The price of freehold land and the interest rate in the seventeenth and eighteenth centuries

By ROBERT C. ALLEN

During the seventeenth and eighteenth centuries, English land was bought and sold at prices that exceeded its economic value. At least that is the consensus among the leading historians of the landed classes. Habakkuk established the position:

Since the supply of land coming to the market in the eighteenth century was small and was still sought for social reasons, it was relatively unremunerative purely as an investment. About 1730 it was estimated that four per cent was a good gross return on the purchase of land—the net return after allowing for taxation and maintenance may well have been less than three per cent—and this was at a time when the return on mortgages was from four to five per cent. A wealthy merchant or lawyer, a distinguished soldier or sailor, was prepared to incur a loss of income of one or one-and-a-half per cent in order to acquire an estate and establish himself as a landowner. It was the fee he paid for admission into the charmed circle of English landed society.  

Clay endorsed the conclusion: 'To realize the dream of establishing one's family on land meant accepting a significantly lower rate of return from capital.' In his recent review of the literature on landownership, Beckett repeated this view:

Once the price rose to nearly thirty years purchase, as it did in the second half of the eighteenth century, the rate of return was only about three-and-one-third per cent gross, or two-and-a-half per cent net. Money borrowed on the London money market was seldom obtained for less than four per cent so that anyone choosing land rather than money as an investment was clearly doing so for non-economic reasons.  

Clearly? The issue is not as simple as these quotations suggest. To understand why, we have to first define terms.

When property was sold in early modern England, its price was expressed as the current rack rental (full commercial) value multiplied by the 'years purchase'. Table 1 shows the history of years purchase from 1600 to 1814. This multiplier declined from 20 to a low of 15 in the mid-seventeenth

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1 I would like to thank Greg Clark, Stan Engerman, John Hartwick, Joanna Innes, Peter Lindert, Frank Lewis, Jeannette Neeson, Patrick O'Brien, Angela Redish, Michael Turner, and Jeff Williamson for helpful discussions and comments, Susan Ghan for research assistance, and Frank Flynn for assistance with programming and data analysis. I am grateful to the Social Science and Humanities Research Council of Canada for financial support. All errors are my own.

2 Habakkuk, 'English land market', p. 171.

3 Clay, 'Price of freehold land', p. 185.

Table 1. The interest rate and years purchase, 1600–1814

<table>
<thead>
<tr>
<th>Years purchase</th>
<th>Gross return (%)</th>
<th>Net return (%)</th>
<th>Mortgage interest rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600–1624</td>
<td>20</td>
<td>5.00</td>
<td>4.63</td>
</tr>
<tr>
<td>1625–1646</td>
<td>20</td>
<td>5.00</td>
<td>4.63</td>
</tr>
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<td>1646–1650</td>
<td>15</td>
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</tr>
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<td>17</td>
<td>5.88</td>
<td>5.51</td>
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<td>21</td>
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<td>1721–1730</td>
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<td>1731–1743</td>
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<td>3.57</td>
<td>2.82</td>
</tr>
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<td>1744–1762</td>
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<td>1795–1804</td>
<td>27</td>
<td>3.70</td>
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<tr>
<td>1805–1814</td>
<td>28</td>
<td>3.57</td>
<td>2.82</td>
</tr>
</tbody>
</table>

Notes: Periods: the break at 1624 reflects the reduction in the legal maximum interest rate; the other breaks follow Clay, 'Estate management', p. 173, and 'Price of freehold land', p. 174. Gross return: the reciprocal of years purchase. Net return: gross return less an allowance for estate administration and taxes. I assumed the allowance was 0.375 per cent before 1690 and 0.75 per cent after. See text for an explanation. Interest rate: See text.


century, then increased to a high of 33 after the Seven Years War, and remained in the high 20s to 1814. The reciprocal of years purchase equals the gross rate of return to land in the Habakkuk and Beckett quotations. The net rate of return equals the gross rate minus taxes and the costs of estate administration. The difference amounted to 0.5-1.0 per cent in the eighteenth century and was considerably less before the imposition of the land tax in the late seventeenth century.

Table 1 also shows the mortgage interest rate. It was always greater than the net return to land. There are two reasons, however, why the existence of that premium is not sufficient to conclude that land was overpriced. First, land was appreciating in value. That benefit to landownership was not included in the gross or net rate of return and must be allowed for to determine the economic return to land. Any allowance will reduce the gap between the net return and the interest rate, thereby undermining the conclusion that land was overpriced. This possibility has been recognized occasionally but then dismissed as negligible without any explicit calculation of its importance. Second, land was a safer investment than mortgages. Much has been written about how the equity of redemption made it safe for landowners to mortgage their property. That is true, but one corollary needs to be emphasized—it was difficult in the eighteenth century for

5 Clay, 'Marriage', p. 508.
creditors to foreclose on defaulted mortgages. Who would have paid very much for the mortgage of a bankrupt duke? The insecurity of mortgages was reflected in their return—normally it was 0.5-1.0 per cent higher than the yield on consols. No one would suggest that consols were overpriced throughout the eighteenth century. Clearly, the greater riskiness of mortgages needs to be considered before it is concluded that land was overpriced.

