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The Interplay of Demographic, Economic, and Social History

The wealth of source material for various aspects of the demographic, economic, and social history of England over the past half millennium makes it possible to describe, for example, urban growth and related changes in occupational structure, or changes in county population densities and their concomitants, often in considerable detail. However, although *description* may be feasible, *explanation* often presents problems. It is normally the case that a number of factors are involved, and determining their relative importance often presents severe difficulties and results in arbitrary decisions. In many sciences, if a similar problem is faced, controlled experiments can sometimes overcome it. The nature of historical information rules out comparable procedures. For example, one of the most striking changes taking place in England in the early modern period was the rapid increase in the proportion of the population living in towns with a matching rise in agricultural productivity to supply town dwellers with the necessities of life. It is reasonable to assume that the urban growth that occurred would have been reduced if agricultural productivity had risen more slowly, but it is not possible to test this assumption to establish, for example, the scale of the impact on urban growth if gross cereal yields had risen by a half between 1600 and 1800 rather than doubling.

This difficulty has often attracted attention in the past. Mathias expressed his disquiet on this issue firmly:

A very deep-seated instinct exists to look for a pervasive single-cause explanation for historical phenomena (preferably one which

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no one else has yet thought of) in terms of which to seek to explain everything. In most cases, this easy assumption is surely misguided in principle and impossible to employ operationally, at least when one is dealing with such a deep-seated and widespread historical phenomenon like the industrial revolution or the Renaissance. To search for a single-cause explanation for the industrial revolution is to pose a false analogy with a simple equation governing chemical change.

Similarly, Hartwell noted, “It is fair to say that the historians, in their detailed analyses, have suggested *many* ‘causal factors,’ yet nearly all have sought ‘a main cause’ and have elevated *one* variable, explicitly or implicitly, to the role *chief cause*.”¹

An alternative to using a causal framework when seeking to provide an explanation rather than simply a description of change in the past is to make use of the concept of positive and negative feedback. This approach avoids some of the problems associated with explaining within a framework of causation. One of the problems associated with using a causative framework is that it implies a causal sequence: If A caused B, it must have preceded it. The interlinkage between two phenomena may be clear but the chronological sequence difficult to establish.

Since history is concerned with change over time, an additional advantage in using a feedback framework is that, as a result of a period of positive feedback between two variables, the nature of their relationship may ultimately provoke a switch from positive to negative feedback between them. Indeed, there is a sense in which this sequence was a fundamental characteristic of all organic economies. For example, urban growth provided a stimulus to farmers to increase their output. A rise in urban demand was matched by a commensurate increase in the output of food and the raw materials of industry, thus facilitating further urban growth. For a time, increasing agricultural output might permit a fall in the unit cost of agricultural production, as when it resulted in a reduction in the percentage of arable land left fallow each year accompanied by increasing growth of leguminous crops, better

1 Peter Mathias, *The First Industrial Revolution: An Economic History of Britain, 1700–1914* (New York, 1983; orig. pub. 1969), 7; Ronald M. Hartwell, “The Causes of the Industrial Revolution: An Essay in Methodology,” in *idem* (ed.), *The Causes of the Industrial Revolution in England* (London, 1967), 56.

fodder for draught animals, and a wide variety of other improvements. However, for reasons set out clearly and convincingly by the classical economists, intrinsic to the nature of periods of growth in organic economies was that positive feedback must at some point give way to negative feedback. Each advancing step made the next step harder to take, first reducing the speed of growth and later halting or reversing it.

This article presents several instances of feedback patterns involving demographic, economic, and social change in early modern England that are visible in urban history and in the operation of the preventive check. Negative feedback was a fundamental characteristic of all organic economies, and there is a sense in which the key feature of the gradual transformation of the English economy between the reigns of Elizabeth and Victoria, often termed the “industrial revolution,” was the escape from the constraints inherent to the nature of all organic economies. The writings of Adam Smith and Thomas Malthus regarding the character of an organic economy deserve attention in this regard since they described it with authority.

ORGANIC ECONOMIES The classical economists were in agreement that three elements were involved in all forms of production—capital, labor, and land. In principle, the supply of capital and labor might rise as required in response to increasing demand, but the area of land could not be increased. The area of farmland could be extended by bringing into cultivation land of inferior quality, or a larger output might be secured from the more intensive use of existing farm land. However, in both cases, as pressure on the land increased, unit costs of production were bound to increase at some stage, thereby also reducing returns both to capital and labor. Negative feedback would replace positive feedback and the period of growth would be replaced by stagnation or decline. Smith summarized his analysis as follows:

In a country which had acquired that full complement of riches which the nature of its soil and climate, and its situation with respect to other countries, allowed it to acquire; which could, therefore, advance no further, and which was not going backwards, both the wages of labour and the profits of stock would probably be very low. In a country fully peopled in proportion to what either its

territory could maintain or its stock employ, the competition for employment would necessarily be so great as to reduce the wages of labour to what was barely sufficient to keep up the number of labourers, and, the country being already fully peopled, the number could never be augmented.²

