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AD c.1000-c.1800”**

**Part I:  
Demographic and economic developments in England c.1000-c.1800**

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## *Abstract*<sup>1</sup>

Estimates of wealth are presented as recorded by over 18,000 probate inventory totals in five English counties for the two centuries after 1550. Real household wealth grew, almost without interruption, from the turn of the seventeenth century onwards. Using data from a sample of complete inventories for Cornwall and Kent, and inventories, accounts and wills for one Kent parish, total inventory wealth is related to material wealth, net wealth, indebtedness and real estate. Inventory totals reflect these other measures of wealth and so the implications of these trends for rates of economic growth and changes in income inequality are considered.

Research in the last 30 years or so has done much to improve estimates of British GDP in the eighteenth and nineteenth centuries. While the level of GDP in the mid-nineteenth century as calculated by Deane and Cole has remained unchanged, their estimates of the rate of growth from the early eighteenth century have been reduced considerably.<sup>2</sup> As E.A. Wrigley has pointed out, it follows that levels of GDP in the eighteenth century must have been much higher than originally supposed, and therefore that the rate of economic growth in the early modern period must have been greater than many historians have assumed.<sup>3</sup> Drawing up national accounts before the nineteenth century is an extremely hazardous exercise and there are few reliable estimates of GDP. Instead, for many historians, the dominating perspective on the sixteenth and seventeenth centuries is the graph of real wages of building craftsmen in southern England as calculated by Phelps Brown and Hopkins.<sup>4</sup> This paper offers another

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<sup>1</sup> The data in this paper were collected during the projects, 'Prices from probate inventories in England, 1550-1750' funded by the ESRC (B00232211) during 1987-9; 'Household economies in southern England, 1600-1750' funded by the Leverhulme Trust during 1996-8; and 'Contextualising consumption: a study of Kentish households 1600-1750' funded by the ESRC (R000222733) during 1998-9. I am grateful to Bridget Taylor, Linda Crust, Brenda Webster, Darron Dean and Andrew Hann for collecting the probate inventories. Mark Allen developed my computer programs to process them. I am particularly grateful to Darron Dean for his contribution to the work on wealth and indebtedness in Milton. Parts of this paper have been given to seminar audiences in Cambridge, Oxford and Exeter. I am grateful for specific comments from Craig Muldrew, Henry French, Paul Webley and Simon Wren-Lewis, but all errors are mine.

<sup>2</sup> Mokyr, 'Accounting for the industrial revolution', p. 4.

<sup>3</sup> Wrigley, 'Quest for the industrial revolution', p. 21.

<sup>4</sup> Phelps Brown and Hopkins, 'Seven centuries of the prices of consumables'; Clark, 'The long march of history'; Snooks, *Economics without time*; van Zanden, 'Early modern economic growth'.

perspective on the issue by looking at household wealth. Wealth is not a direct measure of GDP, but has been used quite extensively to estimate economic growth in North America.<sup>5</sup> Trends in English household wealth are calculated from a large sample of probate inventories from five counties in southern England referring to a broad cross-section of the population. The limitations of English inventories as a source to measure wealth are well known: they omit real estate for example, and are not an unbiased sample of the entire population. While for some historians, particularly in England, this has meant that probate inventories are, ‘not a reliable guide to the total wealth of any individual’, they have been treated as a more unproblematic guide to wealth in studies of other parts of the world.<sup>6</sup> Thus a significant part of this paper is methodological, relating wealth in English inventories to holdings of real estate, the life-cycle, and indebtedness, and suggesting some alternative measures of wealth that can be calculated from them. Simple wealth information, the total of the items in the inventory as recorded by the appraisers, is available for the five counties of Cornwall, Hertfordshire, Kent, Lincolnshire and Worcestershire. More detailed information is available for Cornwall and Kent since entire inventories are available, and the alternative measures of wealth are calculated for these two counties. Information on the lifecycle, indebtedness and real estate (taken from other probate documents) is only available for Milton, a small town in east Kent. Following this methodological discussion the implications for the wealth totals for English economic growth in the early modern period are considered, together with trends in wealth inequality.

## I

The easiest measure of wealth to extract from a probate inventory is the total of the moveable goods as calculated by the appraisers and usually recorded at the foot of the inventory as the total ‘sum’.<sup>7</sup> Since, in theory at least, the possessions of a married woman belonged to her husband in early modern England, this sum is best considered as a measure of household

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<sup>5</sup> For example, Anderson, ‘Wealth estimates for the New England colonies’; Anderson, ‘Economic growth in Colonial New England’; Menard, Harris, and Carr, ‘Opportunity and inequality’; McCusker and Menard, *Economy of British America*, pp. 51-70; Coclanis, ‘Wealth of British America’; Burnard, “‘Prodigious riches’”; Siddiq and Julian, ‘The importance of probate inventories’. They have also been used to study wealth from Finland to South America: Markkanen, ‘The use of probate inventories as indicators of personal wealth’; Salvatore and Newland, ‘Between independence and the golden age’, pp. 32-4.

<sup>6</sup> Moore, ‘Probate inventories’, p. 12. Although, Coclanis, ‘Wealth of British America’, provides a major methodological overview.

<sup>7</sup> For a recent introduction to English probate inventories see Overton, et al, *Production and consumption*, pp. 13-28 and the references therein.

wealth rather than personal wealth. This measure has been used in a number of studies of wealth for England, and more extensively for North America.<sup>8</sup> Indeed a rise in household wealth in England over the two centuries from 1550 was pointed out half a century ago but there has been no extensive analysis of wealth in early modern England to compare with North American studies.<sup>9</sup> Table 1 shows some statistics of appraisers' totals for five English counties.<sup>10</sup> The samples from Hertfordshire, Lincolnshire and Worcestershire date from 1550 and are simple random samples of all the extant inventories for particular ecclesiastical courts, while those for Cornwall and Kent date from 1600 and are stratified random samples.<sup>11</sup> These data confirm the view that the distribution of wealth in early modern England was highly positively skewed. Means are greater than medians and the standard deviations are large. This is emphasized by the Pearson measures of skewness which are all positive. Finally, the table shows an index of concentration, the gini coefficient, which is a summary statistic of the Lorenz curve and a measure of inequality in a population. It is the ratio of the areas between the Lorenz curve and the area of the triangle beneath the diagonal, and ranges from zero, when wealth is equally distributed across the population, to a theoretical maximum of one, when all the wealth is belongs to one individual.<sup>12</sup>

[insert Table 1 near here]

Table 2 aggregates the wealth data from the five counties by decades from the 1550s, using a regression equation to estimate wealth before 1600 for Cornwall and Kent on the basis of their relationship to the other three counties in the period 1600-1749. Wealth totals are

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<sup>8</sup> The major compilation of wealth data is by Jones, *American Colonial wealth*, analysed in her *Wealth of a nation to be* and 'Wealth estimates for the New England Colonies'. Inventory totals are also used by Shammass, 'The determinants of personal wealth' and *Preindustrial consumer*. For England, wealth totals have been used by, among others: Horn, 'Distribution of wealth'; Marshall, 'Agrarian wealth' and 'Domestic economy'; Barley, 'Farmhouses and cottages'; Pickles, 'Agrarian society and wealth'; Riley, 'Wealth and social structure'; Sale, 'Ownership and use of silver'; Zell, 'Wealth, trades and agriculture', and *Industry in the countryside*, pp. 139-52. See also Arkell, 'Interpreting probate inventories'; and Grassby, 'The personal wealth of the business community', who uses Court of Orphans inventories for freemen of the city of London in the seventeenth century.

<sup>9</sup> Barley, 'Farmhouses and cottages', p. 293; Marshall, 'Agrarian wealth', p. 508.

<sup>10</sup> See n. 1. The Lincolnshire and Worcestershire inventories are from consistory courts, those for Hertfordshire from the Archdeaconry Court of St Albans, Cornwall from the Archdeaconry of Cornwall and Kent from the Archdeaconry of Canterbury.

<sup>11</sup> For Kent and Cornwall some 25 parishes were first selected randomly and then inventories selected randomly for those parishes; Overton, et al, *Production and consumption*, pp. 29-31. The inventories were not collected solely for the study of wealth and thus the samples are unnecessarily large for the study of inventory totals alone.

<sup>12</sup> Hudson, *History by numbers*, pp. 101-3.

adjusted to constant prices using a price index derived from the Hertfordshire, Lincolnshire and Worcestershire inventories, weighted to reflect the balance of items within a collection of inventories.<sup>13</sup> While it is difficult to find comparators for most elements of this price series (textiles, metals, and wooden items for **[example]**) agricultural prices can be compared with the recent series produced by Clark.<sup>14</sup> The two series are derived completely independently, yet the Pearson correlation between the two is a reassuring 0.989. The agricultural series used here differs slightly from Clark's in that it includes the prices of livestock rather than livestock products because the former rather than the latter are recorded in inventories. The two series are similar until the decade 1710-19 when the price of livestock increases more rapidly than the price of livestock products indicating an improvement in livestock productivity. The constant price data increase relative wealth in both the early and late parts of the period and reduce it during the middle decades of the seventeenth century, reflecting the inverted U shaped trend in prices from 1550 to 1750.<sup>15</sup>

*[insert Table 2 near here]*

## II

The general trend in household wealth in the five counties is unmistakably upward. People appear to be getting richer, living standards were improving, and by implication the economy was growing steadily (if not spectacularly) for most of the two hundred years from 1550. But before pursuing these themes, it is necessary to examine these estimates of household wealth in some detail.

The first question is the whether the sample is representative of the country as a whole. Overall the geographical composition of the sample of inventories in Tables 1 and 2 is biased towards the south of England. However, although it omits the relatively poor northern counties it also excludes the relatively rich in London and Middlesex. One way to check the

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<sup>13</sup> Overton, 'Prices from probate inventories'.

<sup>14</sup> Clark, 'Price history'.

<sup>15</sup> The effect of the price weighting is to produce constant prices given the balance of commodities in inventories. It is not the same as 'real' wealth because inventories do not represent expenditure since they omit fresh food. Thus the effect of the price weighting is not as great as it would be if a cost of living index had been applied.

relative ordering of the counties in terms of household wealth is to compare the county rankings based on inventories with rankings derived from taxation assessments. There were a considerable number of taxation assessments during the seventeenth century and these can be divided by estimates of county population to get a rank order of counties in terms of assessment per head.<sup>16</sup> Contemporaries were in little doubt that these assessments were not a true reflection of the wealth of each county, and in particular that the north and west was undervalued.<sup>17</sup> However, the 1693 assessment for the land tax was a new one, and does show some correlation with inventoried wealth. Rankings are the same except that inventories rank Lincolnshire first and Hertfordshire second in the 1690s, whereas the assessment has them the other way around.<sup>18</sup> More importantly, the mean assessment for the five counties in the sample is 34 pence per head which compares with the mean for the country as a whole of 31 pence per head, with county means ranging between 59 pence for Sussex and 4 pence for Cumberland.<sup>19</sup> Uncertainty remains over the extent to which a county assessment matched its wealth, but even so the figures suggest that the five-county sample is indicative of the country as a whole.