The disparity between the return to land and the interest rate was much greater in the first half of the seventeenth century. The gross return to land was 5 per cent and the net return at least 4.5 per cent. The interest rate was 10 per cent before 1625 and 8 per cent from then until 1651. No one has argued that seventeenth-century land purchase was affected by an even greater 'social' demand for land than during the eighteenth century. Instead, according to Habakkuk, land was the principal long-term asset available. The interest rate applied mainly to short-term personal debt (although such mortgage lending as occurred was also at that rate). By the eighteenth century, there were several new, attractive, long-term financial assets—government debt, East India Company shares, mortgages—so land no longer commanded a premium, and the net return to landowning came into closer alignment with other interest rates. It is not immediately obvious, however, why the introduction of new long-term assets should have reduced the spread between long- and short-term returns, which is what happened.

This paper has two aims. The first is to develop a simple model of the price of freehold land. The model will show the relationship between years purchase, the mortgage interest rate, the risk premium on mortgages vis-à-vis real estate, and the rate of appreciation of land values. By applying the model to seventeenth- and eighteenth-century data, we can then measure the effect of these variables on the price of land and test whether land was trading at a price that exceeded its economic value. An essential ingredient of these calculations is the rate of appreciation of land rental values. The second aim of the paper is to present a time series of the rack rental value of farm land in the south midlands between 1450 and 1850.

I

In discussions of the seventeenth- and eighteenth-century land market, the 'price of land' means the 'years purchase' by which rack rental values were multiplied to get purchase prices. What determined the number of years purchase? Like all previous writers, I presume that it was determined by the supply and demand for land. The question is how to model their interaction. The usual approach is to treat the existing owners as the potential suppliers who varied the amount of land they were willing to sell as its price changed. In figure 1, this source of supply is represented by the supply curve S. Existing landowners desirous of more property and people owning

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6 Habakkuk, 'Rise and fall, II', pp. 208-10, discusses the financial affairs of Lord Ashburnham and illustrates the difficulties of a lender in collecting interest, let alone the principal, from mortgagors in default in the early eighteenth century.

7 Ashton, Economic history, p. 28.

8 Habakkuk, 'Long-term rate of interest'.

no land but willing to buy on the right terms were the demanders. In figure 1, their demand is represented by the curve D. The price of land adjusted to clear the market. P, the price, is determined by the intersection of D and S in figure 1. The price alters as the demand or supply (D or S) changes.9

While this view of the land market cannot be faulted on logical grounds, it is a complicated model that does not lend itself readily to disentangling the various determinants of the changing price of land. We can simplify the analysis by introducing two other considerations. The first is that the total supply of land in England was fixed—the possibility of augmenting the supply in response to high land values was limited enough to be negligible. This assumption is unexceptionable. Sf in figure 1 represents the total, fixed supply of land.

The second assumption is that landowners who chose not to sell at the current price were implicitly choosing to retain—in effect to buy—their land at that price. In most real estate markets, this proposition would also be unexceptionable. In eighteenth-century England, however, strict settlement meant that land was involuntarily kept off the market. This is a complication we will shortly explore, but it is convenient to begin by positing a free market for land. In that way the effect of settlements on land values will be clear.

Figure 1. Determinants of the price of land

Figure 2. Determinants of the price of land

9 This paragraph and fig. 1 are representations of the model of the land market in Clay, 'Price of freehold land', p. 179, and Habakkuk, 'Rise and fall, II' and especially Habakkuk, 'Rise and fall, III', pp. 215-7.
We begin then by assuming that landowners who did not sell their land were willing to pay the market price to keep it. Consequently, their demand for their own land equalled the total supply $S_t$ minus what they were willing to sell $S$. This demand curve is shown in figure 2 as $D_o$. The total demand for land $D_t$ equalled $D_o$, the demand of existing owners for their own land, plus $D$ in figure 1, the demand of existing owners for more land and of nonowners for land. $D_t$ is shown in figure 2. The intersection of $D_t$ and $S_t$ determined the price of land $P$. By construction, this price will always be the same as the price determined by the intersection of $D$ and $S$ in figure 1.

There are two reasons why figure 2 simplifies the analysis of the land market. First, the figure clarifies the essential point that in a free market with fixed total supply the price of land was solely determined by demand. Supply played no role because it was unchanging. Second, in order to understand the price of land, we need no longer be concerned with the amount of property on the market at any time. Instead we can concentrate on the various motives for owning land and measure their effects. We can distinguish two motives—economic and social. Since we can be specific about the economic demand for land, we shall begin with it.