As Smith viewed the problem, breaking free from the constraints that limited growth possibilities in all organic economies was out of the question, and it is an intriguing irony of the history of the late eighteenth and early nineteenth centuries that his analysis remained orthodoxy during the decades in which it was once orthodox to consider that the industrial revolution took place. Three-quarters of a century after the publication of Smith's *Wealth of Nations*, Mill, a heavyweight figure in the intellectual world of his day, published his *Principles of Political Economy*, rehearsing the same argument that Smith had propounded with only minor reservations.³

Demography played a central role in ruling out the possibility of anything other than a very low standard of living for the mass of the population. As Smith noted,

Every species of animals naturally multiplies in proportion to the means of their subsistence, and no species can ever multiply beyond it. But in civilized society it is only among the inferior ranks of people that the scantiness of subsistence can set limits to the further multiplication of the human species; and it can do so in no other way than by destroying a great part of the children which their fruitful marriages produce.⁴

In 1798, twenty-two years after the publication of the *Wealth of Nations*, Malthus published his *Essay on Population*. He expressed the problem of the enduring poverty of the mass of the population in mathematical terms, suggesting that a population would increase in

2 Adam Smith (ed. Edwin Cannan), *An Inquiry into the Nature and Causes of the Wealth of Nations* (London, 1961; orig. pub. 1776), I, 106.

3 As Mill wrote, "The materials of manufacture being all drawn from the land, and many of them from agriculture, which supplies in particular the entire material of clothing: the general law of production from the land, the law of diminishing return, must in the last resort be applicable to manufacturing as well as to agricultural history" (John Stuart Mill [ed. John M. Robson], *Principles of Political Economy with Some of Their Applications to Social Philosophy* [Toronto, 1965; orig. pub. 1848], I, 182).

4 Smith, *Wealth of Nations*, I, 89.

number geometrically as long as the economy was capable of supporting the resulting increase in population. However, the fact that output could rise only arithmetically, at best, implied that whatever the initial size of a population, the nature of the two types of increase was such that in the course of time, population would rise more rapidly than production, and living standards would be forced down to bare subsistence. This he termed the *positive check*. Mortality would rise to match the fertility level, and a large proportion of the population would live close to the edge of the Malthusian precipice at living standards that at times would be miserably low. Malthus and Smith were in agreement that the positive check was the means by which population and production were kept in balance, thus leaving the bulk of the population unavoidably constrained to a standard of living not greatly above bare subsistence. Both authors, however, were well aware that periods of relative prosperity might persist for a time until the negative feedback generated by increasing pressure on the land as production rose depressed living standards and forced the population closer to the Malthusian precipice.⁵

Three years after the publication of the *Essay on Population*, the first census was taken, directed by John Rickman. In addition to a count of population totals, Rickman arranged for the collection of totals of baptisms and burials during the preceding century to be published as part of the census. These totals made it clear that the population had risen substantially during the eighteenth century and so had the rate of growth during its last few decades. This development was at odds with Malthus' "model" of population trends in a long-settled country, and subsequent censuses taken during his lifetime left no room for doubt about the exceptionally high rate of population growth taking place in England. Malthus never managed to reconcile these data with his original simple model, but he became much better informed about population trends elsewhere in the world, and in due course, he elaborated his model in ways that gave it greater flexibility.

One of Malthus' changes is of particular interest in relation to English history in the early modern period. The arresting of population growth as productive capacity failed to rise as fast as

5 Thomas Robert Malthus, *An Essay on the Principle of Population* (London, 1798), in Wrigley and David Souden (eds.), *The Works of Thomas Robert Malthus* (London, 1986), 8 v.

population could not only result from rising mortality alone but also from a combination of an increasing death rate and a falling fertility rate. Malthus termed the latter the *preventive check*. Where the preventive check was in place, population growth might remain at a level that prevented the standard of living from declining to bare subsistence following a period of growth. In Malthus' words,

From high real wages, or the power of commanding a large portion of the necessaries of life, two very different results may follow; one, that of a rapid increase in population, in which case the high wages are chiefly spent on the maintenance of large and frequent families; and the other, that of a decided improvement in the modes of subsistence, and the conveniences and comforts enjoyed, without a proportionate acceleration in the rate of increase.⁶

THE PREVENTIVE CHECK The writings of two influential scholars caused attention to be focused increasingly on the nature of the preventive check well before there was any substantial body of data reflecting its operation. Hajnal focused attention on the preventive check in a remarkable essay published half a century ago about European marriage patterns. At the time of his writing, in the early 1960s, only a limited amount of scattered information about European nuptiality in earlier centuries was available; Hajnal was cautious in reviewing such estimates as were available to him. He did, however, provide an eye-catching table that left no room for doubt about nuptiality patterns in Western Europe deserving further attention. He contrasted marriage patterns in Western and Eastern Europe by selecting two countries on either side of his famous imaginary line from Leningrad to Trieste. He captured the extent of the contrast by recording the percentages of men and women who were single in three age groups—twenty to twenty-four, twenty-five to twenty-nine, and forty-five to forty-nine. The countries that he chose—Belgium and Sweden on one side and Bulgaria and Serbia on the other—were typical of Western and Eastern Europe generally (see Table 1).