Although the counties in this sample of inventories may be representative of the country, it is clear that the inventories are not a representative sample of the households in those counties, since they were not usually made for those who had few material possessions. The proportion of the population in this category and without an inventory varied from place to place, reflecting local economies and social structures, and the few local studies which have linked inventories to burial registers show quite wide variations.<sup>20</sup> Some idea of the social representativeness of inventories on a larger scale is possible by the nominal linkage of inventories to lists of taxpayers. For example, 340 individuals in the Kent sample can be matched to the 1664 Hearth Tax. Whereas 45 per cent of the households assessed in the Kent parishes had only one hearth, they produced only 21 per cent of the extant inventories. At the other end of the scale, 10.5 per cent of households had five or more hearths, but this group represented 18.8 per cent of those leaving inventories. Only 2.6 per cent of the Kent

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<sup>16</sup> The assessments are listed in Rodgers, *History of agriculture and prices*, vol. v, pp. 116-17; population figures from Wrigley, 'English county populations in the later eighteenth century'.

<sup>17</sup> Beckett, 'Land tax or excise', pp. 292-3.

<sup>18</sup> Rodgers, *History of agriculture and prices*, vol. v, 116-17; Braddick, *Parliamentary taxation*, pp. 126-67.

<sup>19</sup> Rodgers, *History of agriculture and prices*, vol. v, 116-17. Pence are decimal pence.

<sup>20</sup> Overton, 'English probate inventories', p. 209.

inventories that can be matched to the Hearth Tax are for those exempt from the tax. Overall, for the Hearth Tax in Kent, as for England as a whole, the proportion exempt on grounds of poverty was about 30 per cent.<sup>21</sup> Households taxed on one hearth are also under-represented by inventories, so as a very rough estimate perhaps the poorest 40 per cent of the population are excluded from the sample of inventories. This figure must be used with caution, since there was great regional variation in levels of poverty and in the coverage of inventories, but is probably appropriate here given our large samples and wide geographical coverage.

*[insert Table 3 near here]*

If we assume that the poorest 40 per cent of the population are missing, we can simply calculate an estimate of median wealth which applies to the whole population. If the leftmost 40 per cent of observations are missing from the frequency distribution of  $n$  observations, then the median values of wealth for the complete population can be calculated as the value corresponding to position  $1.67n / 2$  in the ranked distribution. If we make some assumptions about the mean wealth of those in the bottom 40 per cent we can recalculate means and variances accordingly, and therefore the Pearson measure of skewness. This is a simpler procedure than some proposals for estimating the wealth of a population from a sample of probate inventories which rely on information on occupation and age. English inventories do not give ages and occupation is a poor predictor of wealth in English inventories.<sup>22</sup> These adjusted data are shown in Table 3, which assumes that the missing 40 per cent had a mean wealth of one pound, which is obviously an arbitrary figure. On the basis of these assumptions we tentatively suggest that median personal wealth in England rose from around £13 per family in the third decade of the seventeenth century to over £20 per family in the early eighteenth century, while the corresponding figures for mean wealth were £33 and £123. There are also some values missing from the extreme right hand side of the distribution: representing those individuals whose probate was handled by the Prerogative Courts because they held property in more than one diocese.<sup>23</sup> There were relatively few of these so they

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<sup>21</sup> More detail of this comparison is given in Overton, et al., *Production and consumption*, pp. 22-26, which also matches Cornish inventories to the 1661 Poll Tax. For Kent as a whole 32% of households were exempt from the 1664 Hearth Tax on grounds of poverty; Arkell, 'The incidence of poverty in England'.

<sup>22</sup> Shamma 'Constructing a wealth distribution'; Jones, *Wealth of a nation to be*, pp. 347-62 and 'Estimating the wealth of the living'.

<sup>23</sup> There are almost no inventories surviving before 1660 in the Prerogative Court of Canterbury and so inventories from this court have not been used in this study.

would have a small impact on the median, though they would serve to raise the mean and increase the levels of skewness.

### III

While the upward social and economic bias in inventories may be corrected in this way, many questions remain about the accuracy of inventories in representing wealth. It is likely that inventories underestimate the wealth of moveable goods in a household because there are so many reasons why any individual inventory may have moveable items omitted. Goods bequeathed in a will might be removed before the inventory were made; heirlooms could be omitted; goods belonging to the wife of the deceased may (or may not) be omitted and so on.<sup>24</sup> Thus means and medians from a collection of inventories is almost certainly an underestimate of the value of the moveable goods: by how much is impossible to say, although it is not likely to be very great.<sup>25</sup>

*[insert Table 4 near here]*

The wealth estimates in Tables 1 and 2 are derive from the total the appraisers recorded at the end of the inventory. It is evident from Table 1 that not all appraisers recorded a total and it is possible that longer (and therefore probably wealthier) inventories were less likely to have a total recorded. We can investigate this for Cornwall and Kent since entire inventories were collected, by adding up the value of all the items recorded and comparing this total with the appraisers' sum.<sup>26</sup> Some results from this exercise are shown in Table 4. There is some truth in the hypothesis: when no total is given by the appraisers mean wealth is usually higher, and when the number of such inventories is small (because most inventories have an appraisers' total) it can be much higher. However, Table 4 also shows that mean wealth per inventory calculated from appraisers totals is only very slightly lower than mean wealth per inventory obtained by adding all the individual values.

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<sup>24</sup> The longest published list of reasons for omissions (which can be extended) is by Orlin, 'Fictions of the early modern English probate inventory'; see also Overton et al., *Production and consumption*, pp. 14-19.

<sup>25</sup> Although omissions reduce values, in some cases this was countered by inflated values: probate accounts reveal that some inventories overvalued standing grain, since its value was in part determined by future price, and prices could fall between valuation and harvest: Bower, 'Introduction to probate accounts', pp. li-liv.

<sup>26</sup> Using the probate inventory analysis program ITEM: Overton, 'A computer management system for probate inventories', Overton et al., *Production and consumption*, pp. 19-21. Not all inventories can be used to do this since occasionally values of items are missing.

[insert Table 5 near here]

This comparison suggests that in general inventory appraisers were competent at arithmetic. Table 5 shows that for Cornwall and Kent their skills improved over the course of the seventeenth century and in only a very few cases was their addition wildly incorrect.<sup>27</sup> Over 60 per cent of appraisers' totals were correct to within  $\pm 1$  per cent of the calculated total in Kent, and, from the late seventeenth century in Cornwall, over 90%. The errors were normally distributed (although there was a tendency to undervalue in Kent). It is noticeable that in both counties there is an improvement in accuracy from the second quarter of the seventeenth century as roman numerals were replaced by arabic numerals.<sup>28</sup> It might be expected that Kent totals would be less accurate because the inventories contain much more information as shown in the last column of Table 5. If appraisers' accuracy was similar in the other counties, then there is very little distortion in wealth from using their totals.

[insert Table 6 near here]

A much more serious problem with using the appraisers' sums as a measure of moveable wealth is that they include real chattels and debts owing to the deceased. Real chattels are moveable chattels referring to real estate, usually in the form of a lease.<sup>29</sup> The value of the remainder of the lease is included in the inventory since the paper on which the lease is recorded is a moveable object. The effect of this is to make individuals in places where land is commonly held by a lease for a term of years appear richer than their counterparts in places where it is not so held. This is shown to dramatic effect in Table 6. During the seventeenth century life leases in Cornwall were increasingly treated as though they were leases for a term of years.<sup>30</sup> As a consequence the values of more leases are recorded in inventories and households appear wealthier. If the value of leases is subtracted from the inventory total to make wealth figures comparable with regions with other forms of tenure, then the apparent

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<sup>27</sup> Discrepancies between the calculated total and the appraisers' sum also reflect errors in transcription from the inventories.

<sup>28</sup> Unfortunately the use of Roman or Arabic numerals is the one major omission from the inventory database so this cannot be measured. See Cullum and Wardley, 'The diffusion of the Hindu-Arabic numerical system'.

<sup>29</sup> Burn, *Ecclesiastical law*, vol. 2. p. 645; Cox and Cox, 'Probate 1500-1800', pp. 31-2

<sup>30</sup> Arkell, 'Interpreting probate inventories', pp. 101-2; Overton et al., *Production and consumption*, p. 141.

doubling of moveable wealth in Cornwall from the early seventeenth to the early eighteenth century disappears. No such switch in the form of landholding was taking place in Kent and there is little difference in the trend of the two measures of wealth. It is more likely that leasehold tenure was appearing during the seventeenth century at the expense of other forms of tenure than it was itself being replaced, so in certain parts of the country 'moveable' wealth totals will be exaggerated since part of the 'moveables' is in fact immoveable real estate. This is most likely to have been in the south west, where life leases were common, and it is unlikely that this problem affects the inventories for Lincolnshire, Worcestershire and Hertfordshire.<sup>31</sup>

*[insert Table 7 near here]*

While the impact of chattel leases will vary from place to place, the omission of debts owed by the deceased person from their inventory was supposedly universal. Debts owing to the deceased were recorded in an inventory, but debts owed by them belonged to other people.<sup>32</sup> This creates an imbalance and may serve to inflate household wealth since net debt cannot be calculated from inventories alone. This imbalance can be corrected when complete inventories are available by subtracting debts from the inventory total. Thus the preferred measure of wealth from a collection of probate inventories is the sum of the items in the inventory less debts and leases. This is described as 'material wealth' since it measures the value of the material items in the household. Material wealth is less than inventoried wealth, but in Kent is a fairly constant proportion over time (70 to 80 per cent for 25-year periods) as Table 7 shows. The proportion falls in Cornwall because of the growing importance of leases. The regressions in Table 8 show that the appraisers' total is a good predictor of material wealth in both Cornwall and Kent.

*[insert Table 8 near here]*

#### IV

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<sup>31</sup> Clay, 'Landlords and estate management', pp. 198-214.

<sup>32</sup> They are occasionally included, Burn, *Ecclesiastical law*, vol. 2. p. 646, says they may be included if it is 'expedient'.

While material wealth as it is defined here is an improvement on the total wealth of the inventory it is still limited by the omission of real estate and debts owed by the deceased. Indeed Spufford considers that:

the sum which appears at the foot of the probate inventory cannot be taken to indicate any individual's real net wealth, even in an approximate manner not only because it does not include, as we all know, real estate, but because it carries no clue to the extent of his indebtedness<sup>33</sup>

The one-sided nature of information about debts has hampered the study of debt and credit in early modern England, and the discussions of the issue based on inventories alone are necessarily limited.<sup>34</sup> To explore household wealth more closely other sources must be used in conjunction with inventories. These can be used to investigate the impact on inventoried wealth of the omission of debts owed to the deceased and of real estate. Debts owed by the deceased appear in the executors' record of their activities in the probate process, known as the probate account. These accounts include details of the payments of legacies, the repayment of debts, the payment of court fees, and a miscellany of other expenses including medical treatment for the deceased, funeral expenses, and the maintenance of minor children.<sup>35</sup> Unfortunately, accounts are much less numerous than inventories: for England perhaps 45-50,000 survive in comparison with the one to two million inventories.<sup>36</sup> However, when both an account and inventory survive then debts owed by the deceased can be subtracted from the total wealth to give a measure of net moveable wealth of the deceased.

A study of inventories, wills, and probate accounts has been undertaken for the Kent parish of Milton next Sittingbourne during the seventeenth century.<sup>37</sup> Milton was a small town with a diverse economic structure including both farming and fishing. In 1663 it had 199 households giving a population of around 750. For the seventeenth century surviving accounts were

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<sup>33</sup> Spufford, 'Limitations of the probate inventory', p. 173.