When land was bought for economic reasons, it was bought as an investment. Hence the price was the present value of the future net income it generated. We can imagine that net income was composed of two parts. The first was the continuance of the current rack rental value (net of taxes and administrative costs) indefinitely into the future. The second was the appreciation (or depreciation) of that rental income due to inflation, enclosure, or other improvements in farming. As with any present value calculation, the discounting is done with the interest rate of an equally risky investment. Let $t$ be time, $R$ be the current net rack rental value, $a$ be the anticipated rate of appreciation in that value, $i$ be the mortgage interest rate, $r$ be the risk premium on mortgages vis-à-vis land, and $P$ be the purchase price of the land that yielded $R$. The variables are then related as

$$P = \int_{0}^{\infty} e^{at}R e^{(i-r)t} \, dt = R \int_{0}^{\infty} e^{(a-i+r)t} \, dt$$  \hspace{1cm} (1)

The integral is finite so long as $a - i + r < 0$. In that case, equation (1) integrates to

$$i - r - a = \frac{R}{P} = r_n$$  \hspace{1cm} (2)

where $r_n$ is the net rate of return to buying land.

We want to relate equation (2) to years purchase. Notice that years purchase $Y$ equals the reciprocal of $r_g$, the gross return to buying land.

$$Y = \frac{1}{r_g}$$  \hspace{1cm} (3)

Taxes and administration, $g$, account for the difference between $r_g$ and $r_n$. 


\[ r_g = r_n + g \]  \hspace{1cm} (4)

Adding \( g \) to both sides of equation (2) and remembering equation (4), we derive

\[ i - r - a + g = r_n + g = r_g. \]  \hspace{1cm} (5)

Combining equation (3) with equation (5) gives the equation that relates years purchase, the interest rate, and the rate of appreciation of rental values.

\[ Y = 1/(i - r - a + g) \]  \hspace{1cm} (6)

Equation (6) tells us the price \( Y \) that investors would pay for land solely for economic motives. That price depended on the mortgage interest rate, the risk premium, the expected rate of appreciation of land values, and the cost of estate administration. If the land market were free and if economic motives were the sole motives for buying land, then demand would be insatiable, i.e. infinitely elastic, at the level given by equation (6). Consequently, the price of land in the market would also be given by that equation. Clay was judicious to insist that

the rate of interest and the price of land are clearly related phenomena, but I am not meaning to imply either that the fall of the one and the rise of the other happened at the same rate, or that the two necessarily moved inversely at all times during the period under review. I am certainly not implying a direct causal relationship between them.\(^{10}\)

Equation (6) shows how risk and expected rental inflation complicated the inverse relationship between the interest rate and the price of land even in this simplest of markets.

How would social motives vary the result? Think of the quantity of land as fixed and the existing owners and potential buyers in a queue. Each person has declared how much he is willing to spend and the number of acres he is willing to buy at that price. The queue is arranged so that the first person is willing to bid the most and the rest are in order of decreasing bid. People can appear more than once if they are willing to pay different amounts for different numbers of acres. The auctioneer works down the queue giving people the land they are willing to buy until the fixed supply is exhausted. Everyone has to pay the same price for land and that price is the amount the last purchaser is willing to pay. The price, in other words, is determined by the marginal bid. This is the price shown by the intersection of \( D_i \) and \( S_p \) in figure 2. If the only motive for buying land were economic then everyone would be willing to bid the price given by equation (6). That price would be the marginal bid and the order in the queue would be indeterminate.

Social motives could affect the price of land only in so far as they affected the marginal bid. Figure 3 shows three possibilities. The horizontal line \( YE \) represents the economic demand for land at the price \( Y \) given by equation

\(^{10}\) Clay, 'Marriage', p. 508, n. 1.
(6). \( N_1, N_2, \) and \( N_3 \) represent three possible configurations of the amounts people are willing to spend on land for non-economic reasons. If \( N_1 \) were the social demand, no one's social motives for owning land would be strong enough to induce them to pay as much for land as economic considerations warrant. In that case, the price of land would equal its economic value. If \( N_2 \) were the social demand, some people would be willing to pay more for land than its economic worth, but there would be so few such people that the price of land at the margin would still equal only its economic value. If \( N_3 \) were the social demand, however, social considerations would be so strong that the price would exceed its economic value. In this case, social motives determine the price.

![Price of land and quantity of land graph]

Figure 3. Social demand and the price of land

Presumably Habakkuk, Clay, and Beckett believed that figure 3 with social demand \( N_3 \) described the eighteenth-century land market. As they suggested, the test of that view is to compare the actual price of land with the price warranted solely by economic considerations. Equation (6) could be used to compute that price. Alternatively, the test is to compare the net rate of return to buying land (including rental appreciation) with the return on an equally risky asset. In this formulation equation (5) ties the variables together.

Before undertaking the test, however, we must ask whether the operation of the legal device of strict settlement influenced the price of land. In the first half of the seventeenth century, much land was settled but the entail could be broken readily with a common recovery. Settlements at that time probably did not remove much land from the market. The situation changed significantly with the adoption by settlers of trustees to preserve contingent remainders. This was a development of the second half of the seventeenth century. Perhaps half of English land was held under strict settlement by \( 1750 \). The life tenants in possession of that property could not sell the land if they wished, and in that sense the land market was not free. In that case,
Do in figure 2 cannot be computed as \( S_f \) minus \( S \). How must our conclusions be modified?

