1.00
284	1696	-	“glebe lands”	-
291	1662	7.0	“one acre of land in Warfield, one half acre in the little Mead, an ayte.. with a small pightle near adjoining, three roods in Watson’s close, three roods in Mark hole, three roods in the close of Henry Blagne, the tenter plat in the Wick, and two acres of land in Wickfield”	1.00
298	1678	3.0	“close”	0.00
309	1625	56.7	“several closes and lands”	0.50
312	1668	12.0	“all that parcel of land, commonly called Ellis Riddings”	0.00
312	1670	9.0	“nine acres of land lying in the common fields”	1.00
313	1691	24.0	“lands at Egham”	-
313	1691	6.8	“11 acres of arable or meadow land, lying in the common fields”	1.00

Notes: ^aArea of common land revealed by later allotments made to the charities in respect of land or houses.

“-“ in the last column means that the share of the plot common could not be approximated.

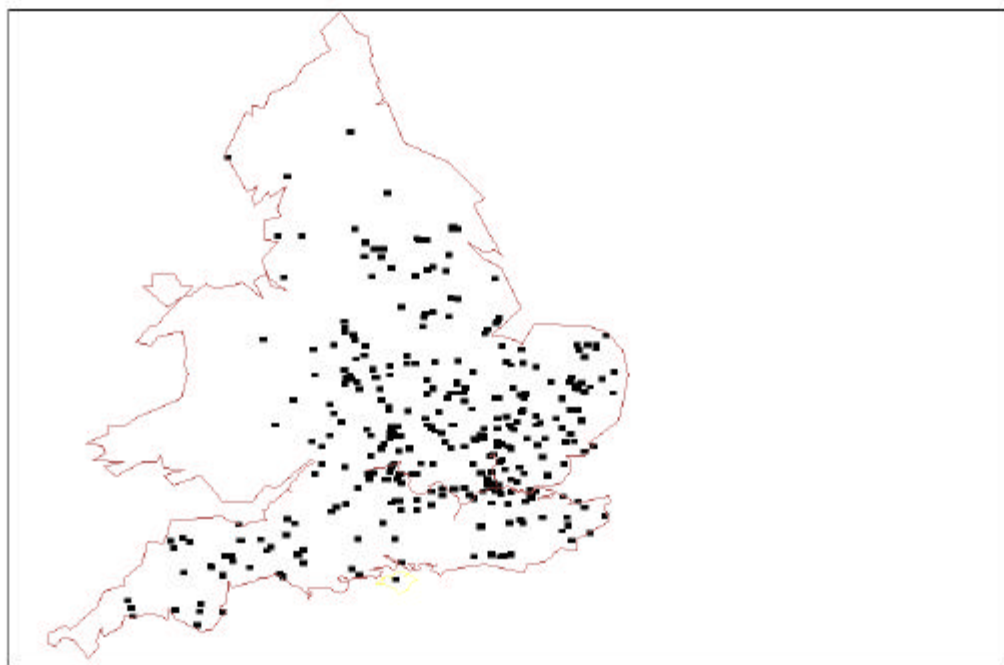
Source: Parliamentary Papers, “Ninth Report of the Charity Commission.”

FIGURE 1: THE GEOGRAPHIC DISTRIBUTION OF THE SAMPLE, 1675-1724



Note: The graph portrays the locations of 1,082 parishes and townships with observations of plots in this period.

FIGURE 2: THE GEOGRAPHIC DISTRIBUTION OF THE SAMPLE, 1575-1624



Note: The graph portrays the locations of 533 parishes and townships with observations of plots in this period.