<sup>34</sup> Holderness, 'Credit in a rural community' and 'Credit in English rural society', recognized this problem though he seems unaware of probate accounts; Marshall, 'Agrarian wealth' p. 511 appears not to realise that debts owed by the deceased were not supposed to be included in an inventory.

<sup>35</sup> Accounts are introduced by Erickson., 'An introduction to probate accounts'; Spufford, 'The limitations of the probate inventory'; Gittings, 'Probate accounts: a neglected source'; Bower, 'Introduction to probate accounts'; and Erickson, 'Using probate accounts'. Many are indexed in Spufford, *Index of the probate accounts of England and Wales* and transcriptions are published in Mortimer, ed., *Berkshire probate accounts* and Wyatt, ed., *Uffculme wills and inventories*. All these were preceded by the publication of a remarkable probate account, Farr, ed., 'Nicholas Eyffeler of Warwick'.

<sup>36</sup> Bower, 'Introduction to probate accounts', p. xvii, Overton, et al., *Production and consumption*, p. 13.

matched to 169 inventories to calculate net debts at the death of the testator. Net wealth is calculated by subtracting the value of leases from the calculated value of the inventory and then subtracting the value of debts owed by the deceased.<sup>38</sup> On average individuals borrowed considerably more than they lent so net wealth is considerably lower than material wealth. It represents the wealth of an individual at death, less any real estate that they might own. Table 9 shows levels of material wealth and net wealth in Milton, and a measure of indebtedness which is the difference between the debts owed by the deceased and the debts owed to them. It should be stressed that these debts do not just consist of the results of the deliberate borrowing of money; they also cover credit for rent, wages, and goods and services provided.<sup>39</sup>

*[insert Table 9 near here]*

The inclusion of data on debts from accounts changes the picture painted by appraisers' totals and material wealth quite considerably, reducing wealth by some 30 to 40 per cent. However, this is less than the amount by which the Spuffords and their researchers have reduced inventoried wealth in their analysis of accounts and inventories. They used the final value of the estate taken from the probate account (i.e. the charge minus the discharge) as their measure of wealth.<sup>40</sup> Table 9 shows that the proportion of accounts with negative balances (charge minus discharge) for Milton is around 50 per cent, higher than the figure of 40 per cent for east Kent as a whole as calculated by Bower, but the proportion of the Milton sample with negative net wealth (with just debts subtracted) is considerably lower at between 20 and 30 per cent.<sup>41</sup> Deducting all other expenses on the estate (in addition to debts owed by the deceased) creates a misleading impression of wealth, because these expenses are incurred after the testator's death and after the estate had stopped generating income. The date between making the inventory and drawing up the account may have been several years if young children had to be maintained, and these expenses, often including bequests, the upkeep of a

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<sup>37</sup> See n. 1.

<sup>38</sup> The calculation is actually a little more complicated than this and is (account charge + additional charge) – debts and bonds owed by the deceased – inventory leases. The charge in the account should equal the appraisers' inventory total and the additional charge reflects changes since the inventory was made.

<sup>39</sup> Muldrew, *Economy of obligation*, pp. 133-12; Spufford, 'Les liens du crédit au village', p. 1362.

<sup>40</sup> Spufford, 'Limitations of the probate inventory', Bower, 'Introduction to probate accounts', Spufford, 'Les liens du crédit au village', pp. 1367-8; Spufford, 'Long-term rural credit'.

<sup>41</sup> Bower, 'Introduction to probate accounts', pp. lix-lxii.

farm or business, and the maintenance of the house where the deceased lived, will distort the value of the testator's wealth at the moment they died. In some cases quite large sums could be deducted from the estate to pay for material and educational provision for children in the future.<sup>42</sup> A better measure of net wealth is simply to subtract the debts owed by the deceased from the charge, rather than subtracting the entire discharge.

*[insert Table 10 near here]*

Thus it is not surprising that Margaret Spufford did not find a relationship between gross wealth and her definition of net wealth because the expenses incurred on the estate varied considerably according to occupation, demographic circumstances and life stage.<sup>43</sup> Contrary to Spufford's view, both the appraisers' sum and material wealth are good predictors of net wealth as the regressions in sections a) and c) of Table 10 show. This suggests that the degree to which an individual went into debt was related to their wealth and this is confirmed by the regressions showing that both the appraisers' sum and material wealth are also good predictors of indebtedness (sections b) and d) of Table 10). The residuals from these equations highlight individuals whose pattern of wealth and indebtedness go against the trend. For example, one of the wealthiest individuals in the Milton sample was Richard Smith, a maltster who died with an inventoried wealth of £899.45, material wealth of £762.28 and an indebtedness of -£94.59.<sup>44</sup> Thus he was not following the trend and borrowing against his wealth or, more likely, had settled his debts before his death. If we exclude these individuals with negative indebtedness, in other words those that were net lenders, then the relationship between material wealth and indebtedness grows even stronger (section e) in Table 10). Thus the amount people borrowed was a clear function of the value of their material goods.

*[insert Table 11 near here]*

This is not an unexpected finding, since the amount an individual was able to borrow, or the degree to which others allowed them credit, was a function of their assets, in part represented by their material wealth. Table 11 divides the Milton sample into four groups on the basis of

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<sup>42</sup> For example, Centre for Kentish Studies PRC1/10/41.

<sup>43</sup> Spufford, 'Limitations of the probate inventory', pp.157-72.

<sup>44</sup> CKS PRC11.27.87 account PRC1.11.160. Indebtedness is defined as debts owed to the deceased – debts owed by the deceased and therefore negative indebtedness means the deceased was in credit at death.

the quartiles of the distribution of material wealth and shows the means and medians of material wealth and indebtedness for each of the four groups. It is clear that the degree of indebtedness in the poorest quartile is much less than in the richer quartiles: the rich could borrow proportionately more. This suggests that creditworthiness is not just a simple function of wealth, reinforcing Muldrew's argument that it was related to an individual's status and their standing in the community.<sup>45</sup>

## V

Thus far real estate has been excluded from the analysis of wealth, yet this omission is considered the crucial problem in using inventories and accounts to measure wealth. The relationship between inventoried wealth and real estate is investigated here by matching wills with accounts and inventories. The nature of this evidence makes it impossible to value real estate, since wills name properties but hardly ever give an indication of their worth. Thus a necessarily crude categorisation of real estate has been adopted: 'none', 'a little', 'a lot'. Whereas 164 Milton inventories have an associated will, enabling the comparison of real estate holding with material wealth, only 14 have both an account and a will, enabling the comparison of real estate holding with net wealth. Thus a further sample of 42 Kent inventories with both accounts and wills has been taken.<sup>46</sup>

*[insert Table 12 near here]*

Table 12 shows that material wealth is strongly related to the holding of real estate: the more real estate the higher the mean material wealth. For both Milton and the sample of Kent inventories, accounts and wills, mean and median material wealth doubles when the category 'a lot' of real estate is compared with the category 'a little', and the differences are statistically significant.<sup>47</sup> However, there is relatively little difference in net wealth between the three categories of real estate: those owing 'a lot' of real estate left roughly the same amount of net moveable wealth as those with no real estate. The reason for the discrepancy between the amount of net and material wealth lies in the fact that those with 'a lot' of real

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<sup>45</sup> Muldrew has shown that the ability to borrow, or creditworthiness is related to far more than simply wealth, *Economy of obligation*, unfortunately our Milton sample is too small to allow the investigation of indebtedness by status or occupation.

<sup>46</sup> Inventories were taken randomly from the Leverhulme Project sample.

<sup>47</sup> Using t tests for differences of means and also the Mann-Whitney U test.

property were much more highly indebted. Those with no real property had very little net debt (in fact the mean is negative meaning money was owed to them) but as the amount of property increases so does the amount of debt: as Defoe put it, the granting of credit depended on ‘Integrity and Ability for Payment’.<sup>48</sup>

*[insert Table 13 near here]*

It is also possible to show the relationship between real estate and material wealth for Cornwall by comparing the value of chattel leases with material wealth. Table 13 shows that the value of leases, and therefore holdings of real estate represented by those leases, rise as material wealth rises.<sup>49</sup> These findings corroborate the work of Horn, who concluded for the Vale of Berkeley in Gloucestershire for 1660-99 that ‘real wealth and personal wealth do seem to be related’, by comparing inventory totals with chattel leases as in this present study, but also by comparing inventoried wealth with evidence of landholding from manorial rentals.<sup>50</sup> They also corroborate the findings of Spufford, who demonstrated a relationship between inventoried wealth and the number of hearths in a house as recorded in the Hearth Tax.<sup>51</sup>

## VI

Thus far we have seen that the appraisers’ total of inventoried wealth is directly related to material wealth, which in turn is related to net wealth and indebtedness, and also to real estate. The final aspect of wealth we shall consider is its variation with the life cycle. Since the wealth estimates we are using refer to people who have just died, it is possible that they overestimate (or indeed underestimate) wealth. On the one hand those near death may have dispersed some of their assets, but on the other may be wealthier because a greater proportion of their debt has been paid off.

*[insert Table 14 near here]*

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<sup>48</sup> Defoe, *An essay upon public credit*, p.9.

<sup>49</sup> There are too few leases to undertake this exercise for the Kent sample.

<sup>50</sup> Horn, ‘The distribution of wealth in the Vale of Berkley’, p. 97.

<sup>51</sup> Spufford, ‘The significance of the Cambridgeshire Hearth Tax’.

Life-cycle stage was estimated for the Milton sample from the evidence in probate documents, especially wills, and from parish registers. Deceased with inventories were grouped into 4 categories: those under 26 and usually unmarried; those aged 27-47 who were married with minor children; those aged 48-59 who were married with both minor and adult children; and those aged over 60 whose children were all adult.<sup>52</sup> Life-cycle stage can be identified for 347 out of 368 individuals with inventories, and for 162 of the 172 with both accounts and inventories. Table 14 shows wealth and indebtedness for the Milton sample by these four life-cycle stages. The data in Table 14 confirm what we might expect, and indeed show a situation that is familiar today. Wealth increases with age and then starts to decline, similarly, indebtedness is low in the first life-cycle stage, before marriage, rises in the middle two stages, and falls in the last life cycle stage.<sup>53</sup> However, there is much volatility within each of the groups, evidenced for example by the difference between mean and median indebtedness for those in the final life-cycle stage, where there are three individuals with indebtedness above £200. Table 15 shows how the holding of real estate is also related to the life-cycle in ways that we might expect: holdings are negligible in the early life-cycle stages, reaching a maximum in the final stage.

*[insert Table 15 near here]*

Perhaps of more interest is the relationship of the distribution of inventories amongst these four life-cycle groups in comparison with the age-structure of the population. Table 16 shows the percentage of Milton inventories in each life-cycle group compared with the proportion of the population of England as a whole in roughly equivalent groups.<sup>54</sup> Rather surprisingly perhaps, the distribution of deaths resulting in an inventory is not that different from the age structure of the population as a whole aged over 15. This is based on a small sample for one Kent parish, but if this is at all representative, then the wealth patterns revealed by inventories reflect the age structure of the population as a whole and therefore the wealth of the population as a whole. Other studies usually assume that inventories are much more heavily

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<sup>52</sup> CKS P253/1/1 and P253/1/2. Milton was chosen for the investigation of wealth in part because of its good run of registers. It is one of the Wrigley and Schofield 404 parishes, in their *Population History of England*.