If strict settlement prevented people who were willing to sell land from doing so, then the widespread adoption of strict settlement in the eighteenth century might have been responsible for the rise in the price of land shown in table 1. There is certainly a hint of that possibility in the literature on the land market. Under some circumstances, strict settlement would have had that effect. Figure 4 shows how. The length of the horizontal axis is \( S_f \), the total land in England. \( S_s \) is the amount of settled land and \( S_n = S_f - S_s \) is the non-settled land. \( D_s \) is the demand for land (both settled and non-settled) arising from the owners (life tenants in possession) of settled estates. This demand increases from zero as the curve extends left, away from the right axis. \( D_n \) is the demand arising from everyone else. This demand increases from zero as the curve extends right, away from the left axis. If there were no strict settlements, the price of land would be \( P \). This price is necessarily the same as the price in the free land market shown in figure 2. At this price, life tenants in possession of settled estates would want to own less land than \( S_s \). Since they are prevented from sale, the market price of land would be higher, \( P^* \), and determined by the intersection of \( D_n \) and \( S_n \).

But the strict settlement did not necessarily have this effect on the price of land. If \( S_n \) were to the right of the intersection of \( D_s \) and \( D_n \), then life tenants in possession of settled estates would want more land than was settled on them. In that case, they would buy additional, unsettled land, and the strict settlement would have had no effect on the land market. Alternatively, suppose that the demand for land from non-settlers derived solely from economic motives, then \( D_n \) would be perfectly elastic and the price of land would equal its economic value irrespective of the impact of the strict settlement on supply.
Figure 5 illustrates this possibility. Here the demand from non-settlors $D_n$ is purely economic, while the demand from owners of settled lands includes a substantial social component. As drawn, the price of land is determined solely by economic considerations, and owners of settled lands also own considerable non-settled property.

Figure 5 is important for three reasons. First, it shows again that the price of land is determined by the marginal bid. Thus, even if there were powerful non-economic motives for owning land among the life tenants of settled estates, these motives would not raise the price of land as long as there was a large enough 'fringe' of potential buyers governed by economic motivations. Second, I argued previously that we could decide whether the price of land was influenced by social motives by comparing its actual price with the economic value implied by equation (6). If the result of that comparison shows land to have been selling at its economic value, figure 5 assures us further that the institution of the strict settlement was not raising the price of land. Third, it will be clear by the end of the paper that English real estate traded at its economic value. English and Saville report that 'almost all estates had some land unsettled at any time: land that had been left deliberately out of the last settlement, or land that had been bought since the last settlement was made.'\(^{11}\) Since many owners of settled estates, thus, owned non-settled properties, figure 5 is a plausible representation of the English land market.

II

To perform the tests described, we need to compute the price of land with equation (6). To do that we need to know $i$, $r$, $g$, and $a$. The latter is

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\(^{11}\) English and Saville, *Strict settlement*, p. 53. See also Clay, 'Property settlements', p. 23.
the rate of appreciation of rental values. It can be computed from a time series of land rents. There is no published series covering this whole period, so one was constructed. This series was intended to be specifically for the south Midlands, which is the focus of a broader study. However, the index appears to be generally representative of the more fertile parts of England and Wales. The series is based on 1678 rent quotations drawn from estate surveys, rentals, and valuations—both in manuscript and as summarized in the Victoria County Histories and the secondary literature. The aim was to measure commercial or rack rents, so rents that appeared to be customary and non-economic were eschewed. Entry fines were amortized and added to quit rents.

Three natural districts were distinguished, depending on the character of the soil, and the rent quotations were assigned to the appropriate district. Open and enclosed rents were distinguished. Average rents for open and enclosed farms on each type of soil were computed at 25-year intervals and the overall average rent of the south Midlands was then computed as a weighted average of these series where the weights reflected the total acreage of the natural districts and the proportion of each district enclosed at each quarter century. Table 2 shows the results. The average rent of farm land in the south Midlands increased from about 6d. per acre in the late fifteenth century to over 30s. per acre in the mid-nineteenth—a sixty-fold increase.

One reason to have confidence in the rent series is that its essential features agree with the generalizations of informed contemporaries and with the rent series already available to historians. Thus Fitzherbert’s famous, early sixteenth-century discussion of enclosure presumed that open-field land let at 6d. an acre and enclosed land at 50 per cent more. Table 2 indeed shows open field arable renting at about that price in the late fifteenth and early sixteenth centuries. Enclosed land in the pasture district, which was the only one where there was any enclosing (and even there not much), was letting at a bit more than Fitzherbert thought.