6 Malthus, *Principles of Political Economy*, in Wrigley and Souden (eds.), *Works* (London, 1986), V, 183.

Table 1 Representative Percentages of Unmarried Men and Women in Western and Eastern Europe, 1900

	MEN			WOMEN		
	20-24	25-29	45-49	20-24	25-29	45-49
West European	89	56	15	76	47	18
East European	54	21	3	20	3	1

SOURCE John Hajnal, "European Marriage Patterns in Perspective," in David V. Glass and David E.C. Eversley (eds.), *Population in History* (London, 1965), 101 (Table 1).

Table 1, which records the average percentages of men and women who were single for each pair of countries, shows dramatic differences. It suggests that in countries where the fertility of married couples is largely uncontrolled, and social convention results in women marrying late in life and a significant proportion of them remaining single, overall fertility rates will be substantially lower than in countries where most women marry early in life and few remain single. The data in the table underline the potential significance of the preventive check in giving rise to a more favorable balance between population and production in countries where women married late or not at all. Hajnal noted "a widespread conviction among eighteenth-century authors that European conditions were fundamentally different not only in marriage, birth and death rates, but above all in standards of living, from those obtaining elsewhere in the world." He stressed that he was essentially re-expressing an issue that Malthus had explored: "The main theme of this paper is not new. It is one of the main topics of Malthus' *Essay* and indeed explicit in its very structure." Hajnal's essay provided a powerful stimulus to use new methods, such as family reconstitution, to improve knowledge of the demography of European communities in the early modern period.⁷

Peter Laslett set a new foundation for work on two aspects of English demographic and social history—the predominant family form and the level of mobility in the population. His work enforced major changes in previous assumptions about household structures and population mobility—that the increasing prevalence of the nuclear family was linked to urban growth, that extended families were still widely present in early modern rural England, and that most

7 John Hajnal, "European Marriage Patterns in Perspective," in David V. Glass and David E. C. Eversley (eds.), *Population in History* (London, 1965), 131, 130.

individuals in rural England continued to live in the parish where they had been born. Laslett's analysis of successive listings of the inhabitants of Clayworth and Cogenhoe in the seventeenth century showed that the nuclear family was the standard family unit. The prevailing convention was that in any one household there should not be more than one married couple. He wrote that the new evidence

makes it possible to put forward a general thesis about the structure of English society in Stuart times, and in earlier times as well. It suggests that the nuclear independent family, that is, man, wife, and children living apart from relatives, was the accepted familial unit. It suggests, therefore, that the more generally accepted impression that the independent nuclear family (now given the name *simple family household*) came into existence with industrialization is not in fact justifiable for England.⁸

Laslett's findings suggested that a young couple contemplating marriage knew that they would have to establish a new household rather than join an existing one. This convention meant that both the average age at marriage and the proportion of each generation that remained single was likely to be influenced by the prevailing economic situation and its prospects. Laslett's analyses also showed that in the later seventeenth century, only a minority of each new generation died in the same parish in which they had been born. By this date, yeomen and husbandmen in much of rural England had been replaced by farmers and laborers. In earlier times, attachment of a family to its plot may well have been stronger, but the land was now farmed with an eye turned more toward taking advantage of market opportunities than sustaining a peasant family.⁹

The operation of the preventive check is central to the understanding of the population history of England in the early modern period. The English population increased rapidly between 1551 and 1801, rising from 3.07 to 8.67 million, almost a threefold rise during a period when the populations of four other big continental countries—France, Germany, Italy, and Spain—rose slowly, by about a half. However, the rate of increase of the English population

8 Peter Laslett, *Family Life and Illicit Love in Earlier Generations* (New York, 1977), 61.

9 As Laslett wrote about Clayworth, "Nothing previously known about settled, rural, traditional populations prepares us for the turnover figure which can be worked out by comparing the names of those present in 1676 with the names of those present in 1688" (Laslett, *Family Life*, 65).

fluctuated markedly over time. Between 1551 and 1651, it rose from 3.07 to 5.31 million with an average annual increase of 0.55 percent. For eighty years thereafter, the population was virtually stationary; in 1731, the total stood at 5.41 million. Growth then resumed; in 1801, the population total climbed to 8.67 million, before accelerating further to 16.73 million in 1851, almost doubling in half a century. The annual growth rates in these two periods were 0.68 and 1.32 percent; the latter figure was higher than in any other comparable period in English history.

Many features of this three-century period call for comment, but one especially should attract attention. We can track the changes in fertility and mortality throughout the period and use the changes in the net reproduction rate and expectation of life at birth (e_0) between successive periods, in conjunction with model life tables, to estimate the relative importance of changes in fertility and mortality in altering growth rates. Throughout the three centuries, and in each of the sub-periods within it, changes in fertility were twice as important as changes in mortality in determining the increases and decreases in the growth rate. Furthermore, the changes in nuptiality that accounted for most of the changes in fertility level were the result of rises and falls in the mean age at marriage and changes in the proportion of men and women who remained single. The decisions about marriage made by individual men and women were the prime reason for the notable rises and falls in the population growth rate. To express the point provocatively, the major changes in the population growth rate were largely due to personal decision.¹⁰

URBAN GROWTH One of the most striking features of the rapid population increase in early modern England, which far outstripped growth in most of continental Europe, is that the difference between English and continental growth rates was almost entirely due to urban growth. The non-urban populations in England and on the continent rose at similar rates (see Table 2).