<sup>53</sup> Rowlingson, Whyley and Warren, *Wealth in Britain*, pp. 35-42.

<sup>54</sup> Wrigley, Davies, Oeppen and Schofield, *English population history from family reconstitution*, p. 615.

biased towards the elderly.<sup>55</sup> Of course in the absence of any age information in the inventory the sample of inventories cannot be weighted to adjust for age distribution.<sup>56</sup>

*[insert Table 16 near here]*

## VII

In the light of the preceding discussion it does seem worthwhile to pursue some of the implications of the trends in nominal and real wealth per capita shown in Tables 1, 2 and 3, since wealth as measured by the appraisers' inventory totals does reflect both material wealth and net wealth, and is also correlated with holdings of real estate. The one series [serious] bias is for the Cornish inventories which increasingly include chattel leases and produce an upward bias in wealth which increases over time. The omission of the poor from inventories can be corrected quite simply to estimate median household wealth for the whole population, and the sample of counties used is not overly unrepresentative of wealth for the country as a whole. Finally, on the basis just one parish in Kent, the life-cycle distribution of those leaving inventories is not very dissimilar from that of the entire population. Some of these conclusions must be preliminary, and subject to further empirical study, but they encourage further discussion of the results.

*[insert Table 17 near here]*

Annual rates of growth in household wealth at constant prices, adjusted for the poor, are shown in Table 17. Although the figures are mostly positive, there are significant periods when mean or median wealth declines, decade on decade. These rather volatile movements are what we might expect in a pre-industrial economy. Plague, fire, and commercial crises, not to mention civil war, must have impacted upon the economy. Yet the dominating influence on the growth rates in Table 17 is the harvest, the 'heartbeat of the economy', or rather the cumulative impact of a series of bad harvests. Hoskins inferred harvest quality by looking at deviations in the price of wheat from its 30 year trend, with poor quality harvests

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<sup>55</sup> Discussed by Coclanis, 'Wealth of British America', pp. 254-7

<sup>56</sup> As does A.H. Jones, *Wealth of a nation to be*, pp. 347-51.

indicated by high price peaks.<sup>57</sup> If we employ the same methodology using Clark's index of arable prices to capture variations in the harvest of other grains, then the period 1594-7 stands out with four harvests in a row 30 per cent or more below the 30 year average; indeed the harvest year 1587 marks the nadir of the Phelps Brown and Hopkins real wage index over its entire run from 1264 to 1954.<sup>58</sup> Other decades of negative growth are less severe, but may also be related to runs of bad harvests, particularly the opening decade of the eighteenth century, following the bad harvests of 1692-98 when all seven harvests were below the 30-year mean, and four were more than 20 per cent below. The fall in growth for the 1650s compared with the 1640s might well reflect the run of bad harvests from 1646-9 which were all 20 per cent below normal. When data are presented by 25-year periods in Table 18, the impact of the 1590s remains, but for the remainder of the period growth is positive, with generally higher rates of growth in the first half of the seventeenth century compared with the second half.

*[insert Table 18 near here]*

Historians of economic growth in North America tend to treat trends in the distribution of personal wealth as a proxy for economic growth almost without question. However, it is clear that real personal wealth is not in itself a measure of economic growth, just as inventoried wealth (of whatever measure used here) is not a complete measure of wealth. Wealth can be defined as anything that has market value. It therefore encompasses material wealth, indebtedness, and real estate, which have been considered here. But these exclude intangible assets, such as goodwill, which may also have a value, or even the value of future earnings.<sup>59</sup> Measures of material wealth are the most appropriate reflection of economic growth because they can be summed to give a national total. Net wealth is not so useful because one person's debt is another person's credit: they should cancel out when summed on a national scale but may not do so with a sample of households.<sup>60</sup>

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<sup>57</sup> Hoskins, 'Harvest fluctuations and English economic history, 1480-1619', and, 'Harvest fluctuations and English economic history, 1620-1759'. His categorisation of harvests is borne out by contemporary comment: see, Stratton, *Agricultural records*.

<sup>58</sup> Clark, 'Price history'. There is a discrepancy in dates between Hoskins and Clark. Hoskins refers to the harvest year September 1594-5 as '1594', Clark as '1595'. Although I have used Clark's data in the context in which they are used here I refer to Hoskins harvest years.

<sup>59</sup> Jones, *Wealth of a nation to be*, pp. 15-17

<sup>60</sup> *ibid.*, p. 22.

Economic growth is usually considered as the growth of real GDP per capita, or more simply an increase in living standards, measured in one of three ways. As the value of incomes (wages, rents, and income from capital investments); expenditures (consumption and investment); or output (from industry and services). Existing estimates of economic growth in England have been based on data on incomes and on estimates of growth in output.<sup>61</sup> The wealth measures here obviously reflect income but in this context it is uncertain as to what multiplier to use to infer income from wealth or whether it changes over time.<sup>62</sup> But the wealth estimates are a much better indicator of consumption or expenditure, which hitherto has not been incorporated into estimates of economic growth before the nineteenth century. Wealth is obviously not the same as expenditure because it is a stock, whereas expenditure, like income, is a flow. Moreover, inventories exclude some important constituents of expenditure, such as that on fresh food, services, and entertainment for example.

*[insert Figure 1 near here]*

While there are no estimates of output before the eighteenth century we do have some evidence of incomes, or at least day wages and rents. Figure 1 compares inventoried wealth with two series of day wages (for building craftsmen and for farm labourers) and with a series of rents.<sup>63</sup> Personal wealth shows a much greater sustained rise than do the rent and wage series. The Charity Commission rent series follows the movement of personal wealth from the mid seventeenth century but before then rents take a much more erratic path. While real wealth is generally rising from the mid-sixteenth century (with a few interruptions) real wages for both building craftsmen and rural labourers fall considerably, and when they do start to rise from the seventeenth century they do so at a much slower rate than does wealth.

We can only speculate as to the causes of these differences. The rise in wealth may be exaggerated because of a growing inequality of wealth if the waged poor were not enjoying

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<sup>61</sup> Crafts, *British economic growth*, pp. 9-47.

<sup>62</sup> Jones deals with this problem by using the capital - output ratio. She uses 3.5 to 1 for Colonial North America although the corresponding figure for England as estimated by Feinstein may be 5.0:1 or greater, *Wealth of a nation to be*, pp. 61-4; p. 373.

<sup>63</sup> Phelps Brown and Hopkins, 'Seven centuries of the prices of consumables, compared with builders' wage-rates', modified by Wrigley and Schofield, *Population History of England*, pp. 638-41; Clark, 'Long march of history'; idem, and 'Land rental values and the agrarian economy'.

the increased prosperity of the inventoried groups. If this was the case then the relationship between the inventoried and uninventoried population was changing over time, specifically if an increasing proportion of the poor were no longer having inventories made for them.

The apparent paradox of increased consumption evidenced by inventory wealth in the face of falling or stagnant real wages has been pointed out by de Vries.<sup>64</sup> He resolves the paradox through an ‘industrious revolution’, one part of which involves a reduction in household leisure time.<sup>65</sup> The wage data produced by both Phelps Brown and Hopkins, and by Clark are *day* wage rates and therefore not direct measure of income and it is likely that hours and days worked by these groups was increasing from the sixteenth century.<sup>66</sup> Recent modifications to the Phelps Brown and Hopkins view of real wages would serve to reduce the magnitude of the real wage fall in the sixteenth century, but also damp down the rise at the end of the seventeenth century.<sup>67</sup>

A final point is that the growth in wealth from the mid-seventeenth century might be a product of a stable population following the rise from the sixteenth century. Assuming the stock of goods is constant then the value of goods per household will fall when population grows since there are more people to share the goods amongst. If population stops growing the value of goods will remain the same. In practice however, goods were becoming less durable from the mid-seventeenth century onwards, and the range and variety of new goods was increasing considerably. Living standards for those leaving inventories were undoubtedly increasing.<sup>68</sup>

Maddison considers that during the two hundred years after 1500 *per capita* output in Europe may have risen by a quarter and total output by around two thirds, resulting in an annual

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<sup>64</sup> de Vries, ‘Purchasing power and the world of goods’; and ‘Industrious revolution’.

<sup>65</sup> ‘Purchasing power and the world of goods’, pp. 110-11; ‘Industrious revolution’, p. 257. The other component of the ‘industrious revolution’ involving the ‘reallocation of labour from goods and services for direct consumption to marketed goods’, did not happen in Kent or Cornwall during the period 1600-1750; Overton et al., *Production and consumption*, p. 173.

<sup>66</sup> Voth, ‘Seasonality of conceptions as a source for historical time-budget analysis’; Clark, ‘Productivity growth without technological change’.

<sup>67</sup> van Zanden, ‘The ‘revolt of the early modernists’’, pp.628-31, 638-9; Boulton, ‘Food prices and the standard of living in London’.

<sup>68</sup> Overton et al., *Production and consumption*, pp. 87-120; Weatherill, *Consumer behaviour and material culture*.

average growth rate of real GDP per capita of 0.1 per cent.<sup>69</sup> Snooks estimates that in England the average annual growth in income per head between Domesday Book and the calculations of Gregory King was 0.29 per cent.<sup>70</sup> The lowest *per capita* estimate of wealth in this study, median wealth per head at constant prices adjusted for the omission of the poor from the sample, doubled between the mid-sixteenth and the mid-eighteenth century at an annual rate of about 0.3 per cent. Mean wealth at constant prices grew more than threefold, or at some 0.7 per cent per annum. Recent estimates by van Zanden suggest a growth rate of GDP per capita in England between 1600 and 1700 of 0.46 per cent, almost exactly the same as the annual average growth of adjusted median wealth over the same period.<sup>71</sup> The findings in this present study therefore reinforce his conclusion that the English economy grew at an exceptional rate during the early modern period.<sup>72</sup>

*[insert Table 19 near here]*

The sources of this seventeenth-century economic growth are beyond the scope of this paper, but these rates of growth should come as no surprise given the changes taking place in the economy. Agricultural efficiency was rising in the seventeenth century so that by 1700 about a tenth of the population lived in London.<sup>73</sup> The production of basic raw materials such as coal also rose significantly, as did the consumption of bar iron.<sup>74</sup> fortunes of the textile industry fluctuated, but its transformation in the seventeenth century resulted in a major rise in exports.<sup>75</sup> The dramatic increase in consumption revealed by Kent inventories is itself evidence of increased domestic production including the increasing use of coal, a doubling in the quantity of linen in the household, and replacement of imports by home produced glass and pottery.<sup>76</sup> The inventories for Cornwall and Kent also enable us to look at the division

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<sup>69</sup> Maddison, *Phases of capitalist development*, pp. 6-7. For a general discussion of historians' views of growth in the preindustrial period see Snooks, 'Great waves of economic change'.

<sup>70</sup> Snooks, *Economics without time*, p. 247.

<sup>71</sup> Calculated from van Zanden, 'Early modern economic growth', p. 75.

<sup>72</sup> *ibid.* p. 85.

<sup>73</sup> Overton, *Agricultural revolution*, Allen, 'Economic structure and agricultural productivity', Harding, 'The population of London'.

<sup>74</sup> Hatcher, *The history of the British coal industry, vol. 1*; Overton et al., *Production and consumption*, pp. 98-9; King, 'Production and consumption of bar iron'.

<sup>75</sup> Coleman, *The economy of England*, p. 133.