Kerridge abstracted rents for new lettings for several estates in Wilts for the period 1510-1660. In the Herbert and Seymour estates, land let at about 6d. per acre in the first decades of the sixteenth century. By the middle of the seventeenth century, the rent had risen to nearly 5s. per acre. Kerridge’s rent series thus begins at the same level as open field rents in the early sixteenth century shown in table 2, and grows like those series, although at a slightly slower rate.

The political arithmeticians who estimated English national income sometimes estimated the rental of the country. In the late seventeenth century, King valued the arable, meadow, and pasture together at 7.33s. per acre. This is a bit lower than the 9.75s. shown in table 2. The

12 The districts are called the ‘pasture’, ‘light arable’, and ‘heavy arable’ depending on the most profitable use of the land. Allen, ‘Enclosure’, describes the districts.
14 Kerridge, ‘Movement’.
15 King, Two tracts, valued all the land in England and Wales together at 6s. 2d. per acre, but that figure is not comparable with those in table 2 since the kingdom as a whole contained large expanses of unproductive land with very low valuations.
Table 2. Rent in the south midlands, 1450–1849 (shillings per acre)

<table>
<thead>
<tr>
<th></th>
<th>Natural districts</th>
<th>South midlands average</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pasture open</td>
<td>Light arable open</td>
</tr>
<tr>
<td></td>
<td>enclosed</td>
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<tr>
<td>1450–1474</td>
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<td>1475–1499</td>
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<tr>
<td>1825–1849</td>
<td>33.82</td>
<td>29.98</td>
</tr>
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</table>

Notes: The ‘south midlands average’ rent is a weighted average of the rents in the other columns. For each natural district in each quarter century, an average rent was calculated as a weighted average of the open and enclosed rents where the weights were estimates of the shares of the district open and enclosed. It was necessary to interpolate some missing rents. The south midlands average is a weighted average of these district averages, where the weights are the shares of the south midlands lying in each district.

Source: See text.

discrepancy arises in the valuation of pasture and meadow, which King put at 9s. per acre where our figures show enclosed land in the pasture district to be renting for 17.6s. King’s valuation of arable at 5.83s. conforms to the appraisals of open field arable in table 2.

Young also estimated the rental of England on the basis of the results of his tours of the late 1760s. In the northern tour he appraised the country at 10s. per acre and in the eastern tour at 14s., numbers that bracket the value for 1750–74 shown in table 2. In the 1790s Pitt appraised England and Wales at 12.5s. per acre, while Beeke proposed 14s. per acre as a more reasonable figure. These appraisals included heath, moors, and mountains, so the valuation of arable, meadow, and pasture was implicitly of the order of 16.64s., a number that agrees closely with our average valuation for 1775–99.

Caird also estimated the rental of England on the basis of his mid-nineteenth-century tour. He appraised the arable, meadow, and pasture of England at 27.17s. per acre. He had confidence in the number since subsidiary calculations showed it was consistent with assessments for the

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16 Young, *Six months tour*, IV, p. 341, and *Farmer’s tour*, IV, p. 456, valued most of the country as though it were good-quality arable or grass—he made scant allowance for unproductive waste.


18 \(16.64 = 14 \times 7.33/6.16\). 7.33s. and 6.16s. are King’s valuations of arable, meadow, and pasture, in England in the first instance, and England and Wales as a whole, in the second.

property and income tax in 1842-3. Caird's finding is within 13 per cent of our estimate for 1825-49.

Further confirmation of table 2 comes from the famous Norton, Trist and Gilbert rent series. This series shows an average rent of 19.1s. for 1781-99, 22.14s. for 1800-24, and 26.43s. for 1825-49. These numbers are of the same order as ours but rise less rapidly.

None of the differences among these rent estimates lead to different conclusions about the historical issues we will explore. Indeed, a rent series made by piecing together previously published material would lead to the same conclusions as those derived from the series in table 2.

Great precision cannot be claimed for that series (or the other rent estimates), however, for there are several ways in which the rent quotations are not directly comparable. First, some farmers, in particular open-field farmers, also paid tithes. Inclusion of tithes would raise the rental value of open-field land relative to enclosed land. Second, some farmers, again mainly open-field farmers, had access to commons whose implicit acreage is ignored in stating the 'rent per acre' of the farm. Inclusion of commons would lower the rental value of open-field land. Third, beginning in the late sixteenth century, farmers had to pay poor rates and after the mid-seventeenth century they usually had to pay the land tax. These taxes should be added to their rents. Fourth, some farmers were responsible for repairs to structures, which should also be added to their rent. This was a more common practice with the copyholds and beneficial leases typical before the eighteenth century than it was afterwards.

Adjusting for these variations in taxation and lease terms would have a perceptible but small impact on the rent series. Suppose we ask what adjustment should be made to the rent of enclosed land in the nineteenth century to make it comparable to open land in the early sixteenth century. Recently enclosed land c. 1806 was renting for £100 per 100 acres of farm land (in round numbers), and tithes and taxes amounted to a further £20. In open land at the same time, tithes and taxes amounted to £35 per 100 acres.