10 The total population for the four continental countries combined rose from 51.8 to 79.8 million, a rise of 54%. Germany was the fastest growing and Spain the slowest, but the differences were modest. Jan de Vries, *European Urbanization 1500–1800* (Cambridge, Mass., 1984), 36–37 (Table 3.6). For the English totals, see Wrigley, Robert S. Davies, James E. Oeppen, and Roger S. Schofield, *English Population History from Family Reconstitution 1580–1837* (New York, 1997), 614–615 (Table A9.1).

Table 2 Urban and Non-Urban Growth in England and Continental Europe, 1600–1800

	ENGLAND			CONTINENTAL EUROPE		
	POPULATION TOTALS (MILLIONS)					
	URBAN	NON-URBAN	TOTAL	URBAN	NON-URBAN	TOTAL
1600	0.34	3.82	4.16	7.7	62.0	69.7
1700	0.85	4.36	5.21	8.0	62.3	70.3
1800	2.38	6.29	8.67	12.4	92.1	104.5
	POPULATIONS AS PERCENTAGES OF TOTAL					
	URBAN	NON-URBAN	TOTAL	URBAN	NON-URBAN	TOTAL
	1600	8.2	91.8	100.0	11.0	89.0
1700	16.3	83.7	100.0	11.4	88.6	100.0
1800	27.5	72.5	100.0	11.9	88.1	100.0
	PERCENTAGE CHANGE IN POPULATION TOTALS					
	URBAN	NON-URBAN	TOTAL	URBAN	NON-URBAN	TOTAL
	1600/1700	150	14	25	4	0
1700/1800	180	44	66	55	48	49
1600/1800	600	65	108	61	49	50

NOTES The definition of *urban* herein encompasses towns with 5,000 or more inhabitants. Europe consists of all the countries listed in Jan de Vries, *European Urbanization 1500–1800* (Cambridge, Mass., 1984), apart from the British Isles and the Netherlands. The Netherlands is excluded because of its rapid urban growth in the seventeenth century, anticipating England's later urban expansion. SOURCES Jan de Vries, *European Urbanization 1500–1800* (Cambridge, Mass., 1984), 36–37 (Table 3.6); Wrigley, "Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period," in *idem*, *People, Cities and Wealth: The Transformation of Traditional Society* (New York, 1987), 170 (Table 7.4); *idem et al.*, *English Population History from Family Reconstitution 1580–1837* (New York, 1997), 614–615 (Table A9.1).

In 1600, the urban percentage in England was lower than that in continental Europe, but whereas the continental figure was almost unchanged between 1600 and 1800, the English percentage more than tripled. Although the overall increase was large, it was far from uniform, as is evident in Table 3. The ten historic regional centers, which were among the largest towns in 1600, simply kept pace with the national growth rate over the next two centuries. The English population rose by 108 percent and the regional centers by 110 percent. In the seventeenth century, London alone accounted for almost three-quarters of the urban population growth

Table 3 Urban Populations: England, London, and Other Towns with 5,000 or More Inhabitants

	1600	1700	1750	1800
England	4,160	5,210	5,920	8,670
London	200	575	675	960
Other urban populations (5,000 or more inhabitants)	135	275	540	1,421
Total urban	335	850	1,215	2,380
Ten historic regional centers	73	107	126	153

URBAN POPULATIONS AS PERCENTAGES OF NATIONAL TOTAL				
London	4.75	11.0	11.50	11.00
Other urban	3.25	5.25	9.00	16.50
Total urban	8.00	16.25	20.50	27.50

NOTES The ten historic regional centers are Norwich, York, Salisbury, Chester, Worcester, Exeter, Cambridge, Coventry, Shrewsbury, and Gloucester. The percentages are expressed to the nearest quarter-percent.

SOURCES Wrigley et al., *English Population History from Family Reconstitution 1580–1837* (New York, 1997), 614–615 (Table A9.1); *idem*, “Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period,” *Journal of Interdisciplinary History*, XV (1985), 162 (Table 7.2), 166 (Table 7.3).

in the country as a whole, becoming the largest city in Europe. In the following century, however, it behaved like the regional centers, rising in parallel with the national population rise. Urban growth in the eighteenth century reflected the dynamic expansion of towns in the north and midlands that benefited from the increasing concentration of industrial activity in or near coalfields. In 1801, Manchester was the second-largest city in England, followed by Liverpool and Birmingham; the combined total for these three cities was more than ten times as large in 1801 as it had been 100 years earlier.