<sup>76</sup> Overton, et al., *Production and consumption*, pp. 90-113.

between production goods and consumption goods in the household, although the distinction between an item used in an inventory for production as opposed to consumption is sometimes hard to distinguish, and more importantly, calculating the value of each is difficult because appraisers lump items together with a common value.<sup>77</sup> Table 19 suggests that there is no dramatic change in the proportion of wealth in the form of production goods as opposed to consumption goods. On the other hand, the value of capital goods was rising relative to consumption goods as Table 20 demonstrates. The increased prices of such items as ploughs, harrows and spinning wheels suggests improvements in their production and possibly therefore, technological change leading to increased production efficiency.

*[insert Table 20 near here]*

## VIII

Over half a century ago Kuznets proposed that inequality increased with the onset of what he called ‘modern economic growth’, stabilized as growth continued, to be followed by a decline in inequality. Thus the trend of inequality with industrialisation demonstrated an inverted ‘U’ shaped curve. The existence or otherwise of this ‘Kuznets curve’ has generated some controversy for England in period after 1760 and attempts have been made to identify such a curve in many parts of the world.<sup>78</sup> More recently van Zanden has argued that ‘premodern economic growth was coupled with an upswing in inequality’, in other words, that inequality increased before the period of the industrial revolution, and before Kuznets postulated that it would.<sup>79</sup> The gini coefficients in Tables 1, 2 and 3 are almost constant for the entire period from 1600 onwards and therefore do not support van Zanden’s argument. However, there is an increase in inequality during the last half of the sixteenth century for Hertfordshire, Lincolnshire and Worcestershire, although this is not associated with a period of rapid growth in wealth, in fact the reverse.

The gini coefficient is very sensitive to the number and wealth of individuals at the rightmost extreme of the distribution. For example, the 1,243 inventories with a sum for the five

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<sup>77</sup> Production goods include those items used in the production for the household, Overton et al., *Production and consumption*, pp. 33-9; 57-64.

<sup>78</sup> Kuznets, ‘Economic growth and income inequality’; Williamson, *Did British capitalism breed inequality?* (Boston, 1985); Feinstein, ‘The rise and fall of the Williamson Curve’; Lindert, ‘Three centuries of inequality’.

<sup>79</sup> van Zanden, ‘Tracing the beginning of the Kuznets curve’, p. 644.

counties in the 1690s have a gini coefficient of 0.597. Adding the 40 per cent poor with a wealth of £1 increases the size of the distribution to 2,072, with a new coefficient of 0.752. If, however, we add just two extremely wealthy individuals worth £100,000 to the distribution, then the gini coefficient becomes 0.878; adding ten such individuals increases it to 0.955. The very wealthy (whose probate was handled by the Prerogative Court of Canterbury) are absent from our sample, but even so given the addition or removal of just a few individuals can have such a dramatic impact on the gini coefficient, no attempt is made to compare these measures of inequality with others.<sup>80</sup>

Nevertheless, the rise in inequality between the second half of the sixteenth century and the seventeenth century suggested by the gini coefficients, is confirmed by looking at the distributions of wealth over time. Compared with the sixteenth century the seventeenth-century distributions have a greater proportion of higher values. This is shown in Table 21 which shows the ratio between median wealth and the 95<sup>th</sup> percentile of the wealth distributions for 25-year periods. The 95<sup>th</sup> percentile is the value above which lies the top 5 per cent of the wealth values, and the median is the mid-point of the distribution or the 50<sup>th</sup> percentile. The ratio between the two doubles between 1550-74 and 1600-24 showing that proportionately more wealthy households are being included in the distributions of wealth.

*[insert Table 21 near here]*

## IX

These findings in this paper rest on the analysis of wealth from probate inventories, and while wealth is calculated from appraisers' totals of household wealth at the foot of the inventory, this measure reflects both material wealth (inventory totals less leases and debts), and probably also net wealth (where all debts are taken into account). Although they are based on the findings from a single parish, and must therefore for the moment at least be tentative, total inventory wealth and material wealth reflect holdings of real estate, and are also closely related to indebtedness.

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<sup>80</sup> For example, Soltow, 'Long-run changes in British income inequality'; Johnson, 'The welfare state', pp. 303-5.

Distributions of wealth are extremely skewed, which means that summary measures must be handled carefully and large samples of inventories are required.<sup>81</sup> Although less useful than the mean, the median measure of wealth, adjusted to include the 40 per cent of the poor without inventories, is probably the most reliable measure. Although it is the measure that shows the lowest rate of growth, household wealth at constant prices doubles between the late sixteenth century and the early eighteenth century. For much of that period annual rates of growth are positive, with exceptions that can be related to runs of bad harvests. After the downswing following the poor harvests of the 16[5]90s, the rate of growth in household wealth at constant prices in England was around 0.7 per cent for the seventeenth century, although it was slightly higher during the early part of the century and slightly lower at the end. Growth rates for mean wealth were higher, reflecting changes in the distribution of wealth. This steady but unspectacular growth in wealth confirms recent revisionist comments about the pace and direction of economic growth before the industrial revolution, and are quite in keeping with what we know of changes in the economy as a whole. This growth in the seventeenth century was not accompanied by an increase in wealth inequality. In fact it is likely that inequality increased between the sixteenth and the seventeenth centuries, when growth was negative.

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<sup>81</sup> Coclanis, 'The wealth of British America', point out confusions between means and medians for north America, pp. 251-3. de Vries, 'Purchasing power and the world of goods', pp 105-6.

Table 1. *Appraisers' wealth totals from a sample of English probate inventories*

<i>County</i>	<i>Period</i>	<i>N</i>	<i>N with total</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>S.D.(£)</i>	<i>Skewness</i>	<i>Gini</i>
<i>Cornwall</i>								
	1600-24	690	613	57.83	21.68	115.17	0.94	0.66
	1625-49	645	578	71.44	36.96	100.99	1.02	0.58
	1650-74	560	511	79.95	35.53	171.69	0.78	0.62
	1675-99	980	954	92.48	35.50	235.42	0.73	0.66
	1700-24	709	703	83.11	32.00	170.72	0.90	0.65
	1725-49	498	492	94.98	41.83	145.34	1.10	0.61
<i>Hertfordshire</i>								
	1550-74	422	272	32.54	17.90	41.95	1.05	0.52
	1575-99	529	433	44.73	17.67	74.65	1.09	0.65
	1600-24	932	710	47.59	19.22	79.92	1.07	0.65
	1625-49	682	501	77.85	29.92	150.76	0.95	0.66
	1650-74	356	294	95.04	47.76	117.13	1.21	0.56
	1675-99	465	347	165.00	62.74	256.05	1.20	0.65
	1700-24	269	213	159.66	70.28	321.44	0.83	0.64
	1725-49	117	100	147.41	81.89	188.30	1.04	0.58
<i>Kent</i>								
	1600-24	903	742	70.72	32.10	113.79	1.02	0.70
	1625-49	949	703	117.58	43.42	258.43	0.86	0.67
	1650-74	565	481	141.16	75.93	206.41	0.95	0.60
	1675-99	846	799	164.33	79.40	253.94	1.00	0.60
	1700-24	507	488	189.38	108.02	239.22	1.02	0.56
	1725-49	156	152	215.23	93.26	399.48	0.92	0.63
<i>Lincolnshire</i>								
	1550-74	933	797	46.38	32.75	48.63	0.84	0.47
	1575-99	822	694	86.12	55.11	91.37	1.02	0.50
	1600-24	733	631	123.71	73.29	162.50	0.93	0.54
	1625-49	636	544	161.00	100.35	200.72	0.91	0.52

1650-74	517	485	226.52	133.07	323.55	0.87	0.55
1675-99	749	735	251.25	152.51	377.69	0.78	0.53
1700-24	431	406	312.61	210.32	321.50	0.95	0.48
1725-49	608	574	245.62	149.65	353.09	0.82	0.54
<i>Worcestershire</i>							
1550-74	711	514	34.58	22.72	50.04	0.71	0.51
1575-99	928	351	42.62	30.49	40.08	0.91	0.46
1600-24	776	581	61.11	33.28	108.10	0.77	0.55
1625-49	721	599	103.60	58.28	180.86	0.75	0.59
1650-74	341	116	83.90	61.38	88.29	0.77	0.51
1675-99	1260	206	101.44	51.90	138.40	1.07	0.57
1700-24	787	734	163.51	86.82	230.44	1.00	0.59
1725-49	176	175	196.79	134.28	219.49	0.85	0.54

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*Note:* S.D. is the standard deviation, Pearson measure of skewness =  $3(\text{mean} - \text{median})/\text{standard deviation}$ .

*Source:* See n. 10

Table 2. *Inventory totals for Cornwall, Hertfordshire, Kent, Lincolnshire and  
Worcestershire at constant prices*

<i>Period</i>	<i>N</i>	<i>Mean</i> (£)	<i>Median</i> (£)	<i>S.D.</i> (£)	<i>Skewness</i>	<i>CV</i>	<i>Gini</i>
1550-59	626	56.30	34.76	74.28	0.87	1.32	0.46
1560-69	626	58.25	33.39	86.54	0.86	1.49	0.51
1570-79	745	67.15	36.62	98.40	0.93	1.47	0.53
1580-89	638	66.14	35.95	94.72	0.96	1.43	0.54
1590-99	426	78.20	40.67	113.47	0.99	1.45	0.57
1600-09	1121	66.21	32.48	94.31	1.07	1.42	0.59
1610-19	1534	68.01	30.97	114.05	0.97	1.68	0.63
1620-29	1291	77.70	34.19	137.41	0.95	1.77	0.63
1630-39	1270	79.96	38.20	132.06	0.95	1.65	0.62
1640-49	986	104.80	49.91	197.11	0.84	1.88	0.62
1650-59	203	95.98	60.11	107.42	1.00	1.12	0.52
1660-69	1074	111.17	55.37	173.78	0.96	1.56	0.61
1670-79	1191	138.12	62.92	272.72	0.83	1.97	0.64
1680-89	1218	144.47	63.09	290.95	0.84	2.01	0.64
1690-99	1243	150.67	77.56	205.17	1.07	1.36	0.60
1700-09	1032	148.80	73.80	213.62	1.05	1.44	0.60
1710-19	1016	182.09	89.55	279.34	0.99	1.53	0.61
1720-29	915	184.01	94.15	269.78	1.00	1.47	0.60
1730-39	575	207.57	106.75	374.34	0.81	1.80	0.60
1740-49	500	204.66	100.61	283.55	1.10	1.39	0.60

*Notes:* S.D. is the standard deviation. Skewness is the Pearson measure defined in Table 1 and CV is the coefficient of variation (the standard deviation divided by the mean).