Adjusting for the difference in tithes and taxes lowers the rental value of enclosed land to £85 per 100 acres ($100 + 20 - 35 = 85$), i.e. 15 per cent less than its nominal rent.

Offsetting this reduction are two adjustments to the value of open-field land. The first is the acreage of commons which amounted to 4-5 per cent of the land in open villages in the south midlands. The second is repairs to buildings, which were probably a heavier burden to farmers in the sixteenth century. The magnitude of this expense was small, however. Young

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20 Norton, Trist, and Gilbert, 'Century'.
21 The average for 1825-49 excludes the problematic returns for 1827 and 1836.
22 Thompson, 'Enquiry', also presented rent series based on estate records covering the first half of the nineteenth century. His rents are consistently lower than table 2, Caird's estimate, and the Norton, Trist and Gilbert series.
23 See Clay, 'Estate management', pp. 224-7 for a discussion of some of the ways in which changes in the terms of leases affect the interpretation of the rent.
24 Computed from Parkinson, Rutland and Huntingdon.
25 The acreage varied from 1 per cent to 2 per cent in predominantly arable areas to an average of 6 per cent in areas where grazing was the most profitable use of the land. Allen, 'Enclosure'.

estimated it to equal 1-3 per cent of the rent c. 1770 and to be equally divided between landlord and tenant.\footnote{Young, \textit{Six months tour, IV}, pp. 341, 359, and \textit{Farmer's tour, IV}, pp. 455-62. Beec, \textit{Observations}, p. 20, estimated repairs to be 4.9 per cent of rent. An equal division of expenses between farmer and landlord is supported by the surveys in Parkinson, \textit{Rutland}, pp. 26-7, and \textit{Huntingdon}, pp. 34-6. These returns show landlords responsible for repairs in about half of the villages, tenants in about a quarter, and with the responsibility shared in the remaining quarter. The same proportions characterize both open and enclosed villages.} Using these adjustments increases the value of open-field land by roughly 5 per cent. Lowering the value of enclosed land in the nineteenth century by 10 per cent \((15 - 5 = 10)\) would make it comparable (in terms of the burden of taxes and the terms of leases) with open land in the sixteenth century. While there is scope for refining the secular measurement of rents, adjustments of this order are too small to affect the calculations we will undertake.

III

In table 3 the values of the variables in equation 6 are displayed, as well as the implied number of years purchase. Before considering the results, several remarks about the constituent variables are in order.

The history of the mortgage interest rate was pieced together from several sources. Before 1650 it was taken to equal the legal maximum rate.\footnote{Habakkuk, \textit{Long-term rate of interest}.} Clay reports the rate was 6 per cent in the third quarter of the century,\footnote{Clay, \textit{Marriage}, p. 508.} and I have adopted that rate for 1650-89. Note, however, that the legal maximum was higher during the Commonwealth, and Habakkuk suggests mortgages were available at 5 per cent after the Restoration.\footnote{Habakkuk, \textit{Long-term rate of interest}, p. 33, n. 3.} Credit conditions were variable in 1690-1703 but often very tight and there is some evidence of government borrowing, which was not restricted by the legal maximum, crowding out mortgage debt. For this period, I assumed the interest rate was at the legal maximum of 6 per cent. Interest rates for the rest of the period are based mainly on the records of Coke of Norfolk.\footnote{Parker, \textit{Coke}, pp. 30, 133.} The rates he paid are consistent with the discussions of credit conditions and scattered quotations in financial histories of the period.\footnote{Habakkuk, \textit{Long-term rate of interest}, p. 33, n. 3.} It should be noted that some periods exhibited considerable variety in credit conditions. Moreover, credit rationing was extreme in 1795-1814,\footnote{Ashton, \textit{Economic fluctuations}, pp. 92, 96, 98, Dickson, \textit{Financial revolution}, pp. 471-3, Habakkuk \textit{Rise and fall, I}, p. 201.} so that the legal maximum interest rate (5 per cent) shown in table 3 understates the cost of finance.

For the eighteenth century the difference between the net and gross returns to land was taken to be 0.75 per cent in view of the comments of Beckett and Clay.\footnote{Williamson, \textit{Capitalism}, pp. 161-84.} Before then the gap was less because there was no land tax. I have assumed the difference was 0.375 per cent, half the eighteenth-century value.