**FIGURE 3: CONFIDENCE LIMITS ON THE PERCENTAGE OF LAND COMMON IN
A SAMPLE OF PARISHES**

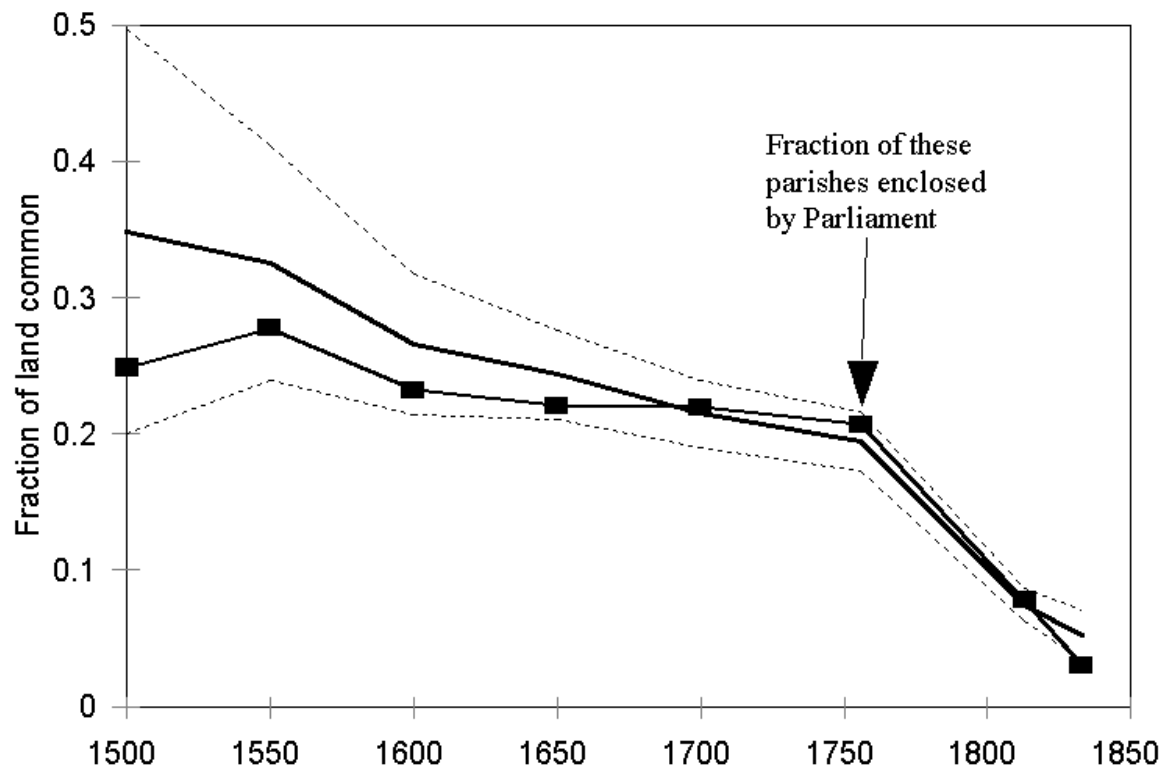


FIGURE 4: COMMON LAND BY PARISH TYPE

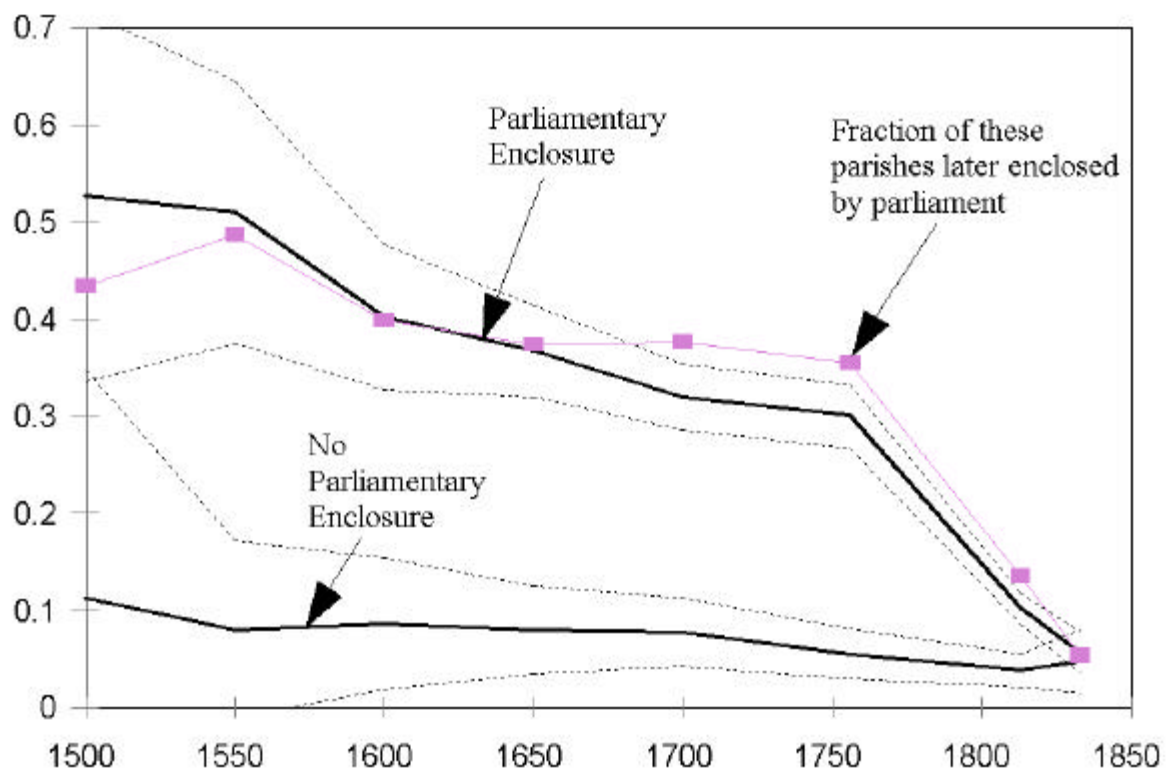


FIGURE 5: COMMON LAND BY REGION