*Source:* Table 1

Table 3. *Inventory totals for Cornwall, Hertfordshire, Kent, Lincolnshire and Worcestershire at constant prices adjusted for the poor*

<i>Period</i>	<i>Mean (£)</i>	<i>Median (£)</i>	<i>SD (£)</i>	<i>Skewness</i>	<i>CV</i>	<i>Gini</i>
1550-59	34.17	11.31	63.69	1.08	1.86	0.65
1560-69	35.29	11.41	72.44	0.99	2.05	0.69
1570-79	40.75	11.44	82.60	1.06	2.03	0.70
1580-89	40.21	10.59	79.80	1.11	1.98	0.71
1590-99	47.44	10.69	95.47	1.15	2.01	0.73
1600-09	40.30	9.54	79.51	1.16	1.97	0.74
1610-19	41.21	8.15	94.11	1.05	2.28	0.76
1620-29	47.01	8.87	112.71	1.02	2.40	0.77
1630-39	48.09	8.57	109.32	1.08	2.27	0.76
1640-49	63.39	14.28	160.62	0.92	2.53	0.76
1650-59	57.90	19.02	95.08	1.23	1.64	0.70
1660-69	67.03	14.02	144.83	1.10	2.16	0.76
1670-79	83.00	15.23	221.44	0.92	2.67	0.78
1680-89	87.33	16.67	235.63	0.90	2.70	0.78
1690-99	90.38	16.72	174.87	1.26	1.93	0.75
1700-09	89.50	16.54	180.41	1.21	2.02	0.76
1710-19	109.42	17.45	233.44	1.18	2.13	0.76
1720-29	110.78	18.63	227.02	1.22	2.05	0.76
1730-39	125.43	23.94	306.32	0.99	2.44	0.75
1740-49	123.72	22.35	240.47	1.26	1.94	0.75

*Notes:* See the note to Table 2 and the method of estimation described in the text.

*Source:* Table 1

Table 4. *Comparison of inventory appraisers' totals with calculated totals*

	<i>Appraisers' totals</i>		<i>Calculated totals</i>			
			<i>All inventories</i>		<i>No appraisers' total</i>	
	<i>N</i>	<i>Mean (£)</i>	<i>N</i>	<i>Mean (£)</i>	<i>N</i>	<i>Mean (£)</i>
<i>Cornwall</i>						
1600-49	1191	64.43	1149	63.71	108	77.01
1650-99	1465	88.11	1404	86.01	33	96.50
1700-49	1195	88.00	1185	88.33	10	225.93
<i>Kent</i>						
1600-49	1445	93.51	1748	93.10	380	97.05
1650-99	1280	155.62	1351	157.80	118	195.07
1700-49	640	195.52	626	191.63	18	188.57

*Note:* Appraisers totals uses all inventories which have an appraisers' sum, calculated totals use all inventories for which a total can be calculated.

*Sources:* See n. 10

Table 5. *The accuracy of inventory appraisers' totals*

	<i>N</i>	<i>Error</i>		<i>Error %</i>	<i>Error frequency %</i>			<i>Mean no. objects</i>
		<i>Mean (£)</i>	<i>SD (£)</i>		< -10%	± 1%	<+ 10%	
<i>Cornwall</i>								
1600-24	524	0.27	3.81	0.492	2.7	72.8	1.9	55.1
1625-49	517	0.05	5.48	0.065	1.9	78.7	1.6	44.8
1650-74	456	-0.02	3.39	-0.027	2.2	89.5	1.5	34.0
1675-99	915	-0.13	5.71	-0.147	0.7	92.8	0.8	31.2
1700-24	694	-0.07	2.46	-0.079	0.6	93.1	1.0	30.6
1725-49	481	0.03	6.90	0.034	0.4	91.3	1.0	34.1
<i>Kent</i>								
1600-24	707	-1.86	16.92	-2.717	12.2	60.7	5.7	76.9
1625-49	661	-0.76	43.45	-0.647	8.9	64.6	5.9	79.1
1650-74	466	0.44	88.19	0.320	10.1	68.7	3.6	90.0
1675-99	767	-1.60	85.13	-0.973	8.5	68.5	3.9	99.6
1700-24	470	1.70	77.62	0.895	6.8	67.7	4.7	105.3
1725-49	138	1.05	39.24	0.527	5.8	66.7	3.0	102.0

*Note:* 'Error' is the difference between the appraisers' total and the calculated total; 'Error %' is the error expressed as a percentage of the calculated total; 'Error frequency' is the percentage of appraisers totals in the bands shown; and 'no of objects' is the mean number of objects mentioned in the inventories.

*Source:* See n. 10

Table 6. *The value of chattel leases*

	<i>N</i>	<i>Calculated total</i>		<i>Total less</i>		<i>Leases as % of</i>	
		<i>(£)</i>		<i>leases (£)</i>		<i>calculated total</i>	
		<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
<i>Cornwall</i>							
1600-24	578	54.84	22.20	50.85	21.36	7.3	3.8
1625-49	560	71.62	34.96	57.60	28.82	19.6	17.6
1650-74	460	74.80	35.31	54.03	25.66	27.8	27.3
1675-99	909	88.78	34.08	67.03	26.28	24.5	22.9
1700-24	692	79.62	31.19	56.90	21.25	28.5	31.9
1725-49	476	93.12	41.31	57.47	26.07	38.3	36.9
<i>Kent</i>							
1600-24	858	72.45	34.39	71.22	33.28	1.7	3.2
1625-49	882	112.81	47.63	107.21	45.94	5.0	3.5
1650-74	543	141.21	75.92	140.17	75.09	0.7	1.1
1675-99	805	166.47	81.35	162.49	80.19	2.4	1.4
1700-24	485	189.27	111.05	188.85	108.07	0.2	2.7
1725-49	141	199.73	92.90	198.51	92.65	0.6	0.3

*Note:* The number of inventories used differs between Table 5 and Table 6. Table 5 uses all inventories in which the appraisers give a total and for which a total can be calculated. Table 6 uses all inventories for which a total can be calculated and the value of leases can be ascertained.

*Source:* See n. 10

Table 7. *Material wealth*

		<i>Appraisers' total</i>		<i>Material wealth</i>		<i>Material as % of</i>	
		<i>(£)</i>		<i>(£)</i>		<i>appraisers' total</i>	
	<i>Count</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
<i>Cornwall</i>							
1600-24	593	57.61	21.57	46.51	16.39	80.7	76.0
1625-49	554	68.77	36.05	45.24	21.85	65.8	60.6
1650-74	488	77.85	35.50	38.70	17.76	49.7	50.0
1675-99	894	86.19	34.66	42.40	17.99	49.2	51.9
1700-24	675	80.71	31.25	39.00	16.50	48.3	52.8
1725-49	466	88.14	40.22	42.18	18.03	47.8	44.8
<i>Kent</i>							
1600-24	714	68.19	31.67	50.31	22.95	73.8	72.5
1625-49	669	107.98	41.85	81.99	32.09	75.9	76.7
1650-74	464	134.82	74.78	102.03	54.26	75.7	72.6
1675-99	762	161.10	77.75	120.83	62.69	75.0	80.6
1700-24	449	172.61	101.42	134.77	74.59	78.1	73.5
1725-49	145	218.47	94.40	152.02	72.70	69.6	77.0

*Note:* Material wealth is calculated total minus debts and leases.

*Source:* See n. 10

Table 8. *Regression predicting material wealth from appraisers' total*

	<i>Adjusted</i>		<i>Standardised</i>			
	$r^2$	<i>F statistic</i>	<i>Intercept</i>	$\beta$	$\beta$	<i>N</i>
<i>Cornwall</i>						
1600-49	0.816	5099**	3.24 (t=2.74**)	0.677 (t=71.411**)	0.904	1146
1650-99	0.865	8818.5**	6.79 (t=7.03**)	0.412 (t=93.91**)	0.930	1382
1700-49	0.553	1409.4**	12.84 (t=8.51**)	0.328 (t=37.54**)	0.744	1140
<i>Kent</i>						
1600-49	0.797	5442.4**	10.4 (t=6.18**)	0.632 (t=73.77**)	0.893	1382
1650-99	0.531	1390.3**	37.92 (t=10.20**)	0.501 (t=37.29**)	0.729	1225
1700-49	0.671	1212.9**	45.68 (t=9.51**)	0.508 (t=34.83**)	0.820	593

Note: \*\* significant at the 99% level

Table 9. *Household wealth in Milton, Kent, from inventories and accounts*

		<i>1600-24</i>	<i>1625-49</i>	<i>1650-74</i>	<i>1675-99</i>
	<i>N</i>	42	38	45	33
<i>Calculated total (£)</i>	<i>Mean</i>	53.19	62.05	128.34	147.04
	<i>Median</i>	21.27	29.41	53.46	86.87
<i>Material wealth (£)</i>	<i>Mean</i>	48.89	58.37	115.42	133.70
	<i>Median</i>	20.65	26.10	52.00	80.38
<i>Net wealth (£)</i>	<i>Mean</i>	14.40	24.77	44.53	51.29
	<i>Median</i>	4.66	12.89	13.87	24.98
<i>Indebtedness (£)</i>	<i>Mean</i>	35.26	37.14	71.01	87.64
	<i>Median</i>	15.35	11.53	31.20	29.10
<i>Account balance</i>	<i>Mean</i>	5.17	9.09	21.80	25.41
	<i>Median</i>	-1.21	-0.31	4.90	-0.74
<i>% with -ve net wealth</i>		31.0	23.7	20.0	24.2
<i>% with -ve account balance</i>		54.8	52.6	44.4	51.5

*Note:* The indices are defined in the text.

*Source:* See n. 1

Table 10. *Regressions predicting net wealth and indebtedness in Milton, Kent*

	<i>Adjusted</i>				<i>Standard.</i>	
	<i>r</i> <sup>2</sup>	<i>F statistic</i>	<i>Intercept</i>	<i>β</i>	<i>β</i>	<i>N</i>
<i>a) Appraisers total &gt; net wealth</i>						
1600-49	0.480	74.02**	-2.157 ( <i>t</i> =-0.410)	0.368 ( <i>t</i> =8.603**)	0.698	79
1650-99	0.449	63.74**	-16.470 ( <i>t</i> =-1.261)	0.471 ( <i>t</i> =7.984**)	0.675	77
<i>b) Appraisers total &gt; indebtedness</i>						
1600-49	0.734	218.47**	-0.862 ( <i>t</i> =-0.163)	0.633 ( <i>t</i> =14.781**)	0.858	79
1650-99	0.373	46.73**	16.491 ( <i>t</i> =1.121)	0.454 ( <i>t</i> =6.836**)	0.617	77
<i>c) Material wealth &gt; net wealth</i>						
1600-49	0.485	75.49**	-4.960 ( <i>t</i> =-0.920)	0.434 ( <i>t</i> =8.689**)	0.701	79
1650-99	0.395	51.33**	-18.220 ( <i>t</i> =-1.286)	0.481 ( <i>t</i> =7.164**)	0.635	77
<i>d) Material wealth &gt; indebtedness</i>						
1600-49	0.737	221.91**	-5.569 ( <i>t</i> =-1.031)	0.745 ( <i>t</i> =14.897**)	0.860	79
1650-99	0.450	63.92**	4.353 ( <i>t</i> =0.305)	0.540 ( <i>t</i> =7.995**)	0.676	77
<i>e) Material wealth &gt; indebtedness for those with negative net wealth</i>						
1600-99	0.876	304.52**	20.680 ( <i>t</i> =2.375*)	1.102 ( <i>t</i> =17.451**)	0.937	43

*Note:* \* significant at the 95% level, \*\* significant at the 99% level.