Land was a safer investment than mortgages and so offered a lower rate of return. I have allowed a risk premium of 0.75 per cent, which is the

Table 3. The predicted and actual value of freehold land

<table>
<thead>
<tr>
<th>Interest rate (%)</th>
<th>Administration (%</th>
<th>Risk premium (%)</th>
<th>Rental increase (%)</th>
<th>Predicted years purchase</th>
<th>Actual years purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>g</td>
<td>r</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600-1624</td>
<td>10.00</td>
<td>0.38</td>
<td>0.75</td>
<td>4.39</td>
<td>19</td>
</tr>
<tr>
<td>1625-1646</td>
<td>8.00</td>
<td>0.38</td>
<td>0.75</td>
<td>0.42</td>
<td>14</td>
</tr>
<tr>
<td>1646-1650</td>
<td>8.00</td>
<td>0.38</td>
<td>0.75</td>
<td>0.42</td>
<td>14</td>
</tr>
<tr>
<td>1651-1664</td>
<td>6.00</td>
<td>0.38</td>
<td>0.75</td>
<td>0.43</td>
<td>19</td>
</tr>
<tr>
<td>1665-1689</td>
<td>6.00</td>
<td>0.38</td>
<td>0.75</td>
<td>0.37</td>
<td>19</td>
</tr>
<tr>
<td>1690-1703</td>
<td>6.00</td>
<td>0.75</td>
<td>0.75</td>
<td>0.37</td>
<td>18</td>
</tr>
<tr>
<td>1704-1713</td>
<td>5.50</td>
<td>0.75</td>
<td>0.75</td>
<td>0.51</td>
<td>20</td>
</tr>
<tr>
<td>1714-1720</td>
<td>5.00</td>
<td>0.75</td>
<td>0.75</td>
<td>0.51</td>
<td>22</td>
</tr>
<tr>
<td>1721-1730</td>
<td>4.50</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>24</td>
</tr>
<tr>
<td>1731-1743</td>
<td>4.00</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>27</td>
</tr>
<tr>
<td>1744-1762</td>
<td>4.25</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>25</td>
</tr>
<tr>
<td>1763-1772</td>
<td>3.50</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>31</td>
</tr>
<tr>
<td>1772-1783</td>
<td>4.50</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>24</td>
</tr>
<tr>
<td>1785-1794</td>
<td>4.50</td>
<td>0.75</td>
<td>0.75</td>
<td>1.07</td>
<td>29</td>
</tr>
<tr>
<td>1794-1804</td>
<td>5.00</td>
<td>0.75</td>
<td>0.75</td>
<td>1.96</td>
<td>33</td>
</tr>
<tr>
<td>1805-1814</td>
<td>5.00</td>
<td>0.75</td>
<td>0.75</td>
<td>1.96</td>
<td>33</td>
</tr>
</tbody>
</table>

Notes: Predicted years purchase calculated from $y = \frac{1}{(i+g-r-a)}$. See text for an explanation of $g$, $r$, and $a$.

Sources: The interest rate and actual years purchase are from table 1.

average difference in the yield of mortgages and consols. This procedure assumes that freehold property was as secure an investment as British government debt.

When Habakkuk discussed the impact of rising rents on land values, he remarked:

There is little evidence available how people at various points in the sixteenth and early seventeenth centuries expected income from land to move, or whether they had any general expectations on the subject; nor do we know enough about the actual course of income to obtain some clue from this source.

We still lack evidence on the first point, but we now know a good deal about the second. I have assumed that people projected their recent experience into the future and have used the average rental value of land in the south midlands to compute such expectations. Usually, I have used the annual rate of change over the previous quarter century. Thus, table 2 shows that the average rental value of land in the south midlands was 16.39s. per acre in 1775-99 and 26.64s. in 1800-24, which implies a 1.96 per cent per annum growth rate over a 25-year period. In table 3 I have applied this value to both 1795-1804 and 1805-14. A uniform rate of growth was assumed over much of the eighteenth century, and the rental increase for 1600-24 was computed over the previous half century. This is not a sophisticated model of expectation formation, but then the geometric progression was still a university subject.

Table 3 shows the number of years purchase implied by the variables in the table and contrasts these predicted values with the actual years purchase.

Ashton, Economic history, p. 28.

Habakkuk, 'Long-term rate of interest', p. 37.

See Ball, Mathematics, and Hartwick, 'Ratios' for a discussion of this subject.
The two series are plotted in figure 6. The agreement is remarkably close. For 1600-24 the value predicted by economic motives was 19 years, almost identical with the 20-year purchase multiplier that Habakkuk concluded was the norm.\(^{37}\) Table 3, however, suggests a different reconciliation between the gross return to buying land (5 per cent) and the interest rate (10 per cent). Using equation 5, most of the gap was accounted for by projecting forward the annual rate of appreciation in rental values over the preceding half century (4.39 per cent per annum). Alternatively, in terms of equation (6), capitalizing the expected increase in rental values accounts for the high number (20) estimated for years purchase.

Twenty years was a high capitalization factor once the price revolution was over and land stopped appreciating. For 1625-50, equation 6 predicts that years purchase would drop to 14, and by the end of the period this fall had in large measure occurred. Indeed, one wonders whether it had not earlier—the value of 20 for years purchase shown for 1625-46 is based on Habakkuk’s judgement of the usual value for the era. It is not founded on actual transactions for those specific years as is the value of 15 for 1646-50, which is based on Clay’s investigations.\(^{38}\) In any event, both the fall in the interest rate and the cessation of rent inflation caused a collapse in the capitalization of land. The end of inflation was the more important cause.