The dramatic increase in the urban sector in the early modern period is indirect evidence of the advances achieved in agricultural productivity. The country remained self-sufficient in temperate foodstuffs until the fourth decade of the nineteenth century. Between 1600 and 1831, the population increased from 4.16 to 13.25 million, more than tripling. Over the same period, the male agricultural labor force rose from 665,000 to 973,000, an increase of 46 percent. The contrast between the scale of growth in these two measures leaves no doubt that output per head of the agricultural

labor force increased substantially during the period, roughly doubling. The positive feedback between urban growth and agricultural productivity did not falter.¹¹

A feature of urban growth in early modern England that facilitated the continuation of this positive feedback was an early instance of escape from one of the normal bonds found within an organic economy. Towns needed fuel no less than food. Providing fuel wood for an urban population involved securing the annual growth of trees from approximately half as large an acreage as was needed to supply their food needs. As an example of the scale of benefit that flowed from a combination of rising agricultural productivity and the substitution of coal for wood as a source of heat energy, consider the change in the size of London's "urban footprint" on the land between 1600 and 1800. The calculation is based on the assumption that in 1600, London was still dependent on wood as a fuel whereas, in reality, it was already deriving most of its fuel from the Tyneside coal mines. Making this assumption, however, shows the liberating effects of gaining access to a massive *stock* of energy rather than being limited by an annual *flow* produced by plant photosynthesis.

In 1600, London's population was c. 200,000. The grain output from about 1,000 square miles of arable land was needed to meet the capital's cereal and beer consumption, and an additional 500 square miles of forest was needed to warm its houses and cook its food. London's urban footprint would therefore have been c. 1,500 square miles. Gross cereal yield per acre doubled between c. 1600 and c. 1800, and the net yield more than tripled. By 1800, the population of the capital had almost quintupled to c. 960,000, and its footprint would have risen to 7,200 square miles if grain yields per acre had remained the same and wood was still its fuel. However, since net grain yields had risen substantially, and coal had replaced wood as a source of heat energy, London's footprint was only 1,700 square miles, a modest increase from its size two centuries earlier. Since controlled experiments are not possible with

11 Ralph Davis, *The Industrial Revolution and British Overseas Trade* (Leicester, 1979), 37; Sebastian Keibek, "The Male Occupational Structure of England and Wales, 1600–1850," unpub. Ph.D. diss. (Univ. of Cambridge, 2016), 152 (Table 18). The information in the table relates to England and Wales, but Keibek kindly produced totals for England only for this publication. Census of 1831, Enumeration Abstract, II, 832–3, PP 1833, XXXVI–XXXVII; Wrigley, *The Path to Sustained Growth: England's Transition from an Organic Economy to an Industrial Revolution* (New York, 2016), 60–61.

historical data, it is not possible to determine how greatly urban growth in England would have been restricted if wood had remained the fuel used by town dwellers, but the effect of the change of fuel was substantial, increasing in parallel with population growth. The increasing use of coal to meet a widening range of heat energy needs is an example of the slow relaxation of the bonds that had always resulted in the conversion of positive into negative feedback in organic economies.¹²

The history of urban growth in England illustrates the way in which positive feedback between urban expansion and agricultural improvement was sustained in a manner that was normally impossible in an organic economy. The contrast with continental Europe, excluding the Netherlands, was marked. Average grain yields per acre on the continent were at the same level c. 1800 and c. 1600, and coal had yet to make any considerable contribution to urban fuel needs. The proportion of town dwellers at the end of the two-century period was also unchanged, c. 11 percent of the total population.¹³

MORTALITY Another respect in which English experience differed from that in most of continental Europe during the early modern period was the impact of harvest failure on the community. The last time when a poor harvest and consequent rise in the price of bread caused a widespread increase in the death rate in England was 1596/7. A century later, when cereal prices in much of Western Europe rose sharply, death rates followed suit. Regarding the mortality crisis in the Beauvaisis in 1693/4, Goubert remarked, “L’identité de la crise céréalière et de la crise démographique est absolue” (the cereal crisis and the demographic crisis are one and the same). Much of Scotland, especially Aberdeenshire, also suffered a crisis mortality in the later 1690s, notably in 1697 and 1699 following bad harvests. In England, the price of wheat was also high in 1690s, notably from 1695 to 1697, but the death rate did not rise. Bad harvests continued to be accompanied by death surges in much of continental Europe during the eighteenth century and even, as in Finland, in the nineteenth century, but

12 For fuller details about the change in the urban footprint of both London and the whole urban sector during the seventeenth and eighteenth centuries, see Wrigley, *Path to Sustained Growth*. 51–64.

13 *Ibid.*, 175 (Table 9.1).