Table 11. *Indebtedness by quartiles of material wealth in Milton*

<i>Quartiles of material wealth (£)</i>	<i>N</i>	<i>Indebtedness (£)</i>		<i>Material Wealth (£)</i>		<i>ID as % material</i>	
		<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
0.67 – 18.64	40	3.96	5.14	12.32	12.87	32.1	39.9
19.26 – 34.40	40	14.89	15.31	25.13	23.91	59.3	64.0
35.02 – 97.63	41	52.00	39.84	60.29	53.46	86.2	74.5
104.38 – 762.46	41	184.17	158.08	264.68	170.68	69.6	92.6

*Source:* See n. 1

Table 12. *Wealth and real property in Milton and east Kent*

<i>Real property</i>	<i>N</i>	<i>Material Wealth (£)</i>		<i>Net Wealth (£)</i>		<i>Indebtedness (£)</i>	
		<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
<i>A. Kent sample</i>							
<i>None</i>	22	61.08	31.30	65.10	32.16	-1.84	5.23
<i>A little</i>	22	94.71	53.45	73.67	40.35	17.89	9.94
<i>A lot</i>	12	226.16	137.15	87.94	34.08	168.49	118.95
<i>B. Milton only</i>							
<i>None</i>	85	74.38	38.04				
<i>A little</i>	56	127.21	80.29				
<i>A lot</i>	23	256.80	180.47				

Note: The Kent sample consists of inventories, wills and accounts; the Milton sample is of inventories and wills only.

Source: See n. 1

Table 13. *Mean value of material wealth and leases in Cornwall by quartiles of material wealth*

	<i>Material wealth (£)</i>				<i>Leases (£)</i>			
	<i>q1</i>	<i>q2</i>	<i>q3</i>	<i>q4</i>	<i>q1</i>	<i>q2</i>	<i>q3</i>	<i>q4</i>
1600-24	3.63	11.34	30.38	142.63	0.28	1.06	1.52	15.90
1625-49	5.20	14.98	36.62	124.60	2.91	3.12	9.59	36.99
1650-74	4.22	12.58	27.52	107.95	4.79	11.09	11.93	59.80
1675-99	3.68	11.47	27.50	124.53	3.61	5.68	14.00	62.49
1700-24	3.43	10.78	27.08	113.90	6.42	5.71	21.07	59.76
1725-49	4.53	12.64	30.54	125.33	10.58	17.31	31.46	78.22

*Source:* See n. 10

Table 14. *Wealth by life-cycle stage in Milton, 1600-99*

<i>Stage</i>	<i>N</i>	<i>Material Wealth</i> (£)		<i>Net Wealth</i> (£)		<i>Indebtedness</i> (£)		<i>Account balance</i> (£)	
		<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
1	17	28.23	15.33	25.70	13.50	2.55	2.63	16.69	4.10
2	87	110.61	44.48	37.46	12.70	76.70	26.30	20.25	-0.72
3	40	82.10	45.25	35.62	12.94	55.24	31.35	8.77	4.91
4	18	55.91	25.84	11.88	10.29	44.51	4.86	-1.00	4.43

*Note:* The stages are: 1. Unmarried under 26. 2. Married with minor children 27-47. 3. Married with minor and adult children 48-59. 4. All children adult over 60

*Source:* See n. 1

Table 15. *Ownership of real property and the life-cycle in Milton, 1600-99*

<i>Life-cycle stage</i>	<i>% with real property</i>		
	<i>None</i>	<i>A little</i>	<i>A lot</i>
Unmarried under 26	67.9	32.1	0.0
Married with minor children 27-47	49.2	39.3	11.5
Married with minor and adult children 48-59	50.0	31.8	18.2
All children adult over 60	39.3	32.1	28.6

*Source:* See n. 1

Table 16. *Life cycle stages of those leaving inventories in Milton, Kent, 1580-1711*

<i>Milton</i>		<i>England</i>	
<i>Life-cycle stage</i>	<i>% of inventories</i>	<i>Age</i>	<i>% of population &gt;15</i>
Unmarried, under 26	14.4	15-24	26.1
Married with minors, 27-47	46.7	25-44	40.3
Married with minor and a children, 48-59	24.5	45-59	20.7
All children adult, over 60	14.4	over 60	12.8
Total	100.0		100.0

*Source:* Milton inventories (n. 1) and for England, Wrigley, Davies, Oeppen and Schofield, *English population history*, p. 615.

Table 17. *Annual percentage growth of mean and median household wealth at constant prices adjusted for the poor*

<i>Period</i>	<i>Mean</i>	<i>Median</i>	<i>Period</i>	<i>Mean</i>	<i>Median</i>
1550-59 – 1560-69	0.34	0.09	1650-59 – 1660-69	1.48	-3.01
1560-69 – 1570-79	1.43	0.03	1660-69 – 1670-79	2.19	0.83
1570-79 – 1580-89	-0.15	-0.78	1670-79 – 1680-89	0.45	0.91
1580-89 – 1590-99	1.69	0.10	1680-89 – 1690-99	0.42	0.03
1590-99 – 1600-09	-1.65	-1.13	1690-99 – 1700-09	-0.12	-0.11
1600-09 – 1610-19	0.27	-1.56	1700-09 – 1710-19	2.04	0.54
1610-19 – 1620-29	1.34	0.85	1710-19 – 1720-29	0.10	0.66
1620-29 – 1630-39	0.29	-0.34	1720-29 – 1730-39	1.21	2.54
1630-39 – 1640-49	2.74	5.24	1730-39 – 1740-49	-0.14	-0.69
1640-49 – 1650-59	-0.88	2.91			

Source: Table 3.

Table 18. *Annual percentage growth of mean and median household wealth adjusted for the poor*

<i>End period</i>	<i>Start period</i>						
	<i>1550-74</i>	<i>1575-99</i>	<i>1600-24</i>	<i>1625-49</i>	<i>1650-74</i>	<i>1675-99</i>	<i>1700-24</i>
<i>A. Means</i>							
1575-99	0.75						
1600-24	0.37	0.00					
1625-49	0.53	0.42	0.84				
1650-74	0.67	0.64	0.97	1.09			
1675-99	0.74	0.74	0.98	1.05	1.01		
1700-24	0.71	0.70	0.88	0.89	0.78	0.55	
1725-49	0.71	0.70	0.84	0.84	0.76	0.63	0.71
<i>B. Medians</i>							
1575-99	-0.23						
1600-24	-0.55	-0.87					
1625-49	-0.15	-0.10	0.67				
1650-74	0.24	0.40	1.04	1.42			
1675-99	0.28	0.41	0.84	0.93	0.45		
1700-24	0.28	0.38	0.70	0.71	0.35	0.26	
1725-49	0.36	0.45	0.72	0.74	0.51	0.54	0.82

Source: Table 3

Table 19. *The value of production goods as a percentage of material wealth*

	<i>Kent</i>			<i>Cornwall</i>		
	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>
1600-24	855	40.4	43.3	636	41.2	48.4
1625-49	875	38.5	38.2	595	40.1	45.5
1650-74	537	41.7	45.4	499	35.9	38.3
1675-99	791	44.3	48.0	907	32.5	37.8
1700-24	454	46.3	50.1	677	33.2	41.7
1725-49	139	43.4	43.4	468	37.7	40.0

Table 20. *Ratio of the price of consumer goods to capital goods in Hertfordshire, Lincolnshire and Worcestershire*

<i>(index 1550-1749=100)</i>			
	<i>Consumption</i>	<i>Capital</i>	
	<i>goods</i>	<i>goods</i>	<i>Ratio</i>
1550-74	77	60	0.78
1575-99	90	69	0.77
1600-24	105	87	0.83
1625-49	124	112	0.90
1650-74	107	121	1.13
1675-99	106	131	1.24
1700-24	93	138	1.48
1725-49	81	143	1.77

*Note:* Consumption goods are: brass pots, brass candelsticks, dripping pans, fryingpans, andirons, chaffing dishes, pewter plates, unspecified plates, bedsteads, chairs, chests, coffer, cupboards, tables, blankets, coverlets, cushions, napkins, pillowbeares, sheets, tablecloths, and towels. Capital goods are: furnaces, harrows, ladders, maltmills, ploughs and gear, spinning wheels.

*Source:* Dervied from, Overton, 'Prices from probate inventories', p. 140

Table 21. *Median and 95<sup>th</sup> percentile values form the distribution of inventory totals for Cornwall, Hertfordshire, Kent, Lincolnshire and Worcestershire at constant prices adjusted for the poor*

	(a) <i>Median (£)</i>	(b) <i>95<sup>th</sup> percentile (£)</i>	(b)/(a)
1550-74	11.50	125.54	10.9
1575-99	10.84	186.82	17.2
1600-24	8.71	191.86	22.0
1625-49	10.29	225.15	21.9
1650-74	14.64	295.05	20.1
1675-99	16.36	393.34	24.0
1700-24	17.47	473.38	27.1
1725-49	21.41	546.73	25.5

Source: See n. 10

## References

- Allen, R.C., 'Economic structure and agricultural productivity in Europe, 1300-1800', *European Review of Economic History*, 3 (2000), pp. 1-25.
- Anderson, T.L., 'Wealth estimates for the New England colonies, 1650-1709', *Explorations in Economic History*, 12 (1975), pp. 151-76.
- Anderson, T.L., 'Economic growth in colonial New England: "statistical renaissance"', *Journal of Economic History*, XXIX (1979), pp. 275-88.
- Arkell, T., 'The incidence of poverty in England in the later seventeenth century', *Social History*, 12 (1987), pp. 23-47.
- Arkell, T., 'Interpreting probate inventories', in T. Arkell, N. Evans and N. Goose, eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), pp. 72-102.
- Barley, M.W., 'Farmhouses and cottages, 1550-1725', *Economic History Review*, VII (1955), pp. 291-306.
- Beckett, J.V. 'Land tax or excise: the levying of taxation in seventeenth- and eighteenth-century England', *English Historical Review*, C (1985), pp. 285-308.
- Boulton, J., 'Food prices and the standard of living in London in the 'century of revolution', 1580-1700', *Economic History Review*, LIII (2000), pp. 155-92.
- Bower, J., 'Introduction to probate accounts', in P. Spufford, ed., *Index of the probate accounts of England and Wales*, British Record Society (1999), pp. xv-xciv.
- Braddick, M. J., *Parliamentary taxation in seventeenth-century England: local administration and response* (1994).
- Burn, R., *Ecclesiastical law* (2 vols, 1763).
- Burnard, T.G., "'Prodigious riches": the wealth of Jamaica before the American Revolution', *Economic History Review*, LIV (2001), pp. 506-24.
- Clark, G., 'Productivity growth without technological change in European agriculture before 1850', *Journal of Economic History*, XLVII (1987), pp. 419-32.
- Clark, G., 'Land rental values and the agrarian economy: England and Wales, 1500-1914', *European Review of Economic History*, 6 (2002), pp. 281 - 308.
- Clark, G., 'The price history of English agriculture', *Research in Economic History*, 22 (2004), pp. 41-123.
- Clark, G., 'The long march of history: farm wages, population and economic growth, England 1209-1869', *Economic History Review* (forthcoming).
- Clay, C., 'Landlords and estate management in England', in J. Thirsk, ed., *The agrarian history of England and Wales, vol. V, 1640-1750, II, agrarian change* (Cambridge, 1985), pp. 119-251.
- Coclanis, P.A., 'The wealth of British America on the eve of the Revolution', *Journal of Interdisciplinary History*, 21 (1990), pp. 245-60.
- Coleman, D.C., *The economy of England* (Cambridge, 1977).
- Cox, J. and Cox, N., 'Probate 1500-1800: a system in transition', in T. Arkell, N. Evans and N. Goose, eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), pp. 14-37.
- Crafts, N.F.R., *British economic growth during the industrial revolution* (Oxford, 1985).
- Cullum, D. and Wardley, 'The diffusion of the Hindu-Arabic numerical system : numeracy, literacy and historical analysis of writing skills in seventeenth-century west Cornwall', *Cornish Studies*, 2 (1994), pp. 3-31.
- Defoe, D., *An essay upon public credit* (1710).
- Erickson, A.L., 'An introduction to probate accounts', in G.H. Martin and P. Spufford, eds, *The records of the nation* (Woodbridge, 1990), pp. 273-86.
- Erickson, A.L., 'Using probate accounts', in T. Arkell, N. Evans and N. Goose, eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), pp. 103-19.
- Farr, M.W., ed., 'Nicholas Eyffeler of Warwick, Glazier: executors' accounts and other documents concerning the foundation of his almshouse charity, 1592-1621', in R. Brearman, ed., *Miscellany I*, Publications of the Dugdale Society, XXXI (1977), pp. 29-110.
- Feinstein, C.H., 'The rise and fall of the Williamson Curve', *Journal of Economic History*, XLVIII (1988), pp. 699-729.
- Gittings, C., 'Probate accounts: a neglected source', *Local Historian*, 21 (1991), pp. 51-59.
- Grassby, R., 'The personal wealth of the business community in seventeenth-century England', *Economic History Review*, XXIII (1970), pp. 220-34.
- Harding, V., 'The population of London, 1500-1700: a review of the published evidence', *London Journal*, 15 (1990), pp. 111-28.