Actual years purchase increased from a trough of 15 in 1646-50 to a peak of 33 in 1763-72. This increase was almost wholly due to the fall in the rate

\(^{37}\) Habakkuk, ‘Long-term rate of interest’.

of interest since the other parameters changed very little. Thereafter, there 
was some decline in years purchase. This decline was caused by the rise in 
the rate of interest brought on by government borrowing during the American 
and French wars. Notice, however, that the number of years purchase did 
not decline by as much as the rise in the interest rate would suggest. When 
the interest rate was 5 per cent in 1714-20, 23 was the typical number of 
years purchase, but in 1794-1814 it was 27 or 28 years. The reason land 
held its purchase price was that rental values were again inflating. Anticipated 
future increases were capitalized so years purchase did not fall. Consequently, 
we must set aside Clay's judgement that 'between 1790 and 1813 . . . it seems 
doubtful whether on estates that were wholly or mainly agricultural the rate 
of increase [in rent] was fast enough to bridge the gap' between the net 
return to land and the interest rate.39

The French wars did cause an anomaly in table 3. For 1794-1814, equation 
6 implies that years purchase should have been 33 rather than the 27 or 28 
that actually obtained. This discrepancy is surely the result of the crowding 
out of private finance by government borrowing. With interest at the 5 per 
cent legal maximum, borrowers still could not raise mortgages and equation 
6 gives a misleading prediction since its use presumes they could raise the 
funds they wanted at the prevailing interest rate. An interest rate of 5.66 
per cent was consistent with 27 years purchase and 5.53 per cent with 28 
years. These are the 'shadow' interest rates implied by the land market.

IV

The remarkable conclusion to be drawn from these calculations is that 
freehold land was not trading at a price that exceeded its economic value. 
Any judgement on this matter is only as sound as the underlying model of 
the real estate market and the data to which the model is applied. In both 
regards I have built on the existing literature. The model of price 
determination extends that literature by formally integrating risk and the 
rate of appreciation of rental values. While historians have discussed their 
importance in passing, it has not been possible, in the absence of an explicit 
model, to assess their impact relative to the mortgage interest rate and the 
costs of estate administration and taxes. On the factual level, I have provided 
a new index of rents. The parameters whose values remain least certain are 
the mortgage interest rate, the risk premium on mortgages, and the costs of 
estate administration and taxes. Further research would be useful to measure 
these parameters as accurately as possible. However, the values I have used 
are those current in the historical literature. At the least, this paper has 
shown the full implications of the conventional beliefs.

If accepted, the findings of this paper imply a reassessment of many well-
established beliefs about English landed society in the seventeenth and 
eighteenth centuries, including the following.

39 Clay, 'Marriage', p. 508. The empirical basis of Clay's conclusion was the observation (based on 
Thompson, Landed society, pp. 217-20) that rents rose 'about 90 per cent, i.e. that in nearly a quarter 
of a century rents had not quite doubled'. Clay, 'Marriage', p. 508, n. 2. That is an annual rate of 
growth of 2.6 per cent, an even higher value than shown in table 3.
First, demand for land for social reasons was not pervasive enough to raise the price of real estate above its economic value. This conclusion is consistent with the possibility that many substantial landowners would have paid an exceptional price for their land for reasons of prestige and status. However, their demand was not extensive enough to inflate the market as a whole.

Second, the rich lawyer or merchant who invested his wealth in a country estate did not thereby immiserate himself. He received three kinds of economic returns from his land—(1) the continuance of the current rents into the future, (2) the appreciation (only rarely depreciation) of those rents due to inflation, enclosure, and productivity growth in farming, (3) the avoidance of the lost income and legal costs due, for instance, to defaults in riskier investments like mortgages. Previous studies have ignored the latter two kinds of returns, and have thereby falsely portrayed the landed elite as ‘constantly under siege from those who, moved by ambition and aided by good fortune, worked to enter its ranks.’

Third, the strict settlement, while undoubtedly preventing some life tenants from selling land, did not raise the price by reducing the supply on the market. This finding reinforces the conclusion that the strict settlement did not lead to the concentration of land in great estates. Settlements did not lock the wealth of the landed classes into uneconomic investments, nor did strict settlements create a systematic tension between the life tenant’s own financial interests and the family’s dynastic ambitions.

Fourth, the functioning of the land market presented a difficult financial problem for families who owned the same property over several generations. Appreciations in land values were a major return to landownership, but how was a family to consume these capital gains without selling the land? The only feasible solution was to mortgage the property. In that way consumption could increase in step with the rising land market. Therefore, rising mortgage debt as such should not be seen as a sign of improvidence or a threat to the financial viability of the landed classes. Mortgaging for consumption purposes was an indispensable tool of prudent estate management.

University of British Columbia

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40 This is Bonfield’s summary of the conventional view: ‘Affective families’, p. 342.
42 Thompson, ‘End of a great estate’, and Cannadine, ‘Aristocratic indebtedness’ have made this point for the nineteenth century.
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