England remained free from severe suffering in the wake of harvest failure.¹⁴

Many factors helped to limit the impact of harvest failure on English parishes. For example, the practice of the preventive check may have contributed by arresting population growth at a level that kept the mass of the population at a distance from the Malthusian precipice. Malthus, however, suggested another factor that may also have been significant. After an extensive tour of Scandinavia during the late 1790s, he returned home to find that a sharp increase in the price of bread in 1799 because a poor harvest was causing widespread alarm. Malthus argued, paradoxically, that the high price was a reassuring sign because it showed that the transfer of support to poor families by the poor law magistrates had enabled them to continue to buy bread. The increase in the demand for bread resulting from this redistribution of purchasing power caused its price to rise higher than would otherwise have been the case. Malthus recalled that in western Sweden the rise in the price of rye, the bread grain of the region, had been less marked than in England because the poor lacked the means to buy rye bread. The scale of the demand for bread was limited as a result. Unable to secure bread, poor families were reduced to eating the inner bark of fir trees and powdered sorrel, molded into a shape resembling rye bread.¹⁵

Mortality levels in England appear to have been generally lower than on the continent. In France, between 1740 and 1789, life expectancy at birth fluctuated between twenty-five and twenty-nine years. During the same decades in England, it fluctuated between thirty-five and thirty-nine years. In Italy, as late as the mid-nineteenth century, life expectancy at birth averaged thirty-three years. Low mortality brought significant benefits.

14 Wrigley and Schofield, *The Population History of England 1541–1871: A Reconstruction* (London, 1981), 510–518 (Table A2.4); Pierre Goubert, *Beauvais et le Beauvaisis* (Paris, 1960), I, 52; Michael W. Flinn (ed.), *Scottish Population History from the 17th Century to the 1930s* (New York, 1977), 172; R. E. Tyson, “Famine in Aberdeenshire 1695–99: The Anatomy of a Crisis,” in David Stevenson (ed.), *From Lairdes to Louns: Country and Burgh life in Aberdeen, 1600–1800* (Aberdeen, 1986), 32–51; Brian R. Mitchell, *British Historical Statistics* (New York, 1988), 752–755 (Table 16); Wrigley and Schofield, *Population History of England*, 511–518 (Table A2.4); Kari Pitkänen, “The Patterns of Mortality during the Great Finnish Famine in the 1860s,” *Acta Demographica* (1992), 81–101.

15 Malthus, *An Investigation of the Cause of the Present High Price of Provisions*, in Wrigley and Souden (eds.), *Works*, VII, 5–6.

Where infant and child mortality rates are high, the proportion of each birth cohort that survives to enter the workforce in their teens will be lower than where fewer children die young. The return on resources invested in rearing children will also be lower in the first situation than in the second. A comparatively modest level of mortality relieved early modern English society of the burden of supporting many children whose early death meant that they would never enter the workforce.¹⁶

Mortality levels were also a critical factor in determining how far urban expansion could continue. When the urban death rate was substantially higher than the urban birth rate, a constant flow of in-migrants was necessary simply to avoid a shrinkage in the size of the urban sector. Whether this was possible depended on the relative level of the birth and death rates in rural areas. An urban birth rate of 30 per 1,000 and a death rate 40 per 1,000 with rural birth and death rates at 30 and 27.5 per 1,000 would have caused the overall population to decline if more than one-fifth of the population lived in towns (ignoring the possibility of immigration from other countries). One of the notable features of English population history is that during the eighteenth century, urban death rates declined to the point at which part of the continued rise in the urban percentage was due to local increase in the towns themselves. In London, burials continued to outnumber baptisms in the first half of the eighteenth century. But the tide then turned, and there was local natural increase. The fact that by the mid-nineteenth century, more than half the population of England was living in towns could not have occurred if urban mortality had remained as high as it had been in early modern England.¹⁷

THE DEPENDENCY RATIO The feedback between the demographic characteristics of a community and many features of its economic and social structure repays close attention, as, for example, in measuring living standards. The complexities involved in attempting to measure the level and trend of living standards are

16 Yves Blayo, "La Mortalité en France de 1740 à 1829," *Population*, XXX (1975), 141 (Tables 15 and 16); Wrigley et al., *English Population History*, 614–615 (Table A9.1); Paolo Malanima, *L'Economia Italiana: dalla Crescita Medievale all' Crescita Contemporanea* (Bologna, 2002), 54 (Table 2.5).

17 John Landers, *Death and the Metropolis: Studies in the Demographic History of London 1670–1819* (New York, 1993).

endless. The issue is commonly approached by basing the calculation on male wage levels in a variety of occupations and facilitating comparison over time by correcting the wage data with a cost of living index derived from the price of a basket of consumables. The limitations of this approach are well known. Employment, for example, was often not continuous. But there are also more fundamental weaknesses. Perhaps a more serious limitation is that the household is a more appropriate unit of reference than the individual. It is indicative of this that the censuses of 1811 and 1821 dealt with occupational structure by asking the question, “What number of families are chiefly employed in or maintained by agriculture? How many by trade, manufacture or handicraft?” Focusing on the household brings into consideration the earnings and expenses of all those living together there rather than just those of the household head. It is also a reminder that many productive acts did not involve a payment. The housewife’s actions when preparing a meal marked the completion of a production process that began when a plowman prepared the ground for planting a crop.¹⁸

Any attempt to measure living standards may also benefit from attention to the potential importance of the dependency ratio. A full exploration of this issue is beyond the scope of this article, but an illustration is relatively simple. Assume that children in the age group from zero to fourteen years were dependent and that the bulk of their support derived from adults in the age group twenty-five to forty-four. In England from 1651 to 1700, 30 percent of the population was in the age group zero to fourteen; the comparable figure for the age group twenty-five to forty-four was 28.3 percent. From 1801 to 1850, the corresponding percentages were 37.6 and 25.1. The ratio of dependents to adults in the earlier period was 106.0; the ratio of 149.8 in the latter period is 41 percent higher. In the early nineteenth century, households carried a heavier burden in this regard than did those in the later seventeenth century. The level of the burden becomes clear if the calculation of living standards is based on the household.