- Hatcher, J., *The history of the British coal industry, vol. 1 before 1700: towards the age of coal* (Oxford, 1993).
- Holderness, B.A., 'Credit in a rural community, 1660-1800: some neglected aspects of probate inventories', *Midland History*, 3 (1975), pp. 94-115.
- Holderness, B.A., 'Credit in English rural society before the nineteenth century, with special reference to the period 1650-1720', *Agricultural History Review*, 24 (1976), pp. 97-109.
- Horn, J.P.P., 'The distribution of wealth in the Vale of Berkley Gloucestershire, 1660-1700', *Southern History*, 3 (1981), pp. 81-109.
- Hoskins, W.G., 'Harvest fluctuations and English economic history, 1480-1619', *Agricultural History Review*, XII (1964), pp. 28-46.
- Hoskins, W.G., 'Harvest fluctuations and English economic history, 1620-1759', *Agricultural History Review*, 16 (1968), pp. 15-31.
- Hudson, P., *History by numbers: an introduction to quantitative approaches* (2000).
- Johnson, 'The welfare state', in R. Floud and D.N. McCloskey eds, *The economic history of Britain since 1700*, 2nd edn, vol. 3. (Cambridge, 1994), pp. 284-317.
- Jones, A.H., 'Wealth estimates for the New England Colonies about 1770', *Journal of Economic History*, XXXII (1972), pp. 98-127.
- Jones, A.H., *American colonial wealth: documents and methods* (3 vols, New York, 1977).
- Jones, A.H., *Wealth of a nation to be* (New York, 1980).
- Jones, A.H., 'Estimating the wealth of the living from a probate sample', *Journal of Interdisciplinary History*, 13 (1982), pp. 273-300.
- King, P., 'The production and consumption of bar iron in early modern England and Wales', *Economic History Review*, LVIII (2005), pp. 1-33.
- Kuznets, 'Economic growth and income inequality', *American Economic Review*, 45 (1955), pp. 1-28.
- Lindert, P.H., 'Three centuries of inequality in Britain and America', in A.B. Atkinson and F. Bourguignon, eds, *Handbook of income distribution* (Amsterdam, 2000), pp. 167-216.
- McCusker, J.J. and Menard, R.R., *The economy of British America, 1607-1789* (Chapel Hill, 1985).
- Maddison, A., *Phases of capitalist development* (Oxford, 1982).
- Markkanen, E. 'The use of probate inventories as indicators of personal wealth during the period of industrialisation: the financial resources of the Finnish rural population, 1850-1911', *Scandinavian Economic History Review*, XXVI (1978), pp. 67-83.
- Marshall, J. D., 'The domestic economy of the Lakeland yeoman, 1660-1749', *Transactions of the Cumberland & Westmorland Antiquarian & Archaeological Society*, new series, LXXIII (1973), pp. 190-219.
- Marshall, J.D., 'Agrarian wealth and social structure in pre-industrial Cumbria', *Economic History Review*, XXXIII (1980), pp. 503-21.
- Menard, R.R., Harris, P.M.G. and Carr, L., 'Opportunity and inequality: the distribution of wealth on the lower western shore of Maryland, 1638-1705', *Maryland Historical Magazine*, 69 (1974), pp. 169-84.
- Mokyr, J., 'Accounting for the industrial revolution', in R. Floud and P. Johnson, eds, *The Cambridge economic history of modern Britain. Volume 1: industrialisation, 1700-1860* (Cambridge, 2004), pp. 1-27.
- Moore, J. S., 'Probate inventories: problems and prospects', in P. Riden, ed., *Probate records and the local community* (Gloucester, 1985), pp. 11-28.
- Mortimer, I., ed., *Berkshire probate accounts, 1583-1712*, Berkshire Record Society, 4 (Reading, 1999).
- Muldrew, C., *The economy of obligation: the culture of credit and social relations in early modern England* (Basingstoke, 1998).
- Orlin, L.C., 'Fictions of the early modern English probate inventory', in H.S. Turner, ed., *The culture of capital: property, cities, and knowledge in early modern England* (2002), pp. 51-83.
- Overton, M., 'English probate inventories and the measurement of agricultural change', *A.A.G. Bijdragen*, 23 (1980), pp. 205-15.
- Overton, M., 'A computer management system for probate inventories', *History and Computing*, 8 (1995), pp. 10-17.
- Overton, M., *Agricultural revolution in England: the transformation of the agrarian economy 1500-1850* (Cambridge, 1996).
- Overton, M., 'Prices from probate inventories', in T. Arkell, N. Evans and N. Goose, eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), pp. 120-43.
- Overton, M., Whittle, J., Dean, D. and Hann, A., *Production and consumption in English households, 1600-1750* (2004).
- Phelps Brown, H. and Hopkins, S.V., 'Seven centuries of the prices of consumables, compared with builders' wage-rates', *Economica*, 23 (1956), pp. 296-314.

- Pickles, M. F., 'Agrarian society and wealth in mid-Wharfedale, 1664-1743', *Yorkshire Archaeological Journal*, 53 (1981), pp. 63-78.
- Riley, D., 'Wealth and social structure in north-western Lancashire in the later seventeenth century: a new use for probate inventories', *Transactions of the Historic Society of Lancashire and Cheshire*, 141 (1992), pp. 77-100.
- Rodgers, J.E.T., *A history of agriculture and prices in England*, vol V. (Oxford, 1887).
- Rowlingson, K., Whyley, C., and Warren, T., *Wealth in Britain: a lifecycle perspective* (1999).
- Sale, A.J.H., 'Ownership and use of silver in Gloucestershire, 1660-1740', *Transactions of the Bristol and Gloucestershire Archaeological Society*, CXIII (1995), pp. 121-50.
- Salvatore, R.D. and Newland, C., 'Between independence and the golden age: the early Argentine economy', in G.D. Paolera and A.M. Taylor, eds, *A new economic history of Argentina* (Cambridge, 2003), pp. 19-45.
- Shammas, C., 'The determinants of personal wealth in seventeenth-century England and America', *Journal of Economic History* 37 (1977), pp. 677-89.
- Shammas, C., 'Constructing a wealth distribution from probate records', *Journal of Interdisciplinary History*, 9 (1978), pp. 297-307.
- Shammas, C., *The pre-industrial consumer in England and America* (Oxford, 1990).
- Siddiq, F. and Julian, G., 'The importance of probate inventories in estimating the distribution of wealth', *Nova Scotia Historical Review*, 11 (1991), pp. 103-18.
- Snooks, G.D., *Economics without time: a science blind to the forces of historical change* (1993).
- Snooks, G.D., 'Great waves of economic change: the industrial revolution in historical perspective, 1000 to 2000', in idem, ed., *Was the industrial revolution necessary?* (1994), pp. 43-78.
- Soltow, L., 'Long-run changes in British income inequality', *Economic History Review*, XXI (1968), pp. 17-29.
- Spufford, M., 'The significance of the Cambridgeshire hearth tax', *Proceedings of the Cambridge Antiquarian Society*, 55 (1962), pp. 53-64.
- Spufford, M., 'The limitations of the probate inventory', in J. Chartres and D. Hey, eds, *English rural society, 1500-1800: essays in honour of Joan Thirsk* (Cambridge, 1990), pp. 139-174.
- Spufford, P., 'Les liens du crédit au village dans l'Angleterre du XVIII<sup>e</sup> siècle', *Annales E.S.C.*, 49 (1994), pp. 1359-1373.
- Spufford, P., ed., *Index of the probate accounts of England and Wales*, British Record Society, (1999).
- Spufford, P., 'Long-term rural credit in sixteenth- and seventeenth-century England: the evidence of probate accounts', in T. Arkell, N. Evans and N. Goose, eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), pp. 213-28.
- Stratton, J.M., *Agricultural records* (1969).
- Voth, H.-J. 'Seasonality of conceptions as a source for historical time-budget analysis: tracing the disappearance of holy days in early modern England', *Historical Methods*, 27 (1994), pp. 127-32.
- de Vries, J., 'Between purchasing power and the world of goods: understanding the household economy in early modern Europe', in J. Brewer and R. Porter, eds, *Consumption and the world of goods* (1993), pp.85-132.
- de Vries, J., 'The industrial revolution and the industrious revolution', *Journal of Economic History*, 54 (1994), pp. 249-70.
- Weatherill, L., *Consumer behaviour and material culture in Britain 1660-1760* (1988).
- Williamson, J.G., *Did British capitalism breed inequality?* (Boston, 1985).
- Wrigley, E.A., 'The quest for the industrial revolution', in idem, *Poverty, progress and population* (Cambridge, 2004), pp. 17-43.
- Wrigley, E.A., 'English county populations in the later eighteenth century',
- Wrigley, E.A. and Schofield, R.S., *The population history of England, 1541-1871: a reconstruction* (1981).
- Wrigley, E.A., Davies, R., Oeppen, J. and Schofield, R., *English population history from family reconstitution 1580-1837* (Cambridge, 1997).
- Wyatt, P., ed., *The Uffculme wills and inventories*, Devon and Cornwall Record Society, new series, 40 (1997).
- Zanden, J.L. van, 'Tracing the beginning of the Kuznets curve: western Europe during the early modern period', *Economic History Review*, XLVIII (1995), pp. 643-64.
- Zanden, J.L. van, 'Early modern economic growth: a survey of the European economy, 1500-1800', in M. Prak, ed., *Early modern capitalism: economic and social change in Europe, 1400-1800* (2001), pp. 67-87.
- Zanden, J.L. van, 'The "revolt of the early modernists" and the "first modern economy": an assessment', *Economic History Review*, LV (2002), pp. 619-641.
- Zell, M., 'Wealth, trades and agriculture in the Elizabethan Weald', in A. Detsica and N. Yates, eds, *Studies in modern Kentish history* (Maidstone, 1983), pp. 203-18.
- Zell, M., *Industry in the countryside: Wealden society in the sixteenth century* (Cambridge, 1994)