THE MINDSET OF A POPULATION The surge of urban growth in early modern England was closely linked to many other changes

18 As Smith remarked, “Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer” (Smith, *Wealth of Nations*, II, 179).

in the economy—such as the rise in agricultural productivity and improvement to transport facilities—but its effect on the mindset of the rural population may have been the most significant of all the changes in train. In the sixteenth century, much land was still cultivated by men whose prime concern was meeting the needs of their families rather than increasing market sales. For example, Hoskins noted that in the Tudor period, despite its closeness to the town of Leicester, “the picture drawn is essentially one of a subsistence economy: only here and there did a Wigston farmer march in the vanguard towards the eighteenth century: nearly all his fellows trod an older and familiar path, their farming as medieval as the houses most of them still lived in, living in a true peasant economy with only small surpluses to dispose of in good years.”¹⁹

The replacement of the yeoman and peasant by the farmer and farm laborer was given momentum unintentionally by the actions of a Tudor monarch, Henry VIII. The dissolution of the monasteries by the Crown transferred ownership of wide tracts of farmland into royal hands, but within a few years, the Crown’s financial difficulties led to the sale of approximately one-quarter of England’s farmland to men whose mentality and aims generally were not those of a peasant. These developments gave impetus to the expansion of an institutional framework that came to typify the people involved in English agriculture for the next two centuries—landowners, farmers, and laborers. The potential significance of this change is suggested by an observation often made in discussions about peasant agriculture in Asia during the decades immediately following World War II. Because of the values attached to the link between the peasant family as a unit and its farmland, no member of the family appeared to be under pressure to leave the holding until the *average* level of output of the heads of family approached bare subsistence. In Western capitalist economies, however, no worker would be retained on a farm if his or her product contributed less than he or she was paid in wages. The

19 William G. Hoskins, *The Midland Peasant: The Economic and Social History of a Leicestershire Village* (London, 1957), 175, 176. Clay generalized Hoskins’ description of Wigston Magna: “English society in the early sixteenth century consisted largely of peasant farmers, whose propensity to consume goods manufactured outside their own homesteads was low, and who anyway received little of their income in the form of money” (Christopher G. A. Clay, *Economic Expansion and Social Change: England 1500–1700* [New York, 1984], II, 4).

marginal rather than the *average* product was decisive in this regard. When reviewing the disadvantages of attempting to maximize output from the land regardless of its effects on living standards, Malthus noted that this danger was averted in a market economy wherever individuals focused on maximizing their incomes:

Upon the principle of private property, which it may be fairly presumed will always prevail in society, it could never happen. With a view to the individual interest, either of a landlord or farmer, no labourer can ever be employed on the soil, who does not produce more than the value of his wages; and if these wages be not on an average sufficient to maintain a wife, and rear two children to the age of marriage, it is evident that both the population and produce must come to a stand."²⁰

England became a country in which the bulk of the farm workforce depended chiefly on a wage as a reward for their efforts rather than on raising food for their families on their holdings. Market-oriented farmers decided the size of the workforce on the land, and peasant holdings ceased to be the norm. In his poem of bitter regret over the changes transforming England, "The Deserted Village," Goldsmith portrayed the new situation and its woeful character:

Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay:
Princes and lords may flourish, or may fade;
A breath can make them, as a breath has made;
But a bold peasantry, their country's pride,
When once destroyed, can never be supplied.
A time there was, ere England's griefs began,
When every rood of ground maintained its man;
For him light labour spread her wholesome store,
Just gave what life required, but gave no more:
His blest companions, innocence and health;
And his best riches, ignorance of wealth.²¹

20 Clay estimated, "If estates granted away to courtiers and royal servants in the mid sixteenth century are also included, perhaps 25 per cent of the land of England had passed from royal into private hands by 1642" (Clay, *Economic Expansion*, II, 263). Malthus, *An Essay on the Principle of Population* (London, 1826), in Wrigley and Souden (eds.), *Works*, III, 405.

21 Oliver Goldsmith (ed. Louise Pound), *The Deserted Village* (Boston, 1907; orig. pub. 1770).

There were major regional differences in the timing and nature of the move from “peasant” to “capitalist” farming. Shaw-Taylor threw much light on this question recently by using information from the 1851 census to establish the relative importance of capitalist farming in different parts of the country: “Agrarian capitalism was more important than family farming everywhere. In the south-east, broadly defined, agrarian capitalism was utterly dominant and was practised on a relatively large scale while family farming was almost insignificant. But across a broad swathe of northern England family farming survived in strength and in parts of the north-west came close to rivalling capitalist farming in importance.” For earlier periods, the available evidence is less complete, but Shaw-Taylor was confident that in the early eighteenth century, a broadly similar pattern existed. He concluded that in southern and eastern England, “the decisive shift to agrarian capitalism took place before 1700.”²²

England, at one time a nation of “satisficers,” was becoming a nation of “maximizers.” Farm laborers as well as farmers gradually became market-oriented. Being wage-paid rather than producing much of what they needed for themselves, as their peasant ancestors had done, inevitably had this effect because their household food needs were increasingly met by purchase rather than by working a peasant plot. Among other changes, the shift to wage labor probably also made farm workers more willing to attempt to improve their lot by migrating to towns where wages were higher.

The changing mindset of the rural population also owed much to the increasing contact between London and the rest of the country. There had long been such contact. Rappaport’s study of sixteenth-century London included data relating to young men coming to London to take apprenticeships. From 1551 to 1553, 1,055 apprentices who had arrived in the capital from elsewhere were enrolled as citizens. Of these, 24.5 percent were from the six northernmost counties (Westmorland, Cumberland, Northumberland, Durham, Yorkshire, and Lancashire), all of them traveling more than 150 miles to reach London. Yet in 1600, the first date for which county population estimates are available, the population of the six counties was 823,000, only 19.8 percent of the national total.²³

22 Leigh Shaw-Taylor, “The Rise of Agrarian Capitalism and the Decline of Family Farming in England,” *Economic History Review*, LXV (2012), 57, 58.

23 Steve Rappaport, *Worlds within Worlds: Structures of Life in Sixteenth-Century London* (New York, 1989), 77–79.

The notes made by Gough about his fellow parishioners leave no doubt that visiting London, even from places many miles from the capital, and spending time there, was a commonplace in the seventeenth century. Gough lived in Myddle, a village near Shrewsbury about 160 miles from London. His *Observations*, written in 1701/2, describe the lives and activities of the inhabitants of the village in the later decades of the seventeenth century. Hey, the editor of his main writings, was struck by the importance that Gough attached to contact with London for the men and women in Myddle:

[Gough] frequently mentions London in passing as if it were commonplace that his neighbours should have been there. Men and women from all sections of his community went to the capital in search of fortune or excitement or to escape from trouble at home. Most of them kept in contact with their families, and further information about events in London and other parts of the country filtered back to Myddle through “the Gazet” and “our News letters.”

The ebb and flow of people to and from London meant that the number of men and women who had had experience of life in London was a substantial fraction of the population of the rest of England. It is little wonder that in seeking to specify London’s function in the national economy, Earle referred to Defoe’s remark that London was “a heart which circulated England’s blood.”²⁴

Another development that steadily reduced the contrast between what was available to consumers in London and in the countryside was the increasing ubiquity of village shops. Village shops strengthened country dwellers’ awareness of the many “comforts” and “luxuries” available to consumers. The reduction in the differences between the rural and urban populations in this regard encouraged country dwellers to secure a larger monetary income. In their wide-ranging survey of the importance of village shops in acquainting rural populations with the goods available for purchase, Stobart and Bailey laid special emphasis on three aspects of their presence in a steadily rising proportion of English villages: First, rural consumers were “directly linked into global systems of

24 Richard Gough (ed. D. Hey), *The History of Myddle* (London, 1983), 19; Peter Earle, *The Making of the English Middle Class: Business, Society and Family Life in London, 1660–1730* (London, 1989), 18.

supply.” Second, village shops “went far beyond supplying simply the basic and everyday needs of rural dwellers.” Third, they “facilitated access to an expanding world of goods—and were thus instrumental in shifting patterns of rural consumption.” The mindset of dwellers in the countryside differed less and less from the mindset of city dwellers.²⁵

It is when moving from description to explanation that the value of taking into account the feedback between a variety of aspects of demographic, economic, and social history becomes apparent. For example, it is often straightforward to describe the demographic history of a town, county, or country by assembling information about births, deaths, marriages, and migratory movement and converting the raw data into rates using the relevant measurement techniques. But if one then seeks to explain the change over time in the levels of fertility, mortality, nuptiality, and migration, this will involve taking into account the economic and social changes of the same era and the feedback between them. A decline in the average age of female marriage may reflect, in part, a demographic change, such as the sex ratio in the relevant age groups, but it may also indicate an improvement in the level of real incomes, or a modification in the conventions influencing marriage decisions. The feedback between the variables involved may be either positive or negative, and their relative importance difficult to demonstrate conclusively, but approaching the task of explanation using a feedback framework can often prove illuminating. In part, of course, this approach is simply using a new vocabulary to describe methods that have always been employed, but there are advantages to using this framework, not least bearing in mind the different implications of positive and negative feedback.

25 Jon Stobart and Lucy Bailey, “Retail Revolution and the Village Shop, c.1660–1860,” *Economic History Review*, LXXI (2018), 398.

